Improving resilience of food supply chains in the UK

HEALTHY SOIL
HEALTHY FOOD
HEALTHY PEOPLE

The H3 project (www.h3.ac.uk) (Healthy soil, Healthy food, Healthy people) seeks to transform food systems 'from the ground up'.

This is one of a series of policy and practice briefs summarising the findings of the H3 project in accessible language and drawing out their implications for government, business and civil society.

Fig. 1: Signs of diminishing system resilience: just-in-time supply chain shortages (image: SH)

Background

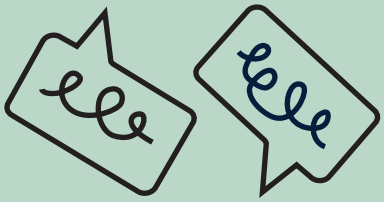
Food supplies in the UK have been disrupted by COVID-19, the cost-of-living crisis, and extreme global weather events. The food we eat is sourced and processed from around the world, with a small number of large companies in control of processing and retailing. Although we currently enjoy food security at an aggregate level, (over) reliance on imports through just-in-time supply means food is not secure in the medium term (**Fig. 1**). Climate change and biodiversity loss continue while the lack of distributive social policy means that healthy foods are inaccessible for an increasing number of households. These interconnected social and environmental challenges highlight the vulnerabilities in our food systems embedded in the political economic dynamics of provision (**Fig. 2a**). This brief explores ways to make them more sustainable and resilient.

Method

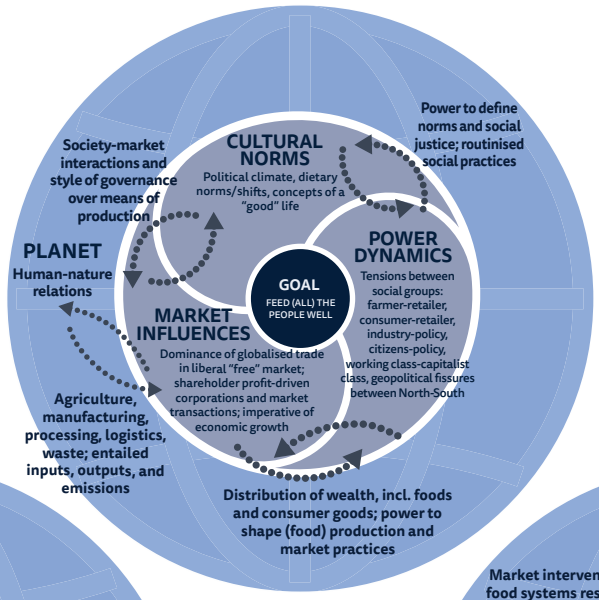
- **Literature Review:** This involved an analysis of 101 peer-reviewed journal articles focusing on at least one of four key areas of disruption (COVID-19, climate change, economic crises, and biodiversity loss) with a specific focus on fresh foods such as meat, dairy, vegetables, and fruit. The review considered the roles of retailers, consumers and other supply chain participants.

  We used Meadow's concept of effective leverage points for systems change (Meadows, 1999; Abson et al., 2017). According to this, deep structural levers change the intent, underlying paradigm, mindsets, and goals of the system, as well as its design and institutional structures. By contrast, shallow leverage points superficially change system parameters and feedback loops without challenging underlying power relations (Hirth, 2023a). Effective policy must include deep structural leverage.

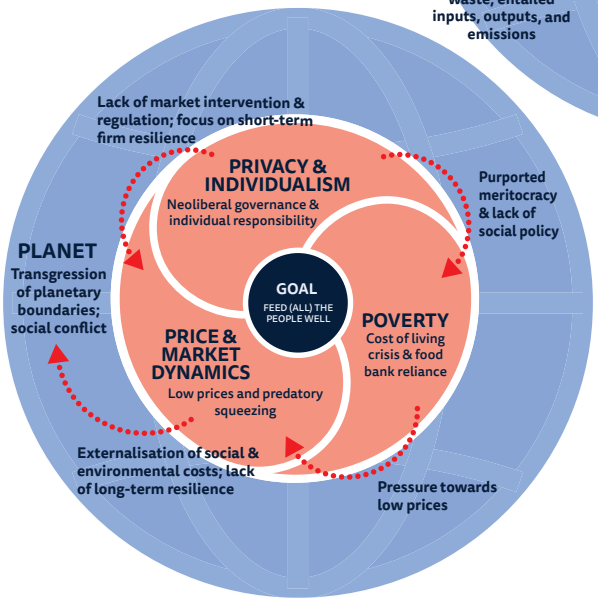
- **Qualitative Analysis:** Semi-structured interviews were conducted and public evidence reviewed to understand the perspectives of British supply chain actors. Our goal was to identify pathways to food system resilience, identifying the types of social and environmental governance needed. Qualitative analysis aimed to clarify the power dynamics within the fresh produce supply chain and to outline the necessary requirements and governance responsibilities to make food systems more resilient and sustainable.



