Bridging the Gap: Climate Change, Food Safety, and Regulatory Practice

Saher Hasnain

Roskilde University, Denmark

shasnain@ruc.dk

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Today

Climate change impacts on food safety

The case for systems thinking in policy

Communication strategies for complex policymaking

Paths forward

Drawing on

Primarily: Hasnain, S. (2024). Impact of climate change on the UK food system. *FSA Research and Evidence*. https://doi.org/10.46756/001c.123418

- Covering the **most likely changes** to the UK food system resulting from climate change over the **next five years**, with a focus on the impacts on FSA strategy.
- This assessment also covers the potential impacts of the UK's planned mitigation activities on a range of sectors.

But also drawing on FEAST, FoSSNet, and Agrifood4NetZero Network+

The Scale of the Challenge

Food safety risks are outpacing regulatory adaptation

Recent Context:

- Food prices are rising.
- The internet exists and is being used in the way it is.
- Climate change is still happening and worsening.
- Sense of disconnect between science and research.

How do we maintain safety standards while the entire system transforms?

Climate Change and Food Safety in the Near-Term Future

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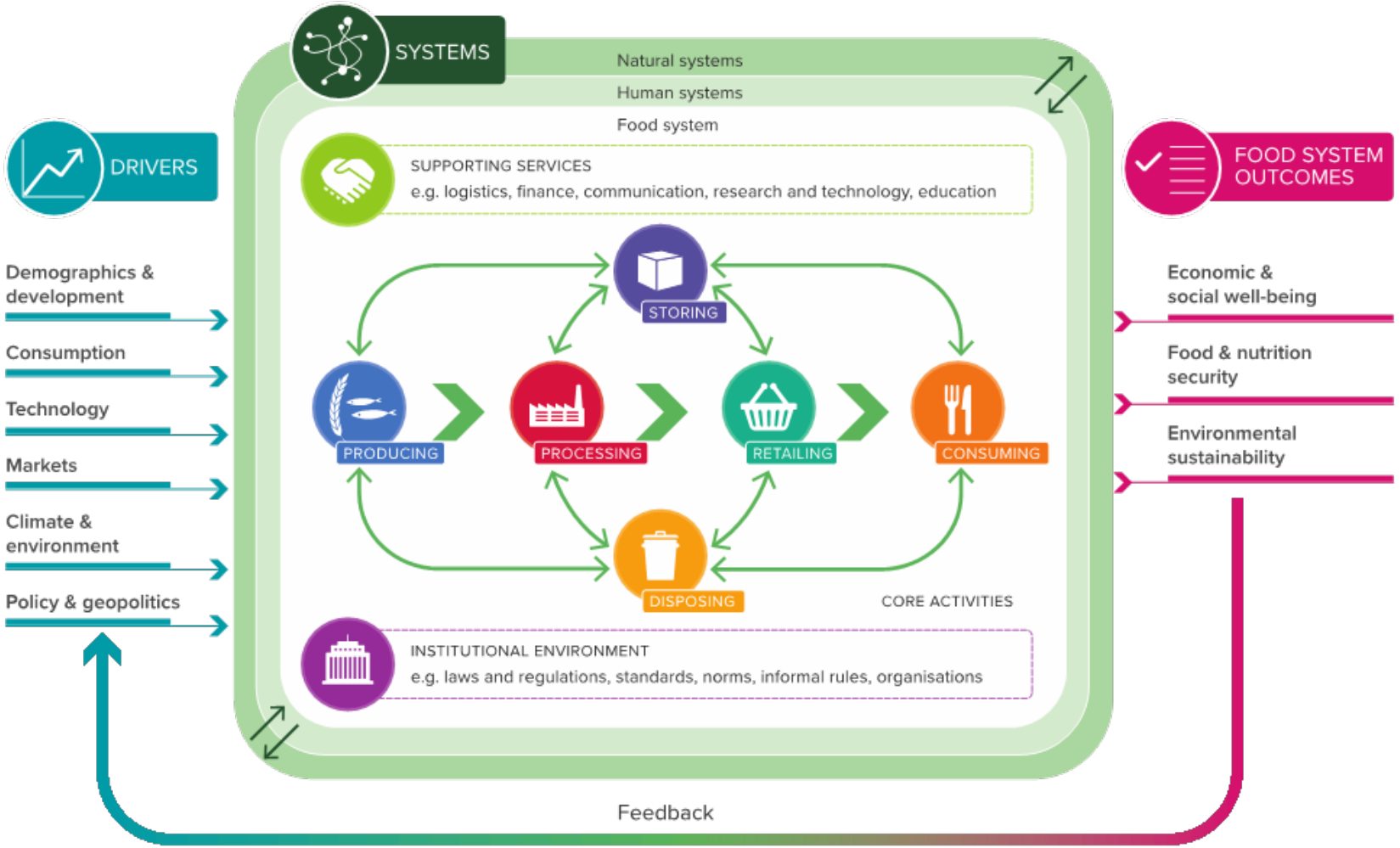
Food Systems Framework



