# Food System Transformation Solution Taxonomy

This taxonomy was developed to support the Food System Transformation Solution Bank. Citation: *Parsons, K and Bladon, AJ (2024). Food System Transformation Solution Taxonomy.*

The taxonomy below is the coding framework applied to the database of solutions[1]. It is a set of multi-level categorisations which can be applied to food system actions. The high level categories were selected through a process of engagement with a wide range of collaborators, with expertise across food system activities and outcomes, and were then populated with more granular detail by the authors, drawing on existing food system taxonomies[2]. This has been further iterated during the coding process, with new categories and clarifications added where necessary. The examples provided are currently from the UK, and there is a bias towards England. We plan to further iterate the taxonomy, with collaborators, to make it less UK-centric.

The five categorisations include descriptive categories  the who, what and how) and system impacts (where and on which outomes). These five were deemed the most fundamental to be included in the first iteration of the solution bank, and which - pragmatically - could be coded with

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[1] The term solutions is used as a catch-all to include: Actions, Levers, Interventions, Measures, Tools, Instruments, Proposals, Recommendations.

[2] The Activity/Actor Codes drew on a mapping of food system actors developed by Parsons and colleagues in the 'Optimising Evidence' project [https://www.food.gov.uk/research/changing-diets/shifting-toward-healthy-and-sustainable-diets-how-to-optimise-evidence-use-for-policy-and-practice?print=1]. The Outcome Codes draw on the Food System Flower framework developed by Parsons and colleagues [https://www.city.ac.uk/__data/assets/pdf_file/0008/471599/7643_Brief-2_What-is-the-food-system-A-food-policy-perspective_WEB_SP.pdf] and three reviews of food system outcomes by Brouwer et al (2020), Stefanovic et al (2020) and Knox and Miller (2022). The Type of Intervention Codes are based on the Parsons & Barling (2021) taxonomy in https://researchprofiles.herts.ac.uk/portal/en/publications/food-systems-transformation-whats-in-the-policy-toolbox(053f4f09-dc36-4d95-b861-f1282c7a7d0d).html.

the limited resources available for the project, without extensive analysis of each solution. There are many other categorisations of solutions which are not currently included but were deemed important during the Food System TSB development process. These include:

*Further description*

- *Context*. The geographical, and wider governance context within which a solution was implemented or proposed for.

- *Scope.* Whether the solution is targeted in some way, or broad. This might include questions of population vs at risk interventions, or narrow or systemic coverage of the food system.

- *Agency*. The demands placed on individuals impacted by a solution; whether the actions require significant agency on the part of those being targeted.

*Viability-related*

- *Cost*. The cost of implementing a solution.

- *Timescale.* The time required to implement a solution, whether it is a short-, medium- or long-term measure.

- *Evidence*. Whether there is any evidence related to the solution, which might range from robust evaluation evidence to case study materials.

- *Feasibility*. The political or public feasibility of a solution.


Details of additional categories discussed during the development process can be found in the project report on the TSB website [https://foodsystemsolutions.mrc-epid.cam.ac.uk]

As with all taxonomies, the Food System Solution Taxonomy represents one – albeit co-designed – interpretation of how to categorise food system solutions. The taxonomy remains a work in progress and is being iterated further as it is applied in different research projects. If you have suggestions for how it can be improved, or made more applicable to your country or place of interest, please contact the authors: Kelly.parsons@mrc-epid.cam.ac.uk or a.j.bladon@reading.ac.uk.

Beyond its use in coding solutions, the taxonomy can be used in any project trying to more systematically map or assess food system activities, actors, outcomes or solutions.

## Food System Actor/Activity Codes: Which part of the food system instigates or is impacted by a food system solution

The food system consists of many different activities which take food from farm to fork, and the actors within those activity areas. The following codes address which activity area a solution operates in, for example is it related to farming or retail activities, and which types of actor a solution is instigated by or implemented by – for example by a local authority government, or by a national private sector supermarket chain. It recognised that delivering solutions can involve multiple actors, and those who propose or instigate a food system solution may not be the same as those who are impacted by it, such as when a public sector regulation is implemented by food companies.

