



Food System
Economics
Commission

WORKING PAPER

Food System Policies: A Global Snapshot from the Food System Policy Database (FSPD)

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ACKNOWLEDGEMENT

This work has been supported by the Food System Economics Commission, funded by an award to the World Resources Institute (WRI) from the Norwegian Climate and Forest Initiative (NICFI), subgrant agreement no. 0581-2021 and by Quadrature Climate Foundation, grant agreement no. G2458.

CITATION

Lowder, S.K., Ruggeri Laderchi, C., Cerutti, N., & Parsons, K. (2022). Food System Policies: A global snapshot from the Food System Policy Database (FSPD).

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FOOD SYSTEM POLICIES: A GLOBAL SNAPSHOT FROM THE FOOD SYSTEM POLICY DATABASE (FSPD)

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Acknowledgements and Disclaimer

This paper was prepared by members of the Secretariat of the Food System Economics Commission (FSEC) funded by the Wellcome Trust, grant agreement no. 221362/Z/20/Z. and Quadrature no. G2458. It benefited from feedback provided by FSEC commissioners, especially Jessica Fanzo (Bloomberg Distinguished Professor of Global Food and Agricultural Policy and Ethics at Johns Hopkins University), Rachel Nugent (Vice President for Global Non-communicable Diseases at RTI International) and Barbara Harriss-White (Emeritus Professor of Development Studies, Emeritus Fellow Wolfson College, Oxford University and Visiting Professor at JNU). The opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the view of the FSEC, Wellcome Trust, or Quadrature.

Abstract

The international community has recognized the need to transform food systems and the importance of government policies in achieving that goal. However, there is no single source of information on all food system related policies that might provide a clear baseline on what countries are currently doing. As a first step towards such a baseline, this article describes what types of policies are in place throughout the world, highlighting patterns across countries at different income levels. The article draws on a new resource, the Food System Policy Database (FSPD), which compiles sources of extensive data on existing government policies impacting the food system. The article presents key findings. For instance, most food system policies are concentrated at the producer end or at the consumer end of food systems. The segments that are least regulated by government policies are toward the middle of the value chain. Additionally, producer subsidies are by far the most widespread type of policy lever. Countries nevertheless rely on a variety of tools, with a majority of countries also using trade policies, regulations and policies to provide information to consumers. The article concludes by recognizing limitations of the data and how they might be addressed going forward.

Keywords: Food system; food policy; agricultural policy; health policy; producer subsidies; healthy diets

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1. Introduction

As evidenced by numerous publications¹ as well as the UN Food Systems Summit, the international community has recognized the need to transform food systems and the importance of government policies in achieving that goal. In conjunction with the summit, countries prepared pathways to the development of sustainable food systems, demonstrating their growing desire to implement policies for transformative change of food systems (United Nations, 2021). Such pathways include objectives of more environmentally sustainable and inclusive² food systems that also result in healthier diets.

The three objectives were chosen deductively, building upon a well-established body of work, such as the EAT Lancet report, that explores the nexus between food systems, climate and health. Debate around the EAT Lancet report highlighted that it will not be possible to transform food systems if key concerns are not addressed; these include the impacts of the transition on food price variability, the affordability of healthy diets and the implications of food system transformation for livelihoods. Hence, identifying “inclusion” as a non-negotiable goal of the food system transformation is driven both by the instrumental considerations discussed above (the feasibility of the transition is in question if equity and distributional issues are not addressed) and by intrinsic ones. The intrinsic reasons reflect a social justice concern that with an estimated 3-4 billion livelihoods depending on food systems any strategy for their transformation needs to address the distributional and more broadly livelihood impacts of the transformation itself (Ruggeri Laderchi, Kanbur and Winters, 2022; FOLU, 2019).

Given the interconnected nature of food systems and the multiple objectives of the desired food system transformation, relevant policies are diverse. They range from reducing the overapplication of fertilizer to make agricultural production more sustainable, to improving the provision of nutritious school lunches for healthier diets or guaranteeing living wages for food system workers. However, there is no single source of information on all food system related policies that might provide a clear baseline on what countries are currently doing.

The indistinct boundaries of food system policies is an acknowledged issue within scholarship and practice, given that virtually any policy effort can be argued to have an impact on the food system in some way and thus be considered part of ‘food policy’ (Candel and Daubjerg 2019 p170). In

¹ See, for example: Fan et al., 2022; Gautum et al., 2022; GLOPAN, 2021; IFPRI, 2021; IPCC, 2022; FAO, 2019; FAO et al, 2021a; JHU & GAIN, 2021; Laborde et al., 2020; United Nations, 2021; United Nations, 2021 and WHO, 2022.