Foresight4Food food systems framework (Foresight4Food, 2019)

Food Safety Implications Across the Chain

Every link in the chain faces climate-related food safety risks

Food Production

- Yield variability creating supply uncertainties
- New pest and disease vectors
- Water quality and availability issues

Processing & Manufacturing

- Energy requirements for temperature control
- Seasonal demand shifts affecting production planning
- Equipment performance during temperature extremes

Distribution & Storage

- Infrastructure damage from extreme weather
- Cold chain maintenance challenges
- Transportation delays and route disruptions

Retail & Consumer

- Price increases and availability fluctuations
- Temperature-related foodborne illness risks
- Changing food preferences driven by climate
- Traceability challenges in volatile supply chains

Indicative near-term impact of climate drivers on food system activities (next 5 years)

Climate Drivers	Food system activities						
	Producing	Processing	Transporting	Storing	Retailing	Consuming	Disposing
Temperature change (+ and -)							
Precipitation change (+ and -)							
Extreme events							
Sea-level rise and surges							

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Indicative near-term impact of policy drivers on food system activities (next 5 years)

Policy Drivers	Food system activities						
	Producing	Processing	Transporting	Storing	Retailing	Consuming	Disposing
National Adaptation Plan							
Net Zero Strategy							
National Food Strategy							
ELM Schemes							

Hasnain, S. (2024). Impact of climate change on the UK food system. *FSA Research and Evidence*.

The regulator and climate change

In the near-term future (i.e. next five years), environmentally driven changes in the food system will result in:

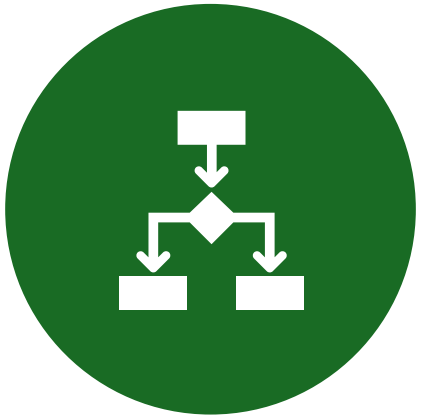
- Increased volatility for supply chains.
- Increased costs for the consumer.
- Increased food safety risks across the supply chains.

In the near-term future (i.e. next five years), developments in the UK's policy landscape will result in:

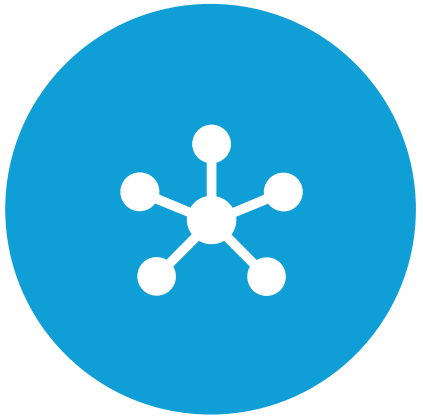
- Improved support and incentives for food producers to adapt their activities.
- Improved resilience of the food system's infrastructure to short-term shocks.
- Increased costs, labour, and time inputs for FBOs to adapt their activities.
- Regulatory challenges from complementary and overlapping areas of remit.