a) Political economic dynamics of provision – conceptual



b) The price dilemma – status quo



c) Civil food resilience – scenario

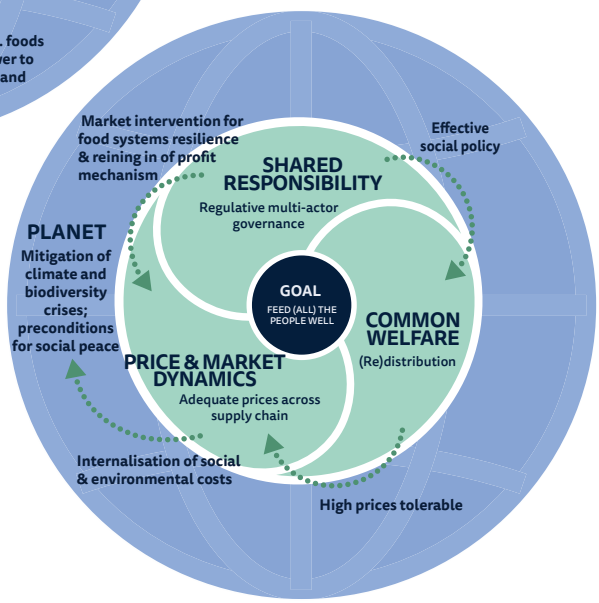
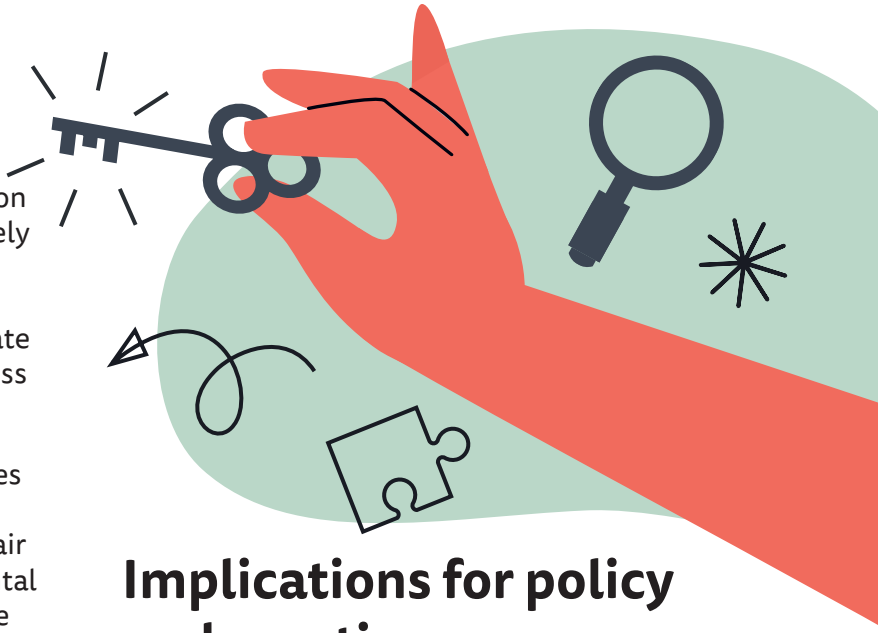


Fig. 2: Overcoming the pricing dilemma for civil food resilience (Hirth, 2025b)



Key findings

- Most of the literature on resilience focuses on responses to COVID-19, and within that, on short-term recovery. This does not adequately address calls for "building back better", nor does it sufficiently consider the long-term effects of complex challenges such as climate change and largely overlooks biodiversity loss and economic crises.

- Stakeholders highlighted their responsibilities in creating a sustainable and resilient food system. This includes effective policies and fair pricing to ensure high social and environmental standards throughout the supply chain, while also making healthy and sustainable foods accessible for all.

- Food is essential. The notion of civil food resilience (Lang, 2025) transfers the system functions to provision for citizens rather than corporate interest. Long-term resilience requires deep systemic change for the food system to intersect with the economic system. Failure to achieve this will pose a serious threat to food security and civil order (Jones et al., 2023).

