



City Research Online

City St George's, University of London

Citation: Lang, T. (2010). Crisis? What Crisis? The Normality of the Current Food Crisis. *Journal Of Agrarian Change*, 10(1), pp. 87-97. doi: 10.1111/j.1471-0366.2009.00250.x

This is the published version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://city-ref-test.eprints-hosting.org/id/eprint/12910/>

Link to published version: <https://doi.org/10.1111/j.1471-0366.2009.00250.x>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).

Crisis? What Crisis? The Normality of the Current Food Crisis

TIM LANG

The 2005–8 food crisis was a shock to political elites, but in some respects the situation was normal. Food policies are failing to respond adequately to the squeeze on land, people, health and environment. Strong evidence of systems failure and stress, termed here New Fundamentals, ought to reframe twenty-first century food politics and effort. Yet so far, international discourse is too often narrow and technical. The paper suggests that 2005–8 reinforced how the dominant twentieth century productionist policy paradigm is running out of steam. This assumed that producing more food would resolve social problems. Yet distortions in markets, access and culture remain. At national and international levels of governance, despite realization of the enormity of the challenge ahead, there is still a belief in slow incremental change.

Keywords: food systems, sustainable food, malconsumption, food crisis, ecological public health

INTRODUCTION

In 2007, world food commodity markets rocketed after gradually rising for two years (FAO 2007a, 2008b; see also Ghosh 2010, *this issue*). A long-arranged June 2008 FAO conference took on the aura of high-level political drama. A mix of fine if bland words emerged; a final communiqué was given (FAO 2008a). Leaders departed but already world prices were dropping. Was the crisis over? Not so.

Crisis is an over-used word covering a spectrum from, at one end, expression of irritation with petty difficulties to, at the other end, meltdown and reconfiguration. It can mean different things to different people. What matters is the frame of reference and indicators. Hunger and food availability have been central to twentieth century food policy discourse. Real advances were made, measured in terms of delivering more food for more people affordably. That celebratory story deserves to be taken seriously (Dyson 1996). The number of undernourished people dropped consistently from the 1970s, but began to rise from the mid-1990s (FAO 2006). Despite noble aspirations, the 2000 Millennium Development Goals have failed to reverse this. A dominant critical food narrative explaining this has been that trade rules and inequalities within and between nations distorted the potential to feed the world equitably. In this paper, I want to argue that this critique itself needs correction and that environmental, health and cultural evidence suggests the need for a deeper analysis of the distortion of needs and of how new fundamentals now

Tim Lang, Centre for Food Policy, City University, London, EC1V 0HB, UK. e-mail: t.lang@city.ac.uk

threaten all food systems. Twenty-first century policy needs to focus on food supply chains, beyond as well as including agriculture, because power and capital have moved off the land, controlling access to mostly urban markets.

THE RETURN OF SHOCK?

When world commodity prices rocketed in 2007, some policy language verged on the apocalyptic. It was reminiscent of the 1971–4 price crisis, shaped by volatile oil prices, when in fact the seeds of its ‘resolution’ were germinated elsewhere in new policy approaches and technologies, from Structural Adjustment to the Green Revolution. Mindful of that experience, some eyes today look to genetic modification for another technical fix. We should be wary, however, of assuming that the crisis is primarily in agriculture, when the late twentieth century food revolution has really been characterized by dramatic shifts everywhere in the food system. The entire relationship between people, food systems and the planet has been restructured.

The last half-century has witnessed a remarkable change in how food is grown and animals are reared. Biology has become the pre-eminent science, replacing the chemical revolution of agrichemicals and fertilisers before it. New intensive systems have emerged on the land, whether through hybrid plant breeding, factory farms, intensive livestock rearing, or prophylactic use of pharmaceuticals to increase weight gain. Throughout the food chain, huge investment and creativity has been applied to speed up and standardize production. The nature of consumer products is literally shaped by extrusion technology, fermentation, blending, and use of cosmetic additives to disguise products and yield consistency.

Power now resides off the land, with retailers shaping what and how things are grown, processed and sold. Sourcing has shifted from the local and national to the continental and international. Global supply enables the blurring of the notion of seasonality. Monoculture on mass farms belies the apparent biodiversity on the supermarket shelf. The insatiable demand of just-in-time sourcing has encouraged a dramatic shedding of labour on developed-world farms, but a retention of pools of cheap labour (immigrants) to do the manual tasks such as grading and picking in a strong push to 24-hour working.