Key Takeaways

CLIMATE DRIVERS CREATE IMMEDIATE RISKS



POLICY RESPONSES ARE IN TRANSITION - SHORT-TERM PAIN FOR LONG-TERM GAIN



COORDINATED ACTION NEEDED ACROSS THE ENTIRE SYSTEM

Coordinated Action and a Food Systems Approach

Food Systems Approach to Policymaking

This approach enhances the **ability to achieve multiple food system objectives** by identifying effective solutions, outlining necessary policy portfolios, increasing policy efficiency, reducing unintended consequences, and fostering inclusive policymaking coordination.

A food systems approach to policymaking connects different policy agendas.

Food Safety Policies and **Cascading and Cross border impacts**

Impact of the EU’s food safety regulations on agricultural employment and women’s livelihoods in 90 low- and middle-income countries. Impacts related to gender balance of technical education and financial assets (Kareem and Kareem 2021).

Keeping up with Policy Changes (e.g. the UK)

- Regulated Products Reform (April 2025 - JUST IMPLEMENTED): **huge** streamlining effort to speed up novel food approvals (precision fermentation, cultivated meat, alternative proteins)
- Cell-Cultivated Products Regulatory Sandbox (2024-2025): Major innovation push - very relevant to your climate/novel proteins discussion
- UK Government Food Strategy (Published July 15, 2025 - BRAND NEW!): priority outcomes implementation from now
- AFN Network+ Roadmap for Resilience (October 15, 2025 - LITERALLY JUST LAUNCHED!): 150 experts, 3,000-strong network + priority actions
- National Level Regulation (NLR) - Ongoing 2024-2025
- Food Law Code of Practice Consultation (Open until May 19, 2025)
- HFSS Restrictions Coming

Novel Protein Demand

Consumer Trend: Rapid growth in plant-based, cultivated meat, precision fermentation

Regulatory Gap: Authorization processes designed for conventional foods (averaged 2.5 years)

UK Response: Streamlined approval (April 2025) + regulatory sandbox

Takeaway: Consider sandbox approaches

Local and/or Sustainable Sourcing

Consumer Trend: "Climate-conscious" consumer seeking low-carbon local food

Regulatory Gap: No standardized "climate-friendly" or "sustainable" definitions

UK Gap: July 2025 Food Strategy acknowledges this but doesn't define standards yet

Takeaway: Anticipate greenwashing risks; develop evidence-based sustainability criteria

Policies, Frames, and Storytelling

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Navigating the Communication Landscape

- Traditional: FSA issues guidance → media reports → public awareness (days/weeks).
- Now: Consumer posts concern → viral within hours → regulatory response needed immediately.
- Social media amplifies fears.
- Confusion on "climate-related" vs. "normal“.
- Different communities interpret climate-food risks differently based on:
  - Historical food security experiences
  - Trust in government institutions
  - Access to alternative food sources
  - Language and digital literacy barriers

Policymaking as Story telling

Do ‘they’ care about what ‘you’ care about?

- The narrative of a policy is essential for its effective delivery across the policy process. Every entity in the process must understand the narrative, the outcome, and their role in the process.

- A policy professional must be able to distil the most useful information and use it to tell the story without getting lost.

- What are the principles, ‘running threads’, and frames in the policy story?

Narrative vs Frame vs Story

Distinct levels of meaning-making

Frames are the underlying mental models that structure understanding and meaning-making.

Narratives are the overarching plots or explanations that organize events.

Stories are the specific, often personal, examples that illustrate points within narratives or frames.