² This article emphasizes the economic aspects of inclusion. As a result, it focuses on improving the lives of what is described by Ruggeri Laderchi, Kanbur and Winters (2022), as “the weakest and most vulnerable sections of the global population—the incomes they earn, the food they can afford, and the constraints they face in improving their wellbeing.”

developing the database, a pragmatic approach to definition of food system policies was taken, building on existing research, including the Parsons & Barling (2021) classification of food system levers, and the food policy mapping method developed by Parsons (2020). The criteria applied was to include policies with a direct influence on the food system, either through explicit reference to food, or without explicit reference to food but where existing knowledge indicated a policy type has known impacts on the food system.

At the country level, such policies are designed and administered by different ministries, whose sectoral focus does not easily lend itself to coordination. Policies have been designed sectorally and the evidence available reflects that sectoral approach. International databases on policies cover only a part of the food system or some of the desired objectives. There is value added in combining the various existing databases in order to have a more holistic view of food systems and their impacts on multiple objectives including environmental, social and health outcomes. Alongside the issues around horizontal fragmentation of food systems policies across multiple sectoral areas, food policies also operate at different levels of governance, from global, regional and national, to subnational and local (Parsons and Barling 2021; Parsons 2021).

Some elements of the policy agenda have attracted significant attention in the literature. These include how and whether it might be possible to repurpose agricultural support (FAO, UNDP and UNEP, 2021), whether trade policies support or hinder a transformation towards more sustainable production patterns (Fuchs, Brown and Rounsevell, 2020) and the effect of growing adoption of taxes on foods with high salt content and sugar sweetened beverages intended to provide incentives for product reformulation (Nugent et al, 2022).

At the same time, less attention has been given to whether interventions which are universally adopted (such as developing rural roads) need to be reconsidered in light of the objectives of a food system transformation (for example, to protect biodiversity). Furthermore, the discussion of food system related policies, while often global in scope, fails to convey clearly that changes to food system policies might have different implications in different countries. Low-income countries that cannot afford large subsidization of domestic agriculture are not going to be directly affected by global pressure to repurpose subsidies, other than through global impacts on food prices, for example.

More generally, by not having a comprehensive picture of all food system policies adopted in a given context, it is hard to ensure coherence. This is emphasized by Parsons and Barling (2021) in their comprehensive classification of food policy levers:

“The proposition presented in this report is that having a clearer picture of the policy levers available for transformation can help to navigate the complex range of activities, actors, and objectives linked to food systems, by providing a bird’s eye view... Mapping examples of the application of different policy levers across the world can support improvements to this patchy evidence and offer an organizing framework for that evidence. Having an organizing framework could also facilitate a process of policy lesson drawing, particularly

between governments at national level, most of which are dealing with similar challenges, and looking for policy solutions to tackle them.” (Parsons and Barling, 2021)

As a first step towards understanding how to implement a policy agenda for supporting and enhancing food system transformation, this article describes which food system policies are adopted around the world. It highlights patterns across countries at different income levels. The analysis is based on a new resource, the Food System Policy Database (FSPD), a purpose-built database that compiles sources of extensive data on existing government policies impacting the food system. For ease of use and interpretation, the data are harmonized and classified in different ways.

There are multiple benefits to this exercise, including:

- Existing databases are mostly sectoral or theme based and cover only parts of the agrifood system; by aggregating different sectoral and topical databases, the FSPD makes it possible to compare policies across different parts of the food system
- The database provides more information than available in the source databases. For instance, it classifies policies as they relate to the segment of the food system, type of policy lever and stated objectives commonly prioritized by the international community
- The creation of the FSPD is a first step towards creating country level policy profiles which could serve as the basis for comprehensive audits of policies

The database makes it possible to answer numerous questions including the following:

- What segment of the food system do food policy interventions most frequently target?
- Which policies are used the most frequently in each segment of the food system?
- What are the most frequently used type of policy levers?
- How frequently is a given policy objective stated in the description of a given policy?
- What policies are used to achieve certain objectives?
- What is an initial picture of the policies a country has?
- What policies are more common in certain country categories (eg. income group, region or food system dashboard grouping)?