Meanwhile, the development of niche products through mass production has been accompanied by the emergence of marketing as key to food retailing. There is a constant emphasis on product development, branding and selling. The result is a dazzling display of apparent choice, with thousands of products vying for attention, yet thousands of ‘new’ products fail and are withdrawn. Retailers have emerged as the gateways to consumers, using contracts and specifications to gate-keep between primary producers and consumers, determining technological improvements, distribution logistics, centralization of ordering, application of computer technology, application of batch/niche production to mass lines (‘flexible specialization’), and in effect moulding consumer tastes and markets.

The result is that we can no longer talk of agriculture as the be-all-and-end-all of food systems (see also Ploeg 2010, *this issue*). Humanity has now entered a new phase in the 10,000-year transformation of our ecological niche. A speed-up of change has occurred since settled agriculture emerged from 8500 BCE and the Iron

Age in 5000–6000 BCE. Quickly after the industrial agriculture revolution of the mid-eighteenth century in Europe came the chemical revolution (early nineteenth century); the application of Mendelian genetics (1860s, but applied in the twentieth century); the oil era (twentieth century, replacing animal and human power), the Green Revolution (1960s on), the modern livestock revolution (1980s on) and now biotechnology.

THE TWENTY-FIRST CENTURY: FROM PRODUCTIONISM TO ECOLOGICAL PUBLIC HEALTH?

Arguably, if we are to understand the challenge of current food policy, the frame of reference needs to go even further back than a mere 10,000 years. Human physiology – how bodies work and respond to their environment and food intake – was biologically set a few hundred thousand years ago. Storing fat when there is a glut was useful in the past but is now a cause of heart disease when supply chains over-produce. Part of the ‘crisis’ today is actually that while producing more food, the twentieth century phases of change – the application of Mendelian genetics, the oil-based industrialization, the ‘Green Revolution’, the livestock revolution and now the emerging biotechnologies – all assumed that human progress would follow from producing *more food*. Today’s food system exhibits a ‘lock-in’: over-production distorts what bodies need, while human aspirations and market power distort land use, and marketing distorts desire. The success of consumer culture is that it opens up wants and changes needs, but these now appear to be sowing the seeds of their undoing. What was seen as a rich, developed-world problem now is manifest globally. Even developing countries now have extensive obesity and overweight problems, with the concomitant healthcare problems (Popkin 2009). While affluent countries are baulking at diet-related ill-health costs, developing countries would be bankrupted if they really offered appropriate healthcare.

After decades in which policy was predicated on the case for increasing output to feed hundreds of millions of underfed people, now it seems that a more complex picture needs to be addressed: a triple burden of over-, under- and malconsumption, all coexisting, often within the same region and country. Despite the evidence of the need to change course, neither macro-policies nor the food supply chain itself are changing radically enough.

How did this situation come about? In truth, the mid-twentieth century architects of agricultural reconstruction after the Second World War have been victims of their own success. From the 1920s and 1930s, a framework had been proposed that investment in science and farm infrastructure could tackle the scourge of hunger and maldistribution. The productivity of animals and the soil could be improved. The Second World War and its aftermath gave them the opportunity and politicians’ ears to apply a political formula: *Capital + Science + Waste reduction → Raises food output → Progress*. This policy formula was based on practical application of earlier scientific advances, ranging from applied soil science (how to maintain rather than ‘mine’ soil structures) to nutrition (how to enhance vitamin and protein intake). But the policy formula was focused on agriculture, with the state as the key driver of change. The state’s role was to be benign but interventionist: driving potential to meet the goal of health through abundance (Lang and Heasman 2004). It is this

productionist approach that has once more been cast by agriculturalists as at risk. In fact, it is only one aspect of the unfolding crisis.

THE EMERGENCE OF THE NEW FUNDAMENTALS

Over the last decade, evidence and concern has mounted about ‘new fundamentals’ for twenty-first century food systems. They look set to reshape what and how food is grown, moved and consumed everywhere, whatever the terrain, country and politics, whether in developing or developed world (Ambler-Edwards et al. 2009). The crisis is now whether we address or are restricted by these new fundamentals.