Narrative vs Frame vs Story

For policy development in food systems

Frames help diagnose the problem and determine the type of solutions considered.

Narratives provide a cohesive plot for change, explaining the journey of the food system and what its future should look like.

Stories offer concrete, relatable evidence and humanize the impact of current situations and proposed policies.

The Path Forward:
The Standard vs. The Necessary

The Path Forward

- Bridge gaps between research, policy, and practice
- Enable regulatory flexibility without compromising safety
- Support all stakeholders through transition
- Invest in monitoring, surveillance, and early warning

Next Steps: Collaborative development of climate-adaptive food safety standards - but we need answers to these questions first

The Path Forward – Yes, but…

- Bridge gaps between research, policy, and practice

→ **How specifically? What mechanisms?**

- Enable regulatory flexibility without compromising safety

→ **What does this look like in practice?**

- Support all stakeholders through transition

→ **What kind of support? How long? Who pays?**

- Invest in monitoring, surveillance, and early warning

→ **And then what? Who acts on the warnings?**

Next Steps: Collaborative development of climate-adaptive food safety standards - but we need answers to these questions first

Pattern Repetition

Pattern 1: "Educate the Consumer"

- Assumption: Consumers make "bad" food choices due to lack of information
- Reality: People understand risks but face constraints (cost, access, time, cultural preferences)
- Result: Blame individuals for systemic failures

Pattern 2: "Incentivize Innovation"

- Assumption: Market-driven solutions will address climate/health challenges
- Reality: Markets optimize for profit, not public health or environmental outcomes
- Result: "Innovations" serve those who can pay, ignore those who can't

Pattern 3: "Streamline Regulations"

- Assumption: Regulatory burden is the main barrier to food system transformation
- Reality: Concentration of power and resources is the barrier
- Result: Further advantages to already-powerful actors

Pattern 4: "Voluntary Industry Standards"

- Assumption: Industry will self-regulate for public good
- Reality: Voluntary standards are adopted by those who can afford them, ignored by those who can't
- Result: Two-tier system that undermines credibility

The Power Gap

- Who Sets the Agenda?
- Who Shapes "Evidence"?
- Who Bears Transition Costs?
- Who Captures Transition Benefits?

Policies are being designed within the same power structures that created most of the vulnerabilities we're trying to fix.

Questions We're Comfortable Asking

- How can regulatory sandboxes balance innovation and safety?
- What communication strategies build consumer trust?
- How do we design an early warning system that helps us respond in a timely manner to system shocks?

Questions We Need to Be Asking:

- **Power & Priority-Setting** "Who decides which climate-related food safety risks get regulatory attention?"
- **Winners & Losers** "The AFN Roadmap calls for 'transformation on a WWII scale.' Post-war transformation created winners (food corporations) and losers (smallholders). How do we ensure this transformation is different?"
- **Evidence & Assumptions** “What assumptions are we making about the fundamental working of the food system?”
- **Repeating Failures** "The EU tried to transform agriculture through the Farm to Fork Strategy and faced massive farmer protests. The UK is launching similar transformation. What are we doing differently? Or are we repeating the same mistakes with new branding?"
- **Regulatory Capture** "With National Level Regulation focusing on large retailers, and regulatory sandboxes supporting tech companies, how do we ensure food safety regulation serves public health rather than private interests?"
- **Citizens' Role** "Citizen science is powerful - but only if citizens have real power to shape outcomes. How citizen-driven projects ensure participation doesn't become tokenistic? How do findings actually change policy?"

Can we have honest conversations about power, or will we keep repackaging the same recommendations?

You **cannot** regulate your way out of systemic vulnerabilities created by structural inequalities

Consumers aren't uninformed. They face real constraints (cost, access, time)

Policymakers aren't slow. They navigate entrenched power structures

Food systems aren't resistant. They respond to incentives that favor concentration over resilience

The complex story IS the necessary story.