Journal of Rural Studies 29 (2013) 71–80

Contents lists available at SciVerse ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud

The interconnected challenges for food security from a food regimes perspective: Energy, climate and malconsumption

Colin Sage*

Department of Geography, University College Cork, Cork, Ireland

Keywords:
Vulnerability
Food regimes
Energy security
Climate change
Malconsumption

A B S T R A C T

Recent experience of food price volatility in global markets encourages closer examination of the dynamics underlying the global food system and reveals a range of contingent factors. Meanwhile a common thread of many recent expert reports has emphasised the need to intensify agricultural production to double food output by 2050. Drawing upon a food regimes approach, the paper argues that the global food system is vulnerable to three inter-connected challenges that make a largely productivist strategy inappropriate. Analysis suggests that there is a strong likelihood of rising energy costs given the anticipated decline in conventional oil supplies which will have repercussions for land-use and food security. Climate change scenarios anticipate rates of warming and drying in large areas of the tropics that will also have huge implications for food security in those areas. Yet the mode of operation of the global food system is to deliver poor quality nutrition with significant dietary health consequences, a phenomenon labelled malconsumption. The paper argues that these issues are closely inter-related and until we address the fact that the global food system remains dominated by powerful economic interests, an effective solution will remain elusive.

1. Introduction

Growing food price volatility during the first decade of the twenty-first century has certainly elicited attention from mainstream science and policy analysis (FAO, 2009; Royal Society, 2009; Science, 2010; UK Government Office for Science, 2011; Economist, 2011). While some documents remain "cautiously optimistic", that commodity prices will fall from their 2010–11 levels and stabilise as market signals incentivise farmers to produce more food (OECD-FAO, 2011), most are less sanguine about the prospects for feeding the world, especially a global population of 9b by 2050 (Evans, 2009). Indeed, of these recent mainstream reports, there are varying degrees of acknowledgement of the other challenges that intersect with food production – such as projected rates of global warming, freshwater depletion, biodiversity losses, and tightening energy markets – let alone matters of livelihood security and improved access to food for the rural poor. For most, the central solution is to develop and apply new agricultural technologies in order to increase food production. Only one recent report of international significance comes to a different conclusion: the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD, 2009), was clear in its advocacy for a new direction in public policy for food and livelihood security under increasingly constrained environmental conditions. As the IAASTD Synthesis Report states: "the current agricultural knowledge, science and technology model requires revision. Business as usual is no longer an option" (IAASTD, 2009: 3).

Yet, developing more sustainable forms of agricultural production that build on the agro-ecological knowledge of small-holder farmers has so far received only limited support from national and international institutions and policies (Pretty et al., 2010; Lang et al., 2009). Not least there remains a hugely powerful status quo that regards the current crisis as requiring the rejuvenation of the existing agri-industrial model. Framing the debate in quasi-Malthusian terms as the need to 'double' food production by 2050 to feed a global population of nine billion,[1] the 'new *productivism*' is a call for a renewed effort to intensify production (Horlings and Marsden, 2011). It may be that precision agriculture, next generation genetic engineering and nanotechnology (Beddington, 2010; Tester and Langridge, 2010; Gebbers and Adamchuk, 2010; Scrinis and Lyons, 2010) all potentially have a role to play in the future development of the food system; and, as

* Tel.: +353 21 4903640.
E-mail address: c.sage@ucc.ie.

[1] Statement made by Jacques Diouf, Director-General of FAO at the high level conference on world food security, Rome, June 2008.

0743-0167/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
doi:10.1016/j.jrurstud.2012.02.005

the Foresight report tells us, should not be excluded *a priori* on ethical or moral grounds (UK Government Office for Science, 2011). Yet some technologies may not be best suited to the needs of many users, nor may they necessarily enhance the human right to adequate food (De Schutter, 2011a). Moreover, the development and extension of property rights and patent laws in combination with genetic technologies has resulted in the concentration of agricultural biotechnologies in a few corporations (Blakeney, 2011) and there remains deep suspicion in many quarters about the use of science for private gain rather than public good, particularly for something as essential as food. Indeed, the privatization and commoditization of the "basic building blocks of life" (Schurman and Munro, 2010) raise profound ethical questions that cannot only be regarded *a posteriori*.

The global food system today comprises a great deal more than the cultivation of primary foods, whether transgenic or organic. As Lang (2010: 88) observes, "power and capital have moved off the land" with the entire relationship between people, food systems and the planet now restructured. This has enabled the major food processing industries, trading companies and supermarket chains – regarded by van der Ploeg as de facto 'food empires' – to exert a 'monopolistic power over the entire food supply chain' (van der Ploeg, 2010, see also 2008). Understandably, this has had a huge bearing on farming systems, as they are reshaped by speculative external forces seeking to exploit specific local circumstances to produce high value goods for distant markets. This inevitably has huge repercussions for ecosystems in which that farming occurs, for farmers and workers, as well as for the quality of the food it produces. It also creates the conditions for greater vulnerability to external shocks, whether climatic perturbation or market prices.