### Category 1: Who Instigates

Which type of food system actor will initiate this solution? They are broken down broadly into three – public sector (government), private sector (food businesses), and third sector (charity, community). The instigator may or may not be the same actor who is impacted. For example, a public sector government might issue (instigate) a regulation banning junk food advertising in place (which is then implemented by - and thus impacts - private sector food/media companies). Or a private sector food company might put in place a price promotion (which is implemented by itself, but also directly impacts consumers in its store).

### Category 2: Who is impacted

As above, this refers to which food system actors will be impacted by the solution, either by having to deliver/implement it (in the case of a manufacturer needing to reformulate its products in response to a government-instigated standard), or being directly affected by it, such as if an action directly targets consumer behaviour.

*Table 1: Who instigates/is impacted?*

| Who is impacted broad | Who is impacted specific | Sub-categories |
|---|---|---|
| Private sector | Input suppliers | Seed suppliers<br>Feed suppliers<br>Fertiliser, pesticide companies, manufacturers<br>Related industry bodies (e.g. Agricultural Industries Federation) |
| | Producers | Farmers[3] |

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[3] Opportunity to add more granular detail on farmer types  e.g. arable, livestock, mixed; small, med, large, owner, contract etc

| | | Fishers |
| | | Related producer industry bodies (e.g. National Farmers Union; AHDB) |
| | Processors | Food Processing Businesses |
| | | Abattoirs |
| | | Related Industry Bodies (e.g. British Meat Processors Association) |
| | Food manufacturers | Food Manufacturing companies |
| | | Related industry bodies (e.g. Food and Drink Federation) |
| | Packaging | Packaging manufacturers, suppliers |
| | | Packaging services |
| | | Related industry bodies (e.g. Packaging Federation) |
| | Warehousing | Warehousing services |
| | | Related industry bodies (e.g. Federation of Wholesale Distributors) |
| | Distribution | Distribution services |
| | | Related industry bodies (e.g. Federation of Wholesale Distributors) |
| | Wholesale (business to business) | Wholesale Businesses |
| | | Related industry bodies (e.g. Federation of Wholesale Distributors) |
| | Retailers | Supermarket chains |
| | | Convenience stores |
| | | Online-only retailers |
| | | Specialist stores |
| | | Short supply chain retail |
| | | Food retail in non-food stores |
| | | Street Markets |
| | | Farmers Markets |
| | | Wholesale (business to consumers) |
| | | Related Industry Bodies (e.g. British Retail Consortium) |
| | Out-of-home caterers | Restaurants |
| | | Takeaways |
| | | Hospitality |
| | | Pubs |

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| | | Cafes<br>Digital platforms (e.g. Just Eat)<br>(non contract) Caterers<br>Street-food traders<br>Related Industry Bodies (e.g. British Hospitality Association; Nationwide Caterers Association). |
| | Investors / shareholders | Investment/finance companies<br>Private equity |
| | Developers | Builders<br>Developers |
| | Trading organisations | Commodity traders |
| | Advertising and marketing | Advertising companies<br>Marketing and sponsorship companies |
| Public sector | Local council / authority / government | Local Government Departments - Policymakers (Elected Officials; Civil Servants) working in departments/on policy and delivery areas such as:<br>• Public Health<br>• Environment<br>• Planning<br>• Business/Economic<br>• Education<br>• Welfare<br>• Environmental Health<br>• Trading Standards<br><br><br>Service Commissioners<br>Local Food Partnerships formally linked into/ hosted by local government |
| | Regional Government | Sub-national level government, e.g. West Midlands Combined Authority, Greater Manchester |
| | National Government | Policymakers (Elected Officials; Civil Servants) working on/in departments such as:<br>• Health/Safety/Standards |

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|---|---|---|
| | | • Environment<br>• Trade<br>• Agriculture<br>• Education<br>• Industry<br>• Welfare |
| | International Government | UN Institutions:<br>• Food & Agriculture Organisation<br>• World Health Organisation<br>• World Trade Organisation |
| | Public institutions | Public Sector Food Procurement (schools, hospitals, prisons, public sector-owned recreational facilities, government estate) Professionals<br>• Procurement Managers<br>• Catering staff<br>• Contract Catering Companies<br><br>Public Sector Catering Professional bodies:<br>• Food for Life (for example, may conduct audits)<br>• Local Authority Caterers Association - LACA<br>• The University Caterers Organisation - TUCO<br>• Public Sector Catering |
| | Professional practitioners: Health | Health:<br>• GPs<br>• Nutritionists/Dieticians<br>• Early years Care incl. Health Visitors, Midwives<br><br>Health Professional Bodies:<br><br>• British Medical Association |