- The status quo, in which retailers squeeze suppliers on price, results in a dilemma where low end prices appear to be necessary. Poverty, caused by a lack of governmental market intervention and ineffective social policy, reinforces this (**Fig. 2b**). The dilemma is that this comes not only at a cost to farmer livelihoods and their capacity to invest in sustainable practices, but also results in negative environmental and social impacts (externalized costs) of production, and therefore, the continued transgression of planetary boundaries that threaten resilience.

- Moving away from globalised just-in-time production to the highest possible share of local, seasonal, and plant-rich provision, is vital to first achieving, then maintaining civil food resilience.

- Policies are needed that resolve conflicts of interest on pricing. The baseline level of appropriate pricing must incorporate, and thus minimise, environmental and social costs. This highlights the importance of shared responsibility among different actors, recognising their different levels of influence.

Implications for policy and practice

Our research highlights the need for government to identify the specific roles and responsibilities of stakeholders, which can drive significant change within the system. It is crucial to understand how vested interests and lobbying for individual short-term profit obstruct these transformations (Hirth et al., 2023b; 2025b).

Indicators are needed to balance short and long supply chains, domestic production and international trade, and local, seasonal produce and diverse, nutritious diets. Current supply chains can manage short-term shocks, but often fail to address long-term challenges. Academia, policy, and supply chain practice often overlook the fundamental systemic changes needed for meaningful improvement. Governance should focus more on mandating and facilitating (Fox et al., 2002) than on private sector partnerships that risk co-option of civil interest, or on just endorsing transformations (without acting on them). Voluntary approaches are now insufficient.

Key to overcoming these challenges is to address the pricing dilemma, determining actual production costs, including environmental impacts, and reflecting these in supply chain prices (**Fig. 2c**). Social policies that ensure affordable, healthy and sustainable fresh produce for all are vital.

Our research supports a comprehensive strategy to transform the food system by coordinated efforts at various intervention points, promoting a shared model of responsibility, with all stakeholders playing a distinct and crucial role and being accountable. By addressing these interconnected issues, existing best practice and ambitious ideas can be elevated to the forefront of our food systems.

Project outputs

Hirth, S. et al. 2023a. Examining food system resilience in the UK — disrupted fruit and veg supply: https://medium.com/globalfoodleeds/examining-food-system-resilience-in-the-uk-disrupted-fruit-and-veg-supply-cea5b7659b6

Hirth, S. et al. 2025a. Improving resilience in supply chains: A review of leverage points for food systems transformation, in review

Hirth, S. et al. 2025b. Restoring food system resilience in a turbulent world: supply chain actors' shared responsibility, in review

Other references:

Abson, D. J. et al. 2017. Leverage points for sustainability transformation. Ambio, 46(1): https://doi.org/10.1007/s13280-016-0800-y

Fox, T. et al. 2002. Public sector roles in strengthening corporate social responsibility: a baseline study: http://documents.worldbank.org/curated/en/284431468340215496/Public-sector-roles-in-strengthening-corporate-social-responsibility-a-baseline-study

Hirth, S. et al. 2023b. Barriers and enablers of 1.5° lifestyles: Shallow and deep structural factors shaping the potential for sustainable consumption. Frontiers in Sustainability, 4, 1–17: https://www.frontiersin.org/journals/sustainability/articles/10.3389/frsus.2023.1014662/full

Jones, A. et al. 2023. Scoping potential routes to UK civil unrest via the food system. Sustainability, 15(20): https://doi.org/10.3390/su152014783

Lang, T. et al. 2025. Just in Case: 7 steps to narrow the UK civil food resilience gap. National Preparedness Commission: https://nationalpreparednesscommission.uk/publications/just-in-case-7-steps-to-narrow-the-uk-civil-food-resilience-gap/

Meadows, D. H. 1999. Leverage Points: Places to Intervene in a System. Hartland, VT; The Sustainability Institute. https://donellameadows.org/wp-content/userfiles/Leverage_Points.pdf

Acknowledgements

This work was conducted as part of the H3 project (www.h3.ac.uk). It was produced by the H3 work package 6 team at the University of Leeds (Dr Romain Crastes dit Sourd, Dr Steffen Hirth, Dr Elizabeth Morgan, Dr Gulbanu Kaptan, Prof Anne Tallontire, and Prof William Young [work package lead]) via a grant from UKRI's'Transforming UK food systems' programme [grant number BB/V004719/1].

For further information visit our website or watch our film.

HEALTHY SOIL
HEALTHY FOOD
HEALTHY PEOPLE

TRANSFORMING UK FOOD SYSTEMS
Strategic Priorities Fund

Contact Details: Dr Steffen Hirth: s.hirth@leeds.ac.uk, **Prof William Young** (work package lead): c.w.young@leeds.ac.uk