**Title**

Food security, food safety & healthy nutrition: are they compatible?

**Authors**

Helen Walls1, Phillip Baker2, Ephraim Chirwa3, Benjamin Hawkins1 4

**Institutions**

1Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, United Kingdom

2 Faculty of Health, Deakin University, Australia

3 Department of Economics, University of Malawi, Malawi

4 Department of Health Sciences, University of York, United Kingdom

**Abstract**

Food security, food safety, and healthy nutrition are key aspects of food systems with important implications for population health. Food safety addresses food-borne illness, and covers the handling, preparation and storage of food. Healthy nutrition is about the nutritional quality of diets. Food security encompasses both food safety and healthy nutrition, as well as a wider set of concerns related to food availability, access, utilization and stability. These three aspects of strong food systems are not only compatible, as important objectives and outcomes of food systems, but are complementary in principle, with important synergies existing between them in terms of their impact on population health outcomes. Yet tensions exist between food safety, healthy nutrition and the distinct aspects of food security. In practice, they are much less compatible, with political trade-offs between addressing them evident. This article critically assesses the compatibility of these concepts as a framework for achieving coherent food policy and global health.

**Full text**

Food security, food safety, and healthy nutrition are key aspects of food systems with important implications for population health. Healthy nutrition is concerned with the nutritional quality of diets and relates particularly to malnutrition in all its forms: both underweight and associated micronutrient deficiencies, as well as overweight, obesity and associated non-communicable disease (1, 2). Food safety addresses food-borne illness, and covers the handling, preparation and storage of food (3). Food security has been described by the United Nation’s Food and Agriculture Organization (FAO), as “a situation that exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life” (4). It encompasses both food safety and healthy nutrition, as well as a wider set of concerns related to food availability, access, utilization and stability: the four ‘pillars’ of food security identified by the FAO (4). Yet tensions exist between food safety, healthy nutrition and the distinct aspects of food security. This article critically assesses the compatibility of these concepts as a framework for achieving coherent food policy and global health. It does so by undertaking a brief literature review and using illustrative case studies of Malawi and the European Union, and draws on political science theory to add conceptual clarity.

Most food system conceptualizations feature all three of food security, food safety, and healthy nutrition (c.f. (1, 5-9), and each of them fit within the framework of the High Level Panel of Experts on Food Security and Nutrition (2017), which defines food systems as covering “all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic and environmental outcomes” (1). Thus, food safety, healthy nutrition and food security are all compatible, in that they are each necessary, dimensions of a healthy food system.

However, in practice implementing these three objectives is a fundamentally political, as well as technical, challenge. All three concern the distribution of resources and power both within and between states, and involve decisions made by both international organizations and state governments (10, 11). Furthermore, whilst they are sometimes considered as different aspects of a single process or set of objectives – reflected in terms such as ‘food and nutrition security’ – food security, food safety, and healthy nutrition have different characteristics which mean that they are conceptualized and prioritized differently by policymakers (12, 13).

Addressing these issues effectively requires both political prioritization and the allocation of resources (financial, technical and human) commensurate with the severity of the issue in order to implement policy responses (11, 12). However, policy making is not a purely rational process. It is complex and non-linear with policy makers pulled between multiple concurrent policy challenges – each with advocates able to cite evidence on the scale of the issue and the need for governmental response – making calls upon the finite resources available (13-15). Agenda setting and political prioritization is an area that has been widely studied, and many different frameworks exist to help understand these processes. Many such frameworks highlight the importance of similar activities and dynamics. One such framework to understand political prioritization within health policy, the Shiffman and Smith framework (12), outlines four key areas that shape the priority an issue receives on a political agenda: *actor power* (the strength of the individuals and organisations concerned with the issue); *ideas* (the ways in which those involved with the issue understand and portray it); *political context* (the environments in which actors operate and decisions are taken); and *issue characteristics* (features of the problem, such as whether credible evidence exists, the severity of the problem, and whether effective interventions are available to address it) (12). When considering the domain of *issue characteristics*, some issues are considered to be acute with immediate effect, whilst others have effects that are felt over the longer-term (16) Policymakers respond very differently to immediate issues – such as food safety, with its acute effects on food-related health and wellbeing – than longer-term or chronic issues, such as healthy nutrition (17). Characteristics of food security such as the emphasis on availability, access and system stability are again different to those of the other two issues – and characteristics which have strong resonance with some decision makers, given their implications for national security.