| | | • British Dietetics Association (One Blue Dot)<br>• Institute of Health Visiting<br>• Royal Society Public Health |
|---|---|---|
| | Professional Practitioners: Education | Education Practitioners (early years care including Nurseries; Children's Centres)<br><br>• Teachers<br>• Nursery staff<br><br>Professional Bodies:<br>• OFSTED<br>• Nursery equivalent |
| Civil society | NGO | Charity<br>Civil Society Organisation<br>Non Governmental Organisation<br>Campaigning Group |
| | Food banks | Trussel Trust Food Banks<br>Independent Food Banks (IFAN Network) |
| | Community food initiatives | Community kitchens<br>Community cooking classes |
| | Community gardens/urban agriculture | Community Gardens<br>Growing Projects<br>Urban Agriculture<br>Allotments |
| Other | Certifying body | Soil Association<br>Marine Stewardship Council |

|  |  | Red Tractor Assured |
|  |  | Fairtrade Foundation |
|  | Food technologists | Food Technologists |
|  | Social enterprise | Cooperatives |
|  | Research organisations | Universities |
|  |  | Non-University Research Organisations |
|  | Early years care | Nurseries |
|  |  | State-run nurseries |
|  |  | Private nurseries |
|  | Care homes | Care Homes |
|  | Media | Newspapers |
|  |  | Magazines |
|  |  | Social Media |
|  |  | Journalists |
|  |  | Content Creators and Influencers |
| Consumers* |  | Consumers |
|  |  | Citizens |
|  |  | The Public |
| *Applies to who is impacted only |  | Eaters |

## Outcome Codes: Which food system outcomes are being impacted

There are many different goals for transforming food systems, or 'outcomes' which solutions may impact, from improving people's health, to reducing inequity or environmental impact, or increasing economic viability.  Some solutions are aimed at improving a single outcome, whereas others are designed to hit multiple complimentary outcomes across the food system, such as by encouraging food which has both health and environmental benefits.

## Category 3: Outcomes

Outcomes refer to the impacts which the solution is targeting. These can be divided into *Intended* outcomes, which are those which were part of the original design of the solution, and *unintended* outcomes, which are either secondary impacts, or impacts which were not expected. For example, a solution to increase fruit and vegetable consumption may be doing so to improve health, but it may also have secondary environmental benefits if the fruit and vegetables replaces meat in the diet, and may have unintended consequences for producers - if they get more orders for fruit and vegetables, or fewer orders for meat, as a result.

Table 2: *Outcomes*

| Outcomes (intended/unintended) broad | Outcomes (intended/unintended) specific | Outcomes (intended/unintended) examples |
|---|---|---|
| Health | Diet/nutrition | Diet Quality<br>Diet Diversity<br>Diet-related Health Effects e.g. Obesity, CVD, Diabetes, Hypertension, Malnutrition, Gestational Problems and Birthweight, Consumption Patterns |
| | Food safety | Pathogen Contamination of Food<br>Chemical Contamination of Food |
| | Well-being | Mental Health |
| | Environmental health | Airborne Pollution<br>Waterborne Pollution<br>Infectious Disease |
| | Antibiotics | Antimicrobial resistance |
| | Workplace safety | Workplace Fatalities<br>Workplace Injuries<br>Occupational Health |
| | Health System | Health System Costs<br>Health System Pressure |
| Environment | Land/sea | Natural Resources – Fossil Fuels, Minerals, Marine Resources<br>Land Use – Desertification, Settlement & Zoning, Deforestation |
| | Water | Water (water quality, water pollution – pathogens, chemicals, nutrients; sea currents and salinity, water quantity and availability) |
| | Soil | Soil Pollution – Pathogens, Chemicals<br>Soil Erosion<br>Soil Degradation – Structure, Composition |
| | Climate | Mitigation |