Climate Change

Evidence about climate change has been building for decades but its implications for food capacities are pressing (Intergovernmental Panel on Climate Change; IPCC, 2007). The Millennium Eco-Assessment firmly placed this on the agenda, and more recently the issue lay at the heart of the reports of the International Agricultural Assessment of Science, Technology and Development, co-sponsored by the World Bank, various UN agencies and other stakeholders (IAASTD 2008). The final IAASTD report suggested complex effects of climate change throughout world agriculture, ranging from water stress to the spread of invasive pests. Regions will be affected differently according to latitude, altitude and topography. Similar comprehensive assessments are required for the entire food supply chain. Meat and meat products was the largest contributor, accounting for 4–12 per cent of the impact on global warming of all consumer products (Tukker et al. 2006).

Water

Food is embedded water. One 150 gram beefburger in the Netherlands, for instance, contains 2,400 litres of embedded water, if full account is taken of the water used to grow grain, feed and water the cow, wash equipment, and process and sell the product (Chapagain and Hoekstra 2006). Agriculture is the greatest user of water worldwide, accounting for an estimated 70 per cent of potable water use, with livestock playing a significant part in that (Clarke and King 2004). The IPCC has suggested that aquifers for large cereal-producing land areas are globally under stress. This could herald the curtailment or perhaps the end of such production in areas such as parts of the United States and Australia. Yet what would this do to consumer expectations for whom meat (except in vegetarian cultures) is so often an indicator of wealth and progress?

Biodiversity and Ecosystems Support

To the urban food shopper (now a majority of humanity), biodiversity appears to be in good shape, judging by the plethora of products and foods on supermarket shelves. But this is illusory. By 1995, the FAO was estimating that since 1900 about three-quarters of the genetic diversity of domestic agricultural crops had already been lost, plants and animals which are ‘the result of 3,000 million years of natural evolution – and 12,000 years of domestication – and selection’ (FAO 1995).

Fifty-two per cent of wild fish stocks are 'fully exploited' according to the FAO's classification (FAO 2007b). Yet nutrition guidelines continue to persuade consumers to eat more, not less, fish. Even if consumers turn to 'sustainable' fish, is there enough to feed 9 billion people by 2050? Few think so.

Energy and Non-Renewable Fossil Fuels

The availability of cheap and plentiful petroleum has been a key factor in the twentieth century rise of productivity in food systems (Pimentel and Pimentel 1996). The productionist model assumed that progress comes via the internal combustion engine and oil-driven machinery replacing animals and humans as motive power. Oil defines food modernity. The number of horses and mules on US farms, for instance, plummeted from 12 million in 1945 to 2 million in 1960, while the number of tractors doubled (Dimitri et al. 2005). Oil enables food to be trucked, shipped and flown increasing distances, underpinning the restructuring of supply routes now controlled by large retail traders. In the United Kingdom, for example, food supply chains account for about one-fifth of total energy use (Smith et al. 2005). The food system accounts for over a third of all UK road freight: since 1978, the annual amount of food transported in the UK by Heavy Goods Vehicles (HGVs) has increased by 23 per cent, and the average distance for each trip has increased by over 50 per cent. One in four trucks on UK roads moves food, and one in two of those trucks is empty, according to the industry itself (IGD 2008). As large supermarket chains consolidated, the distance consumers drove to the shops grew (as did their obesity as they stopped walking). From 1985/6 to 1996/8, average UK travel-to-shop distances increased by 57 per cent. Now with the prospect of 'peak oil', short-termists think that this oil-based modernity can be fuelled by biofuels, as though this does not destabilize land used for food (FAO 2008c).