It has been observed that decision-makers prioritize short-term or acute issues over longer-term issues that may go beyond electoral cycles (18, 19). Thus, food safety, with its acute characteristic, and the potential to disrupt markets for a country’s export products, often receives high prioritization in food policy – and international standards and domestic regulation that are strongly enforced (17). An example of such standards is the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). The SPS Agreement addresses the application of food safety, animal and plant regulations. It requires countries to adopt international standards such as those developed by the Codex Alimentarius Commission for food safety. Domestic food safety regulations which are more stringent than those of the SPS Agreement often aim to ensure that agricultural produce is fit for consumption in terms of acceptable levels of contaminants, including chemical residues, and that imported food is produced, prepared, and stored in such a way as to prevent foodborne illness and adverse impacts to a country’s economy, society or environment (20).

In contrast, few equivalent regulatory measures have been implemented to address unhealthy nutrition, either at national or international levels, despite high, and increasing, levels of overweight and obesity amongst adults and children in most high-income countries over several decades (21). Dietary risk factors are considered to have recently overtaken tobacco as the leading risk factor for disease globally (22), but whilst tobacco is addressed by the WHO Framework Convention on Tobacco Control (FCTC), there is no similarly powerful global mechanism for addressing unhealthy diets (23). At national level, an increasing number of governments are implementing fiscal measures (in particular on sugar-sweetened beverage taxes) and front-of-pack nutrition labelling to address consumption of some unhealthy foods. However for the most part, governments have favored those approaches with little chance of success in isolation – educational and awareness-raising approaches and industry self-regulation – rather than enacting comprehensive structural measures addressing the production, availability, processing and marketing of foods (2, 24, 25).

Food security is the issue from food systems that most often features in debates regarding national (and regional) security, with the European Union (EU) Common Agricultural Policy an example of this (26-28). This strategic importance to national security contributes to its high priority on national political agendas. For example, agriculture, alongside coal and steel, was selected as a core policy area on which to base the development of trans-European economic and political integration in the 1950s, in part due to the fundamental role of both agriculture and heavy industry in war. The idea was that countries with integrated food supplies would be less likely or able to go to war (29). In more recent times, EU countries (and high-income countries such as the United States) have strongly protected domestic agricultural producers from external competition, something which led in the early 2000s to the stymying of the World Trade Organization’s Doha Development rounds (30). That this protectionism continues today at the expense of higher food prices in the EU for consumers (perhaps restricting dietary choices) and poorer nutritional content, reflects not just the vested interests, extensive resources and political organization of the EU (and US) farming lobby, but wider concerns amongst decision-makers about national security, and thus the need to address food security and protect domestic supplies.

This high prioritization of food security is arguably most appropriate in a context of on-going food shortages and hunger – and in particularly resource-constrained settings. In Malawi, for example, malnutrition levels are high and there are challenges with food safety (31-33). Both issues are rightly on the political agenda, however, it is food security that is most highly prioritized. Several poor growing seasons and hunger crises in years following economic liberalization of the 1980s and 1990s (which included removal of subsidies on fertilizers, seeds and credit, supported by the World Bank and International Monetary Fund), and adverse weather and other conditions including hardship caused by the civil war in Mozambique, led to the Malawian government introducing agricultural input subsidy programs (34-36). Prominent amongst these is the 2005/06 Farm Input Subsidy Program (FISP), a large-scale national program, the main objectives of which are to increase maize production, promote household food security, and enhance rural incomes (37, 38). The donor community was initially opposed to the FISP. Thus, while many high-income countries subsidize their farmers extensively, Malawi was criticized for doing so. However, the FISP was soon hailed as a success, with Malawi achieving its biggest ever maize harvest in 2006 and subsequently becoming an exporter of its maize surplus (39), although FISP impact is not without debate (35, 40). Over time, the FISP has evolved to target legumes as well as maize – with one of the aims of this change to address dietary diversity and healthy nutrition. However, food security is still the primary food-related target of the policy.

Thus, food security is often prioritized politically over food safety, and food safety over healthy nutrition. In a resource-constrained country such as Malawi, where much of the population is food insecure, such a focus may seem most obvious. However, lack of dietary diversity and issues such as obesity and non-communicable disease, particularly related to healthy nutrition, are now affecting substantial proportions of the country’s population (41, 42). Related to this, Pelletier et al. (1995; 2012), for example, has discussed the ‘food-first’ bias in low-income contexts whereby food security is prioritized above healthy nutrition (43, 44). In high-income contexts, for most of the population, healthy nutrition is receiving increasing political attention given high levels of obesity and NCD. Nevertheless, large and perhaps increasing proportions of populations in countries such as the United Kingdom and the United States are food insecure (45, 46). Indeed, there is substantial overlap and synergy between these three food system issues and their health outcomes, and in all three instances their causes are to a large extent political in nature. For example, the so-called ‘double burden of malnutrition’ – whereby underweight and associated micro-nutrient deficiencies and overweight, obesity and NCD co-exist in the same communities and even families (2) – are often a result of varying combinations of food insecurity, unhealthy nutrition, as well as issues with food safety, which can affect nutrient absorption (20, 47).