| | | Adaption |
|---|---|---|
| | Air | Air Pollution – Particulate Matter, Noxious Gases |
| | Biodiversity | Genetic Resources<br>Agrobiodiversity |
| | Animal and Plant Health | |
| | Waste | Food Loss<br>Food Waste |
| Social | Livelihoods | Skills<br>Working Conditions – worker rights & safety, exploitation<br>Income & Employment  - Secure livelihoods, wage levels, unemployment |
| | Education | |
| | Community | Community Vibrancy<br>Community Empowerment<br>Community-Based Socio-Economic Development<br>Social Cohesion |
| | Culture | Culture and Traditions |
| | Gender | |
| | Media/advertising | |
| | Race & Ethnicity | Diversity |
| | Trust | |
| | Equity | Food Insecurity<br>Social Inclusion<br>Food Sovereignty<br>Economic Impacts<br>Food Democracy |
| | Animal welfare | |
| | Rights | Right to Food<br>Right to Health<br>Social & Cultural Rights |

| | | Land Rights |
|---|---|---|
| | | Right to Benefit from Scientific Advances |
| Economic | Trade | Exports |
| | | Imports |
| | Skills | |
| | Job creation | Employment Creation |
| | Value generation | Enterprise Opportunity |
| | | Productivity (incl crop yields) |
| | | Profitability |
| | | Economic Growth |
| | Competitiveness | |
| | Allocation of resources | Smallscale Livelihoods |
| | Public Sector Budget | Clean Up/Treatment Costs |
| | | Taxes/Revenue Generation |
| | Market Sector Concentration | |
| Food Security | Food Availability | |
| | Food Accessibility | |
| | Food Affordability | |
| | Food Appropriateness | |
| | Local food production | |
| | Resilience | Vulnerability to Disruption |
| | | Reliance on Transport and Trade |
| | | Reliance on Non-Renewables |

## Intervention Codes

There are many different ways to refer to actions taken in the food system; from policies, measures, instruments, interventions, and so on. These tend to be linked to different disciplinary perspectives. Policies can be defined narrowly – for example as instigated and delivered by the public sector – or widely, for example the strategies enacted by food businesses, or initiatives led by civil society. Food system transformation will require many different actions, delivered in concert, by many different types of actors, which is recognised in the inclusive approach to solutions taken in the solution bank.

## Category 4: Type of Intervention

This refers to the type of policy, measure, action which the solution represents. It consists of predominantly policy measures, or other types of intervention, with a clear delivery mechanism such as 'information and communication' or 'fiscal'. There is an additional category of 'practical actions', which is used for solutions which are more about 'doing' practical things, without any formal policy or intervention mechanism involved.

*Table 3: Type of Intervention*

| Type of Intervention | Sub-Categories | Short Description | Long Description |
|---|---|---|---|
| Direct Food Provision | • Public Sector Food Procurement (Schools, Hospitals, Prisons, Military, fraGovt Estate)<br>• Food Vouchers<br>• Cash (For Food)<br>• Social Prescribing<br>• Food Banks<br>• Meals On Wheels<br>• (Free) School Meals<br>• Breakfast Provision in Schools<br>• Milk, Fruit and Veg Provision in Schools | Levers which provide food, or the means to purchase food, directly to consumers | The class Direct Food Provision encompasses a range of different types of lever, some of which also fit under other categories, such as the economic lever of **subsidies**.<br><br>Two main types of direct provision are identified, **direct food provision** aimed at tackling food insecurity, and **public procurement** of food (for example for serving in schools, hospitals or other government-run institutions. **Procurement** is linked to multiple |

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| | • Provision of cooking equipment<br>• Holiday Hunger/Holiday Activity & Food Schemes<br>• (Government) Supported Retail Outlets (in food deserts)<br>• (Government) Supported Community Restaurants | | other levers, including **standards** (because standards for particular types of food may be set, for example the UK's school food standards), and **certification**, because certified produce is often part of any procurement policy, as a way of demonstrating commitments to particular production methods.<br><br>**Direct food provision** has a strong social welfare dimension (thus overlapping with welfare provision such as the UK's Universal Credit scheme) and covers levers such as: food **vouchers or cash**; **food banks**; **meals on wheels provision of food to the elderly**; (free) **school meals, breakfasts and fruit and veg provision.**<br><br>Provision may involve supplying **equipment for cooking** (for example slow cookers), rather than just food itself.<br><br>Provision may be via '**holiday hunger**' and other holiday activity and food ('HAF') schemes covering periods outside of school hours. Provision may also involve (government) support for establishment and operation of retail or restaurants, to tackle food insecurity. |