The events of 2007–08 and again more recently are evidence that the global food system is becoming more, not less, vulnerable to external forces. Amongst those that have been identified as being the most significant drivers of food price volatility are: financial speculation; climate change and extreme weather; energy prices and the expansion of the biofuels sector; declining grain stocks; a drastic fall in public investment in agriculture over two decades; and rising consumer demand, both demographic and changing dietary composition. For the World Bank no less than three-quarters of the 140 percent increase in its food prices index from 2002 to 2008 was caused by biofuels and related effects (Evans, 2009). On the other hand, Ghosh (2010) sifts through the evidence implicating higher oil prices and poor weather conditions and makes a strong case for the overwhelmingly destabilising role of speculation on the futures markets for food commodities. Finally, work conducted at the New England Complex Systems Institute not only quantitatively models the dynamic relationship of food prices with financial speculation and ethanol conversion, but traces the links between food price volatility and political instability in North Africa and the Middle East (Lagi et al., 2011a,b).

Such studies not only reveal the complexity of connections between the food supply system and a range of other issues, but demonstrate the need for research that can develop a trans-disciplinary perspective. This approach needs to draw together two divergent challenges. The first is to better understand the sources of vulnerability of the global food system in order to revise thinking about food *security*. Recent experiences of food price volatility demonstrate that the system is highly sensitive to short-term episodic shocks: it lacks resilience and a buffering capacity to cope effectively with such events. This might be partly mitigated by rebuilding global grain stocks and restoring the legitimacy of government interventions to support needy populations. But all the evidence suggests that the global food system as it is currently organized is unlikely to be able to cope with long-term stress arising from climate change. In this regard it becomes a vital task to enhance the adaptive capacity of local and regional food systems (Leach et al., 2010). Yet such measures may constitute little more than band-aids if we do not address the second key research challenge: which is to better understand the fundamental dynamics and locus of control of the global food system. In this regard we require a framework of analysis that can connect agricultural production and food consumption patterns, identify the key vectors of power, and locate them within an evolving economic system that is reshaping people's access to food.

Without seeking to overstate its explanatory capabilities, this paper draws upon the food regimes approach to help highlight some of these issues. While once largely known for its historical periodisation of an emerging international food system, a focus that arguably brought it to a state of impasse (Burch and Lawrence, 2009), it has recently re-emerged as offering a suitable framework to help explain reconfigurations of the global food system (Pritchard, 2009). A food regimes approach offers a wider lens not only through which to examine the structural shortcomings of the existing food order, but it is also alert to alternative models that challenge the ecological and ethical basis of trans-national agri-food supply chains.

This paper has developed as a review exercise, drawing principally upon scholarly articles and documentary sources. A significant amount of material has recently been placed in the public domain concerned with global food security in light of recent price instability (e.g. the UK Foresight Studies; see also *inter alia*: Royal Society, 2009; Science, 2010; EC, 2009; Ambler-Edwards et al., 2009). A striking feature of much, though by no means all, of this work is its preoccupation with feeding a world of nine billion by 2050, with the central axiom the need for scientific and technological innovation in agriculture to raise output. This raises three important considerations. First, it has been argued that population increase and the prospect of hunger assert a powerful ideological claim that overrides questions of distribution or the associated ecological costs of production systems (Feldman and Biggs, 2012). Second, an approach that emphasises agricultural output increasingly regards food, feed and fuels as a set of interchangeable and tradable commodities for international markets rather than constituting the elements for national food security. Indeed, biofuels production designed to enhance energy security in distant countries may well stake a superior claim to land than the cultivation of food staples to alleviate domestic hunger. Third, a concern with food output is not concerned with matters of diet or of *nutritional* security: it assumes the continued global projection of western dietary norms through the process of 'nutrition transition' (Popkin, 2005).

It is in light of these considerations that this paper seeks critically to examine three key areas of vulnerability in the prevailing food system that at once reveals its asymmetrical balance of power. First, the paper will review some of the implications for agriculture emerging from the rising cost of fossil fuels. In the 'peak of the oil age' (Aleklett et al., 2010) biofuels have come to serve as a surrogate source of automotive energy, resulting in the diversion of coarse grains, sugar cane and vegetable oils from food processing into petro-chemical refineries. Indeed, such is the extent to which agri-commodity traders and governments are locked in mutual pursuit of energy security – swathed, it should be said, in the greenwash of 'carbon neutrality' – that it has triggered a host of speculative land deals in the poorest countries (van der Horst and Vermeylen, 2011). Secondly, although it has been recognised that climate change threatens agricultural productivity in the poorest countries (Gregory et al., 2005), recent scenario building exercises reveal just how dramatically warming and drying will exacerbate food insecurity in many regions throughout the tropics. Thirdly, a focus on the global food system rather than simply upon agriculture requires