We have described how, despite apparent tensions, the three aspects of strong food systems are not only compatible in that they are all important objectives and outcomes of healthy food systems, but are complementary in principle, with important synergies existing between them in terms of their impact on population health outcomes. In practice, however, they are much less compatible, with political trade-offs between them evident. For example, governments often prioritize achieving food security and food safety at the expense of healthy nutrition, although the appropriateness of such trade-offs, as discussed above, may differ between country and regional contexts. The challenge for food systems researchers and advocates is to find ways to improve the compatibility of healthy nutrition with food security and food safety from a political perspective, and increase the tractability of healthy nutrition on the political agenda. This involves the development of food security and food safety measures which at the same time support the goal of healthy nutrition within healthy, sustainable food systems.

**References**

1. HLPE. Nutrition and food systems: A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome: Committee on World Food Security; 2017.

2. Walls H, Kadiyala S, Smith R. Research and policy for addressing malnutrition in all its forms. Obesity. 2016;24(10):2032.

3. World Health Organization Regional Office for Southeast Asia. Food safety: What you should know. World Health Organization; 2015.

4. Food and Agriculture Organization of the United Nations. Rome declaration on world food security and World Food Summit plan of action. World Food Summit; Rome, Italy; November 1-17, 1996.

5. Kanter R, Walls H, Tak M, Roberts F, Waage J. A conceptual framework for understanding the impacts of agriculture and food system policies on nutrition and health. Food Security. 2015;7(4):767-77.

6. Turner C, Aggarwal A, Walls H, Herforth A, Drewnowski A, Coates J, et al. Concepts and critical perspectives in food environment research: A global framework with implications for action in low- and middle-income countries. Global Food Security. 2018;18:93-101.

7. Pinstrup-Andersen P, Watson D. II. Food policy for developing countries: The role of government in global, national, and local food systems: Cornell University Press; 2011.

8. Kearney J. Food consumption trends and drivers. Phil Trans R Soc B. 2010;365:2793-807.

9. Ingram J. A food systems approach to researching food security and its interactions with global environmental change. 2011;3(4):417-31.

10. Balarajan Y, Reich M. Political economy challenges of nutrition. Globalization and Health. 2016;12(70).

11. Baker P, Hawkes C, Wingrove K, Demaio A, Parkhurst J, Thow A, et al. What drives political commitment for nutrition? A review and framework synthesis to inform the United Nations Decade of Action on Nutrition. BMJ Global Health. 2018;3(1):e000485.

12. Shiffman J, Smith S. Generation of Political Priority for Global Health Initiatives: A Framework and Case Study of Maternal Mortality. The Lancet. 2007;370(13).

13. Smith K. Beyond evidence based policy in public health: Palgrave MacMIllan UK; 2013.

14. Russell J, Greenhalgh T, Byrne E, McDonnell. Recognising rhetoric in health care policy analysis. Journal of Health Services Research and Policy. 2008;13(1).

15. Hawkins B, Parkhurst J. The ‘good governance’ of evidence in health policy. Evidence and Policy. 2016;12(4):575-92.

16. Peters BG. What is so wicked about wicked problems? A conceptual analysis and a research program. Policy and Society. 2017;36(3):385-96.

17. Walls H, Walls K, Loff B. The regulatory gap in chronic disease prevention: A historical perspective. J Public Health Policy. 2011;33(1):89-104.

18. Geneau R, Stuckler D, Stachenko S, McKee M, Ebrahim S, Basu S, et al. Raising the priority of preventing chronic diseases: a political process. Lancet. 2010;376:1689-98.

19. Meadowcroft J. Engaging with the politics of sustainability transitions. Environmental Innovation and Societal Transitions. 2011;1:70-5.

20. Unnevehr L. Food safety in developing countries: Moving beyond exports. Global Food Security. 2015;4:24-9.

21. Ng M, Feming T, Robinson M, Thomson B, Graetz N, Margonono C, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systeamtic analysis for the Global Burden of Disease 2013. The Lancet. 2014;384(9945):766-81.

22. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet. 2012;380(9859):2224-60.

23. Vanderijvere S. Why a global convention to protect and promote healthy diets is timely. Public Health Nutrition. 2014;17(11):2387-8.

24. Walls H, Peeters A, Loff B, Crammond B. Why education and choice won't solve the obesity problem. Am J Public Health. 2009;99:590-2.

25. Moodie R, Stuckler D, Monteiro C, Sheron N, Neal B, Thamarangsi T, et al. Profits and pandemics: prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries. Lancet. 2013;381(9867):670-9.

26. Winters L. Digging for victory: agricultural policy and national security. The World Economy. 1990;13(2):170-91.

27. Wallinga D. Agricultural policy and childhood obesity: A food systems and public health commentary. Health Affairs. 2010;29:405-10.

28. Walls H, Cornelsen L, Lock K, Smith R. How much priority is given to nutrition and health in the EU Common Agricultural Policy? Food Policy. 2016;59:12-23.

29. Kant I. Perpetual Peace; A Philosophical Essay. London: S. Sonnenschein, 1903; 1795.

30. Cho S. The demise of development in the Doha Round Negotiations. Texas International Law Journal. 2010;31.

31. Sassi M. Short-term determinants of manutrition among children in Malawi. Food Security. 2012;4:593-606.

32. Matumba L, Monjerezi M, Biswick T, Mwatseteza J, Makumba W, Kamangira D, et al. A survey of the incidence and level of aflatoxin contamination in a range of locally and imported processed foods on Malawian retail market. Food Control. 2014;39:87-91.

33. Mensah P, Mwamakamba L, Mohamed C, Nsue-Milang D. Public health and food safety in the WHO African region. African Journal of Food, Agriculture, Nutrition and Development. 2012;12(4).

34. Chinsinga B, Poulton C. Beyond technocratic debates: The significance and transicence of political incentive n the Malawi Farm Input Subsidy Programme (FISP). Development Policy Review. 2014;32(S2):S123-S50.

35. Resnick D, Tarp F, Thurlow J. The political economy of green growth: Cases from Southern Africa. Public Administration and Development. 2012;32(3):215-28.

36. Chibwana C, Shively G, Fisher M, Jumbe C, Masters W. Measuring the impacts of Malawi’s farm input subsidy programme. African Journal of Agriculture and Resource Economics.9(2):132-47.

37. Lunduka R, Ricker-Gilbert J, Fisher M. What are the fram-level impacts of Malawi's farm input subsidy program? A critical review. Agricultural Economics. 2013;44(6):563-79.

38. Arndt C, Pauw K, Thurlow J. The Economy-wide Impacts and Risks of Malawi's Farm Input Subsidy Program. American Journal of Agricultural Economics. 2015;98(3):962-80.

39. Dorward A, Chirwa E. The Malawi Agricultrural Input Subsidy Programme: 2005-6 to 2008-9. International Journal of Agricultural Sustainability. 2011:232-47.

40. Chirwa E, Dorward A, Matita M. Thinking ‘graduation’ from the Farm Input Subsidy Programme in Malawi. 2012(3).

41. Ziraba A, Fotso J, Ochako R. Overweight and obesity in urban Africa: A problem of the rich or the poor? BMC Public Health. 2009;9:465.

42. Msyamboza K, Kathyola D, Dzowela T. Anthropometric measurements and prevalence of underweight, overweight and obesity in adult Malawians: nationwide population based NCD STEPS survey. Pan African Medical Journal. 2013;15(1).

43. Pelletier D, Deneke K, Kidane Y, Haile B, Negussie F. The food-first bias and nutrition policy: lessons from Ethiopia. Food Policy. 1995;20(4):279-98.

44. Pelletier D, Frongillo E, Gervais S, Hoey L, Menon P, Ngo T, et al. Nutrition agenda setting, policy formulation and implementation: lessons from the Mainstreaming Nutrition Initiative. Health Policy & Planning. 2012;27(1):19-31.

45. Loopstra R, Reeves A, Taylor-Robinson D, Barr B, McKee M, Stuckler D. Austerity, sanctions, and the rise of food banks in the UK. BMJ. 2015;350:h1775.

46. Gundersen C, Ziliak J. Food Insecurity And Health Outcomes. Health Affairs. 2015;34(11):1830-9.

47. Grace D. Food Safety in Low and Middle Income Countries. Int J Environ Res Public Health. 2015;12(9):10490-507.