| Certification and Standards | • Certification of Production Methods<br>• Standards – Food Safety, Quality, Composition<br>• Traceability Monitoring and Compliance<br>• Award Schemes | Levers to document and promote the processes of food production | **Certification** can be used to assure the application of particular production methods and products (for example organic, or Fair Trade), and tends to be private-sector led. However, the lines between public and private sector in regard to certification can be blurred: private certification schemes may be accompanied by government-baseline standards - such the EU-derived organic standards, and the UK Soil Association's organic certification scheme, which operates above the baseline standard, or the UK's independent private sector Red Tractor Assurance scheme, which is formally government endorsed or approved.<br><br>Linked to certification, therefore, are **standards**-setting levers which can be applied – and can be either mandatory or voluntary – to assure food safety, quality, or composition (for example the presence or absence of particular ingredients for nutrition reasons). Along with the organic example stated, other examples are food safety laws, such as the EU's General Food Law, and bans or voluntary reformulation to remove high |

<table>
<tr><td></td><td></td><td></td><td>levels of salt, fat or sugar in food products. Standards are therefore overlapping with the **regulatory** class (because standards may be introduced by law).

Certification and standards are also linked to **traceability** levers, which monitor foods through their supply chain journey, to ensure compliance with safety standards, for example, and often involve the application of **technology**.

**Award schemes** - such as local government award schemes for healthy/sustainable catering businesses – may be used to incentivise business and inform consumers.</td></tr>
<tr><td>Information/Communication</td><td>

- Consumer Information Campaigns
- Campaigning and advocacy initiatives
- Interpretive Tools
- Dietary Guidelines
- Labelling
- Front of Pack Labelling
- Ingredient and Production Process Labelling
- (Food) Education
- Nutrition Advice
- Cooking and Growing Activities
</td><td>Levers to share information with or between actors in the food system</td><td>This class consists of what might be considered 'softer' levers, around information. Specific levers include **public information/campaigns**, such as the UK's Change4Life campaign; interpretive tools to provide information in accessible ways, such as (food-based) **dietary guidelines** like the UK's Eatwell Plate; and **labelling**, such as front-of-pack traffic light labels, along with more straightforward ingredients and production process labelling;</td></tr>
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|---|---|---|---|
| | <ul><li>Sensory/Taste Education</li><li>Professional Education/Training</li><li>Professional Advisory/Skills & Knowledge Sharing</li><li>Breastfeeding Campaigns</li><li>Advertising</li><li>Leaflets</li><li>Posters</li><li>Digital Content</li></ul> | | the inclusion of food as part of **education** provision, which may involve: nutrition advice, cooking and growing activities; and sensory/taste education in schools.<br><br>Campaigns also include **campaigning and advocacy** initiatives by non-government actors, such as in the private or third sectors.<br><br>Finally, there are professional education interventions beyond schools, involving the provision or sharing of **skills, knowledge, and training** at different points in the supply chain, including farmers, processors and manufacturers, and caterers, and health professionals (such as doctors).<br><br>Information and communications tools are also linked to **certification** and **standards**, which may provide the foundation for any labelling or other information provided.<br><br>Information and communication are also linked to **mapping, measuring and monitoring** interventions, and **data**-related levers. |