Population Growth

One does not need to be a neo-Malthusian to note the awesome challenge from population growth. The politics are delicate, seized on by deep greens and proponents of GM alike. The current world population is roughly 6.7 billion and is projected to rise by over 25 per cent by 2050 (UNFPA 2007). This increase of 2.5 billion is equivalent to the total size of the world population in 1950, and it will occur mostly in less developed regions, whose population is projected to rise from 5.4 billion in 2007 to 7.9 billion in 2050. In contrast, the population of the more developed regions is expected to remain largely unchanged at 1.2 billion, and would have declined, were it not for the projected net migration from developing to developed countries, which is expected to average 2.3 million persons annually. A looming gap between food production capacity and global population is widely anticipated. According to FAO figures, measured as kilos per capita, the growth of availability of main crops such as grains, soy, potatoes – which rose admirably from the 1960s due to investment in new farm systems – began to level off from the 1990s (UNEP 2009). Urbanization is rising, taking more land and requiring more feeding from urban and rural growers. In 1975 the world's urban population was 40 per cent of the world total. By 2005 it was almost half. This puts a further burden both on remaining rural populations to feed the urban masses and on the urban

population to recognize its reliance on the primary food labour force. Whichever policy route is taken, this signals stress ahead.

Waste

One factor that could feed more mouths is the reduction of food that is wasted. The reduction of waste was a key rationale for productionism. Science would reduce waste at ports and stores by better technology and hygiene (Pyke 1950). Despite the promise of post Second World War science to reduce waste, the form and function of food waste has merely changed. Rich consuming societies – exemplars of supposed progress – are huge food wasters. In 2007, according to the UK government's waste body, UK consumers threw away 6.7 million tonnes of food, approximately *one third* of food purchased (WRAP 2008). Only a fifth of this waste is unavoidable – peelings, cores, bones. The avoidable waste occurs due to a combination of factors such as excess purchasing, marketing (e.g. 'buy one get one free' offers), obeying cautiously set 'sell-by' or 'best before' dates, large portion sizes, plate waste and price incentives – in short, the consuming patterns and styles of retailing that represent modernity.

Land

Food is an intensive user of land, yet everywhere there is fierce competition between it and other uses for land: fuel, carbon/water sinks, biodiversity, amenity, transport, identity, wood and fibre. The land debate is often pitched as about the developing world, but the developed world's food system actually controls disproportionate landscape. London, a nineteenth century mega-city, actually uses 48,868,000 global hectares (gha) of land to keep its consumers; that is, 6.63 gha per person living in the city. London's footprint – its land use – thus far exceeds its actual geography. To make London's land use more equitable, that land use ought to drop to 1,210,000 gha, 0.16 gha per capita (Lyndhurst and Greater London Authority 2003). In reality, rich cities such as London or New York exert a covert land 'imperialism', using land elsewhere without owning it. Within London's total footprint, food accounted for 41 per cent. For its food consumption to be more equitable, each Londoner ought to consume 70 per cent less meat, eat more than 40 per cent local seasonal unprocessed food and cut waste by one tonne a year.

Soil

Soil is the basis of food production and civilization. Unless soil health is protected by good management and conservation, food production halts, yet according to the UNEP nearly 2 billion hectares (ha) of land are globally affected by human-induced soil degradation. The European Agricultural Conservation Foundation has estimated that soil erosion and degradation caused by conventional agriculture affect approximately 157 million ha (16 per cent) of Europe, roughly three times the total surface of France (ECAAF 1999). Average soil erosion rates in Europe are judged to exceed the average rate of soil formation, with most EU countries affected. In the Mediterranean – from which the UK derives much horticultural produce – soil erosion is deemed 'very severe'. The UK's own soils still bear the legacy of the country's

status as the first industrial nation, with higher levels of pollutants in urban than rural soils. Evidence suggests that soil dioxins grew between 1880 and 1980 but have dropped by 70 per cent since 1980, reflecting both de-industrialization and the effectiveness of controls (Environment Agency 2007).