| Governance/Organisation | • Creation of Bodies or Other Institutional Mechanisms<br>• Direct Spending/Funding<br>• Finance/Investment Targeting Food Business Impacts<br>• Mapping, Measuring and Monitoring (incl. price monitoring)<br>• Local Food Partnerships<br>• Food Policy Councils<br>• Food Bodies<br>• Creating/continuing/strengthening movements | Levers around processes and structures | Along with levers applied with substantive aims, are a class of lever which address organisational process and the structures of decision-making arrangements. These can broadly be placed under the umbrella of **'governance'.** They encompass the creation of **bodies** to connect decision-making or activity across government horizontally and vertically, and with and between outside stakeholders (participation and transparency), **funding food-related activities directly**, and the **mapping, measuring and monitoring** of activities and outcomes, and policies, in the food system. Governance and organisation actions may also include **creating or strengthening movements and coalitions**, alongside more tangible bodies.<br><br>**Framework policies** overlap significantly with the governance/organisation class.<br><br>Other dimensions of governance - though not interventions per se – are **leadership/political will, transparency and participation.** These are included in the lever mapping because they are potentially-important influences on food system transformation. |
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| Regulatory | • Food-Related Rules<br>• Food-Related Laws<br>• Acts<br>• Rules on Promotion<br>• Rules on Advertising<br>• Rules on Nutrition Claims<br>• Rules on Food Packaging<br>• Rules on Import/Export of Foods<br>• Planning Policy<br>• Mandatory Rules<br>• Voluntary Rules/Agreements<br>• Mandatory Reporting (e.g. of data)<br>• Government-Industry Voluntary Agreements<br>• Industry Voluntary Agreements<br>• Self-Regulation<br>• Advisory Guidelines<br>• Target Setting<br>• Impact Assessment<br>• Primary Legislation<br>• Secondary Legislation<br>• Local Byelaws<br>• Permits<br>• Rights<br>• Nudging/Choice Architecture; rules around menu option positioning, physical product positioning, choice editing etc | Levers aimed at controlling a food supply chain activity or process | The regulatory class of lever encompasses a range of different strengths and breadths of **rules** which control what is allowed at a particular point in the food chain, often linked to the objective of reducing negative social or environmental outcomes. Regulatory levers come in different forms: they may be 'framing', and broadly set out the aims without specifying the means to achieve, for example the EU's General Food Law Regulation, which is translated into national guidance by the UK's Food Standards Agency. Or they may be more specific, such as regulations banning particular foods or ingredients, such as the mandatory removal of trans fats which have been introduced in several countries. Regulation may be underpinned by a scientific tool such as a nutrient profile model.<br><br>While some regulation is mandatory (classed as a 'harder' measure), there are many policies which set rules form controlling food chain activities or processes which are voluntary – often described as 'self-regulation', for example commitments by the food industry to limit |
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| | • Quotas | | advertising to children, or to remove junk food from supermarket check-outs.<br><br>Regulatory levers may also involve the use of **mapping, measuring and monitoring (including target-setting)**, as part of implementation, or **impact assessment**.<br><br>Organisations may instigate particular rules around the way food is displayed/positioned – often referred to as **nudging**, or changing the **choice architecture** – to encourage behaviour change whereby they select or avoid particular foods (either consciously or unconsciously). |
| Economic/Financial | • Fiscal Incentives<br>• Subsidies<br>• Taxes<br>• Tax Relief/Waiver (Subsidy)<br>• Business rate relief<br>• Support To Access Finance/Investment/Insurance<br>• Linking Finance to Delivering Food System Outcomes e.g. Environmental Performance<br>• Investor Action<br>• Other Non-Direct Financial Incentives (Offering Indirect | Fiscal levers aimed at sending signals to the markets | Economic levers involve the provision of financial incentives (such as **subsidies, or tax concessions**), or charging of penalties (such as **taxes**), in order to encourage or discourage certain activities. **Waivers** for particular costs to business – for example business rates – may be used to encourage them to establish or change their provision. |

| | Financial Benefits/Other Material Resource Gain) <br> • Fees <br> • Charges | | Fiscal levers also include support for access to **finance/investment/insurance** for particular food production activities. <br><br> Fiscal levers are generally considered to be 'harder' measures, and can be aimed at the producer/organisation level, or at individuals. |
|---|---|---|---|
| Market Intervention (happens more in developing countries) | • Regulating the Food Supply <br> • Setting Price Limits on Products <br> • Public Sector Storage of Produce <br> • Support for Local Infrastructure E.G. Roads <br> • Support for (Local) Processing Facilities, incl Abattoirs <br> • Assisting Producer Organisations to Improve Supply <br> • Crisis Measures to Shore Up Supply in Periods of Market Disruption <br> • Government Backing of Producer Organisations <br> • Support for Cooperatives <br> • Support for Short Supply Chains <br> • Trading Practices <br> • Competition Law <br> • Unfair Trading Practice Rules <br> • Trade Agreements Between Countries | Levers aimed at supporting agri-food markets – including during emergencies impacting on the food supply chain – and how they are organised | This class of lever involves intervening in the market for food, including regulating the food supply, to ensure availability. It includes levers such as setting **price limits** on produce, public sector **storage** of produce, support for local infrastructure, such as roads, or processing facilities, assisting **producer organisations** to improve supply, and other crisis-related measures to shore up supply in periods of market disruption (for example as applied in response to Covid-19). In addition to government-backing of producer organisations for particular commodities, there are private-sector policies to facilitate **cooperation arrangements** between different segments of the food chain (for example farmers). There are also levers - primarily private sector-led, by farmers themselves, or civil society-led – which |

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| | • Trade Facilitation Arrangements<br>• Export Subsidies<br>• Export Taxes<br>• Import Tariffs<br>• Import Duties | | target particular types of trading arrangements, such as supporting **short supply chains** between producer and consumer.<br><br>Market interventions also encompass those levers applied to facilitate trading, including around **trading practices** (such as **competition law**, and **unfair trading practice rules**), and **trade agreements** between countries and other trading arrangements. |
| Technology/Innovation | • Financing of Innovation<br>• Innovation/Enterprise Support (Strategy/Funding)<br>• Collection and Application of Data<br>• Technology measures to change algorithms<br>• Social Innovation E.G. Community Projects<br>• Community Cooking Skills<br>• Community Food Growing/Agriculture<br>• Community Food Sharing<br>• Community Kitchens<br>• Distribution of Food Surplus<br>• Research Activities on Food System<br>• Research Collaboration | Levers aimed at the application of technology or other innovative measures to food production or consumption, or both | **Technology/innovation** is a lever for system transformation beyond policy itself, and can be applied at all points in the food supply chain, to the service of multiple objectives, from purely economic to environmental**.** Such interventions may be private or civil society-led, or have a link with government. Public sector involvement may be through the development and oversight of a **Framework Policy** – like the UK's Agri-tech Strategy to increase the application of technological innovation in farming – or through **financing** of, or providing support for finance/investment in, particular innovative activities, or organisation of **collaboration** across food system stakeholders. |

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| | - Research Funding<br>- Evidence use, generation, synthesis | | **The collection and application of data** is an important intervention in this category**.** Who owns the technology, or who accesses it, is an important consideration.<br><br>Technology/Innovation can also encompass social innovations, such as **community projects**. Community projects related to food span initiatives around **cooking skills**; **food growing**; **food sharing**; and the **distribution of food surplus.**<br><br>**Research activities** targeting the food system could also be encompassed within this category, along with efforts to improve the **science-policy/practice interface**, and **evidence use** more broadly. |
| Framework Policies (paper docs over physical networks) | - Strategies<br>- Programmes<br>- Initiatives<br>- Roadmaps<br>- Covenants<br>- Collaboration Initiatives<br>- Food Strategies | Levers aimed at coalescing action in the food system around a particular goal | Framework policies are a class of lever which involve a plan or agreement, also sometimes called a 'strategy', 'programme', 'initiative', 'roadmap' or 'covenant', aimed at eliciting action on a particular food system activity or objective. They may be focused on agricultural |

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| | - Food Policies<br>- Food Plans<br>- National Food Strategies<br>- Local Food Strategies<br>- Food Culture Strategies<br>- Circular Economy Strategies<br>- Food Security Strategies<br>- Obesity Strategies | | production, food exports, or promoting food culture. They may also be cross-cutting policies on food, which bring together lots of activities and outcomes under a single umbrella - an example being the EU's Farm to Fork Strategy.<br><br>**Collaboration** interventions link up different food system stakeholders, either within a particular segment (such as farmer or restaurant/chef networks), or across multiple segments of the chain. These may be focused on a particular outcome – such as health or sustainability – or bring together the participants from the supply chain for a particular food, for example dairy. In reality both framework policies and collaboration tend to be used in conjunction.<br><br>Framework Policies may involve the application of a range of supporting levers such as, **mapping, measuring and monitoring, including target-setting**, establishment of rules to be followed (**self-regulation**), and **skills, training and knowledge provision**. |