Labour

Whereas most labour in the food system has historically been in agriculture, today the main trends are to displace farm labour. In developed countries, more people work in food service than on farms. Labour tends to shift down the food chain, yet agriculture is still the world's largest employer, with about 40 per cent of the world's employment – although much is at a subsistence level (Halweil 2000). Of the approximately 1.1 billion men and women working in agricultural production in the mid-1990s, nearly half did so on a waged basis (FAO 1996). Although the value of food production in 2000 was only about 3 per cent of gross world product, the agricultural labour force accounts for approximately 22 per cent of the world's population, and 24 per cent of GDP in countries with per capita incomes of less than \$765, the low-income developing countries, as defined by the World Bank (Millennium Ecosystem Assessment (Program) 2005). Millions of these workers earned the lowest wages in the rural sector, lower even than the amount required to subsist. Even in a rich country such as the UK, the farm is the most dangerous place of work, if measured by the likelihood of the worker being killed while at work (Health and Safety Executive 2008). There has also been a shift from full-time to part-time workers, up from 21 per cent of the total in 1984 to 43 per cent by 2007, and a gradual ageing of farmers. Only 3 per cent are under 35 years of age (Defra 2008). Developed country agriculture faces a serious problem of future labour: Where is it to come from? Will it be migrant? Meanwhile in developing countries, the drift to towns imposes a double burden: on the country to feed the burgeoning urban mass, and on the land, with sprawling towns so often built on prime land.

Dietary Change and Public Health

On top of these structural pressures, consumer tastes internationally have exhibited what is known as the 'nutrition transition', a term to describe a process that happened many decades ago in developed countries but is now occurring in developing countries. There is a shift from simple staples to greater intake of high-value-added processed foods, meats, dairy and soft drinks. The transition accelerates the incidence of diet-related non-communicable diseases, an impact known for decades, arguably since the US epidemiologist Ancel Keys' Seven Countries study showed that Cretan peasants ate the healthiest diet of the seven countries studied (Keys 1970). Today, the formerly admirable Greeks have 'westernized' their diet, as the Chinese and Indians are now doing, all moving towards high consumption of fatty, sugary, processed (salty) foods and a lower than desirable consumption of fruit and vegetables, combined with a decline in physical activity, associated with a wide range of non-communicable diseases. This is why today public policy needs to address a different picture to that charted by the 1930s architects of productionist policies. Whereas the 1930s concerns were for nutritional

deficiencies, today the picture that needs to be confronted is more complex, symbolized by rocketing obesity alongside continued hunger.

NEW PROBLEMS ADDED TO THE OLD

The New Fundamentals almost certainly cannot be addressed singly, but must be addressed comprehensively and collectively. To act on water stress, for example, by investing in desalination plants, as is happening in oil-rich Middle Eastern countries, is likely to add to carbon load and hence climate change, because such plants are energy intensive. There is the danger of unintended consequences in single solutions. The New Fundamentals must be addressed systemically, by altering the food system's fabric. These challenges are beginning to be discussed, but they actually cut into a structure that is already deeply fissured. 'Old' problems include the continuing deep inequalities within and between countries; the unparalleled concentration of control within and across food sectors; and the implications for governance of the power and influence of late twentieth century global food corporations that dwarf many nation-states. Ideologically constrained by the Washington Consensus, food policy's public institutions are too weak or unsupported to address the fault-lines. The difficulty of the new food picture is its complexity. No longer is it possible just to focus on agriculture, yet to ignore it would be folly, as was belatedly acknowledged at the Rome FAO crisis meeting in June 2008.

The picture is sobering. The pessimists smell impending catastrophe. Yet there is a serious body of analysis suggesting possible ways through seemingly immense difficulties. In 2008, the World Bank initiated IAASTD countered those who believe in GM as the new magic bullet, arguing that sustainable food systems could be built around supporting the social not just ecological infrastructure of small farmers (IAASTD 2008). The WHO's Commission on Social Determinants of Health painted a similarly sober but positive direction of travel, arguing that reducing social inequalities pays off in enhanced general health and wellbeing (Commission on Social Determinants of Health 2008). In 2009, UNEP argued that food policies must be built on recognizing environmental limits (UNEP 2009) and the World Cancer Research Fund published policy recommendations on how, at the population level, dietary change plus appropriate physical exercise could significantly prevent cancer rates (WCRF/AICR 2009).