| | | | A key sub-set of framework policies are **Natural Resource Management programmes,** aimed at limiting or repairing the environmental impacts of food production on the natural environment. These can take many forms, and are likely to be a hybrid of multiple types of lever, crossing **information and communication**, such as the training of farmers in climate-friendly agricultural techniques, **regulatory** - such as restrictions on land expansion, or particular agricultural inputs, and **economic** - such as **subsidies** to encourage or compensate for particular activities or **fees or charges** for environmental damage caused or resources consumed, or 'payments for ecosystem services', which provide finance for natural resource management. **Permits, rights, and quotas** are a type of environmental policy lever which can be used to limit impacts on natural resources - such as fish, or climate emissions - being depleted, and these may be tradeable between users. |
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| Behavioural Tools[4] | <ul><li>Choice Editing</li><li>Choice Expansion</li><li>Choice Architecture</li><li>Default Rules</li><li>Simplification</li><li>Increase in ease and convenience</li><li>Physical or digital micro environment changes that alter context of choice</li><li>Priming</li><li>Disclosure</li><li>Warnings</li><li>Use of Social Norms (Showing what others are eating)</li><li>Pre-Commitment Strategies (self pledges)</li><li>Reminders</li><li>Eliciting Implementation Intentions (Do you plan to?)</li><li>Informing of implications of past choices (amount of GHG saved)</li></ul> | Levers which utilise insights from behavioural science to encourage changes in food behaviour. Sometimes referred to as 'nudges'. | Behavioural Levers apply insights from behavioural science, to encourage different behaviours around food, primarily so they eat more healthy, environmentally sustainable food, and less unhealth, unsustainable food. The aim is to make such foods more normal, easy and appealing. There is a sub-group of tools - **choice editing, expansion, simplification, architecture**-related, **increasing ease and convenience**, **physical or digital micro environment changes that alter context of choice** and **default rules** – which alter which foods are most prominent in a setting. This can include removing or adding certain items from menus, offering substitutions, changing the placement of items on a menu (for example not separating vegetarian dishes on menus or in chillers), or making certain food items more or less prominent in a physical setting such as a canteen (for example prominently providing a side-salad, or positioning vegetarian dishes first before the meat dishes). **Default rules** may include initiatives such as a meat-free Monday. These actions may involve particular approaches to communication or '**priming**' which have been shown to influence behaviours, for example not labelling dishes as 'vegan' or 'meat-free' |

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[4] From Reisch et al 2021 'Mitigating climate change via food consumption and food waste: A systematic map of behavioral interventions', Journal of Cleaner Production

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| | | | because it may reduce appeal, or using store design and signage.<br><br>Another sub-set of behavioural tools relate to informing people about the impacts of their behaviour, for example **disclosure** (for example of the environmental costs of meat consumption), **warnings** (such as coloured labels), **informing of implications of past choices** (e.g. amount of greenhouse gases saved).<br><br>Tools around **social norms** involve showing what most others are eating.<br><br>Other tools involve making commitments to change behaviour, such as **eliciting implementation intentions**, to highlight plans ('do you plan to eat less meat'), and **self-pledges** to adhere to certain food behaviours (for example 'Veganuary', or reducing food waste). **Reminders** of plans can be used to support commitments. |
| Practical actions | • Building something, like a growing space/rooftop garden<br>• Farming practices (not involving some kind of policy or scheme) | 'Doing' something practical, which does not explicitly link to a particular | There are certain solutions which do not fit comfortably in any broad type listed in this taxonomy, because they are simply **practical things which can be done**, which require no |

| | | policy instrument, or other formal intervention. | obvious policy or intervention mechanism. These may include planting trees on a farm, or building a rooftop garden. While such actions can be part of a policy, for example an agri-environment scheme, or a regeneration strategy, they can also happen in the absence of this. |
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## Governance/Scale Codes

Food system solutions can be delivered at different levels or scales. These might be formal governance levels, such as by national government or local government, or in non-government terms, it might mean a solution applied across a region or in an individual organisation or building.

## Category 5: Level

This refers to the level of governance/scale at which the solution is operating. It might be national law, or a national supermarket campaign, a regional funding pot, a city-wide campaign, a local borough initiative, a neighbourhood project, or a single hospital programme.

*Table 4: Level*

| Level (Broad) | Examples |
|---|---|
| National | National Supermarket Chain<br>Business Head Office<br>All Primary Schools |
| Regional | Sub-national area<br>Devolved Regions? |
| City/Town | City<br>Town |
| Local Borough | Sub-City (e.g. London Borough) |
| Local Neighbourhood | Sub-Borough |
| Individual Institution | Single Store or School |