How to fuse these different foci is itself a key policy challenge (Lang et al. 2009). The new era needs to build food systems around better understanding of the human niche, delivering low-carbon, nutritious, sustainable food. Whereas the productionist paradigm assumed that the Earth was limitless, the new era's policies must assume the connection between environment, social justice and health. The much-cited term 'food security' has in recent times been denuded; like 'crisis' it means all things to all people. This is the looseness from which Oshaug and Haddad tried to rescue it, proposing *de facto* a return to core values – that food policy is about resolving the linkage of people, nutrition and environment (Oshaug and Haddad 2002). I agree. Instead of defining food security as the pursuit of the three A's – access, availability, affordability – food (and agricultural) policy needs other aims: to deliver sufficiency of production only on ecological terms, with sustainable food systems at the heart

of international development; to judge food not just by price but meshing embedded carbon, water and land use with calories – a new set of heuristics; to factor in *all* diet-related ill-health, not just hunger; to draw on all the sciences, not just the ‘natural’ sciences, to help create resilient food systems; to focus on entire food chains, not just agriculture, to transform how food is produced, distributed and consumed; to re-frame consumer aspirations to engage them in lowering food’s impact on the environment; and to deliver the above through democratic means, building movements that hold food systems to account and shape needs appropriately. Against these objectives, current food systems fall short.

From this ecological public health perspective, food security *is* sustainability; only sustainable food systems can deliver meaningful security. While productionism has run out of steam, the world actually needs the deployment of policy measures locally, nationally and globally where the core goal is to feed everyone sustainably, equitably and healthily; which are diverse, ecologically sound and resilient in the face of increasing environmental, economic or social volatility and creates robust and sufficient supply systems and stocks; whose principles and mode of operation can be maintained for the long term, thereby enhancing – not just protecting – the land’s productive capacity; and which build the capacities and skills necessary for future generations. Measured against those aspirations, the current food system exhibits signs of systems failure. The crisis in 2005–8 was not a blip, but creeping normality.

REFERENCES

- Ambler-Edwards, S., K. Bailey, A. Kiff, T. Lang, R. Lee, T. Marsden, D. Simons and H. Tibbs, 2009. *Food Futures: Rethinking UK Strategy*. Chatham House Report. London: Royal Institute of International Affairs (Chatham House).
- Chapagain, A.K. and A.Y. Hoekstra, 2006. *Water Footprints of Nations*, vols. 1 and 2. UNESCO–IHE Value of Water Research Report Series No. 16. Paris: UNESCO.
- Clarke, R. and J. King, 2004. *The Atlas of Water: Mapping the World’s Most Critical Resource*. London: Earthscan.
- Commission on Social Determinants of Health, 2008. *Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health. Final Report of the Commission on Social Determinants of Health*. Geneva: World Health Organisation (http://www.who.int/social_determinants/final_report/en/index.html).
- Defra, 2008. ‘Average Earnings and Hours of Agricultural and Horticultural Workers (England and Wales)’. London: Department of Environment, Food and Rural Affairs (<https://statistics.defra.gov.uk/esg/datasets/ehrwmta.xls>).
- Dyson, J., 1996. *Population and Food: Global Trends and Future Prospects*. London: Routledge.
- ECAF, 1999. ‘Conservation Agriculture in Europa’. ECAF First Report. Brussels: European Conservation Agriculture Federation.
- Dimitri C., A. Effland and N. Conklin, 2005. *The 20th Century Transformation of U.S. Agriculture and Farm Policy*. Washington, DC: USDA Economic Research Service.
- Environment Agency, 2007. *UK Soil & Herbicide Pollutant Survey*. London: Environment Agency.
- FAO, 1995. *Dimensions of Need: An Atlas of Food and Agriculture*. Rome: Food and Agriculture Organisation.
- FAO, 1996. ‘Farm Wage Labour: Poorest of the Rural Poor’. Rome: Food and Agriculture Organisation (<http://www.fao.org/docrep/x0262e/x0262e19.htm>) accessed 23 January 2008.

- FAO, 2006. *The State of Food Insecurity in the World 2006: Eradicating World Hunger – Taking Stock Ten Years after the World Food Summit*. Rome: Food and Agriculture Organisation.
- FAO, 2007a. *Food Outlook: Global Market Analysis*. Rome, Food and Agriculture Organisation.
- FAO, 2007b. *State of Food and Agriculture 2007*. Rome: Food and Agriculture Organisation.
- FAO, 2008a. *Declaration of the High-Level Conference on World Food Security: The Challenges of Climate Change and Bioenergy*. 3–5 June 2008. Rome: Food and Agriculture Organisation (http://www.fao.org/fileadmin/user_upload/foodclimate/HLCdocs/declaration-E.pdf).
- FAO, 2008b. *Food Price Index (May 2008 Report)*. Rome: Food and Agriculture Organisation (<http://www.fao.org/worldfoodsituation/FoodPricesIndex>).
- FAO, 2008c. *State of Food and Agriculture 2008 – Biofuels: Prospects, Risks and Opportunities*. Rome: Food and Agriculture Organisation.
- Ghosh, J., 2010. 'The Unnatural Coupling: Food and Global Finance'. *Journal of Agrarian Change*, 10 (1): 72–86.
- Halweil, B., 2000. 'Where Have all the Farmers Gone?' *World-Watch* 13 (5): 12–28.
- Health and Safety Executive, 2008. *HSE Statistics 2007/08*. London, Health and Safety Executive (<http://www.hse.gov.uk/statistics/index.htm>).
- IAASTD, 2008. *Global Report and Synthesis Report*. London: International Assessment of Agricultural Science and Technology Development Knowledge.
- IGD, 2008. *Sustainable Distribution in 2008*. Radlett, Herts: IGD.
- IPCC (Intergovernmental Panel on Climate Change) 2007. *Climate Change 2007: the IPCC Fourth Assessment Report (AR4) – The Synthesis Report*. 17 November. Geneva: IPCC.
- Keys, A., 1970. 'Coronary Heart Disease in Seven Countries'. *Circulation*, 41 (supplement 1): 1–211.
- Lang, T. and M. Heasman, 2004. *Food Wars: The Global Battle for Mouths, Minds and Markets*. London: Earthscan.
- Lang, T., D. Barling and M. Caraher, 2009. *Food Policy*. Oxford: Oxford University Press.
- Lyndhurst, B. and Greater London Authority. 2003. *London's Ecological Footprint: A Review*. London: Greater London Authority.
- Millennium Ecosystem Assessment (Program), 2005. *Ecosystems and Human Well-Being: Synthesis*. Washington, DC: Island Press.
- Oshaug, A. and L. Haddad, 2002. *Nutrition and Agriculture: A Briefing Note*. Geneva: UN Administrative Committee on Coordination Sub-Committee on Nutrition (<http://www.unsystem.org/scn/Publications/foundation4dev/06Agriculture.pdf>).
- Pimentel, D. and M. Pimentel, 1996. *Food, Energy and Society*. Niwet, CO: Colorado Press.
- Ploeg, J.D. van der, 2010. 'The Food Crisis, Industrialized Farming and the Imperial Regime'. *Journal of Agrarian Change*, 10 (1): 98–106.
- Popkin, B., 2009. *The World is Fat: The Fads, Trends, Policies and Products That are Fattening the Human Race*. New York: Avery/Penguin.
- Pyke, M. 1950. *Industrial Nutrition*. London: MacDonald and Evans.
- Smith A., P. Watkiss, G. Tweddle, A. McKinnon, M. Browne, A. Hunt, C. Treleven, C. Nash and S. Cross, 2005. *The Validity of Food Miles as an Indicator of Sustainable Development. Report to DEFRA by AEA Technology*. London: Department for the Environment, Food and Rural Affairs.
- Tukker, A., G. Huppes, J. Guinée, R. Heijungs, A. de Koning, L. van Oers, S. Suh, T. Geerken, M. Van Holderbeke, B. Jansen and P. Nielsen, 2006. *Environmental Impact of Products (EIPRO): Analysis of the Life Cycle Environmental Impacts Related to the Final Consumption of the EU-25*. EUR 22284 EN. Brussels: European Commission Joint Research Centre.

- UNEP, 2009. *The Environmental Food Crisis: The Environment's Role in Averting Future Food Crises. A UNEP Rapid Response Assessment*. Nairobi: United Nations Environment Programme.
- UNFPA, 2007. *State of World Population 2007: Demographic, Social and Economic Indicators*. Washington, DC: UN Population Fund (<http://www.unfpa.org/swp/2007/english/notes/indicators.html>).
- WCRF/AICR, 2009. *Policy and Action for Cancer Prevention – Food, Nutrition, and Physical Activity: a Global Perspective*. London/Washington, DC: World Cancer Research Fund/American Institute for Cancer Research.
- WRAP, 2008. *The Food We Waste*. Banbury: Waste & Resources Action Programme.