This article describes the FSPD and demonstrates how it can answer the first four of the questions listed above. The structure of the paper is as follows: section two outlines the approach that has been taken to define food systems, identify policy levers and reorganize and systematize the information provided in existing databases. Section three describes how the database was built. Section four then describes some of the key patterns that emerge from the data. Section five concludes and briefly suggests future directions for the development of the database that could further enhance its usefulness in understanding policy baselines for different food systems.

2. Defining food systems, identifying and classifying policies

Given the ambition to describe the policies that countries are adopting across the entire food system, a multistep approach was taken. A first step in the design of the database was to identify its scope as including decisions made by government entities and not those of corporations. The second step was to define food systems. A definition of food systems developed by the High Level Panel of Experts on Food Security and Nutrition was adopted:

A food system gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities related to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socio-economic and environmental outcomes.

(HLPE, 2014)

Thirdly, a general taxonomy of policy levers was created, to help organize the information. A crucial step in creating a taxonomy is to subdivide food systems into constituent parts of analytical value, partly because different groups of decision makers may be tasked with regulating those separate segments. Note that given the interconnected nature of food systems with other systems (for example many policies designed by Ministries of Health impact dietary health as well as the human health more generally) this exercise is to some extent arbitrary, yet it is important to define which policies can be considered as inherent to food system outcomes and therefore food system policies to be included in this database.

Different food and agriculture related policy taxonomies were considered; these included that of the Food and Agriculture Policy Decision Analysis database (FAPDA) (FAO, 2015); the Food System Dashboard (Johns Hopkins University and Global Alliance for Improved Nutrition, 2021) and the ‘Transformation Toolbox’ taxonomy developed by Parsons and Barling (2021) with the latter being selected.

The ‘Transformation Toolbox’ taxonomy is based on a definition of the entire food system (as opposed to agricultural production or diets only); it consists of several segments of the food system, each of which are affected by certain policy levers (Parsons and Barling, 2021). The segments are: agricultural inputs, farming, distribution and transport, trade, processing and manufacturing, retail, food service, eating, food waste, research and technology. There is also a multiple/ cross-cutting category of levers which apply to more than one segment. The taxonomy maps a universe of nearly 130 policy instruments for which there are at least some examples globally for each of those segments. Annex 1 provides details.

For the FSPD, the Parsons and Barling (2021) segments were revised to provide more detail and a more comprehensive description of policy levers affecting some segments, based on the taxonomy adopted by FAPDA as well as literature and expert inputs. Some segments from the Parsons and Barling (2021) taxonomy such as food loss and waste were not included, because few policies fitting that category were identified. The resulting segments used by the FSPD are: agricultural inputs, farming, distribution and transport, trade, processing and manufacturing, retail, food service, final consumption, multiple and natural resource management. Table 1 lists the

policy levers that are included in each segment of the food system; definitions of each of the policy levers and further details are provided in Annex 2.

Table 1: Segments of the food system included in the FSPD taxonomy and policy lever included

Segment	Policy lever included
Inputs	Exemption, reduction or increase in tax on agricultural inputs; Fertiliser distribution; Fertiliser subsidies/vouchers; General input measures; Livestock and livestock feed distribution; Machinery support (subsidies or distribution); Market intervention: local input production/provision; Seed distribution; Seed subsidies/vouchers; Seed technology and quality assurance
Farming	Agricultural market intervention (eg. price, procurement, etc); Data, including national market information systems; Farm income or other unspecified agricultural tax; Knowledge - agricultural extension and training; Knowledge - agricultural research and technology; Other production support; Product certification; Production subsidy; Standards: food safety/ quality/ traceability; Support for agricultural insurance or risk management; Support for cooperatives; Support for farmer/ community markets; Support for finance and credit; Support to irrigation infrastructure; Support to productive assets; Tax or fee on agriculture, fisheries, forestry or hunting
Distribution and transport	Establishment or modification of food stock; Release of food stock; Rural roads and transport infrastructure
Trade	Common market/economic unions; Competition policy; Customs union; Export - other export promotion measures; Export - other export restrictions; Export ban; Export promotion - improved sanitary and phytosanitary standards; Export quota; Export subsidy; Export tax; Free or preferential trade agreement; Government procurement through imports; Import - antidumping duties, countervailing duties, etc; Import - non tariff barrier - sanitary and phytosanitary measures (sps); Import - non tariff barrier - technical barriers to trade; Import - other import restrictions; Import - tariff-rate quota; Import ban; Import quota; Import subsidy; Import tariff; Other trade-related measures Trade facilitation
Processing and manufacturing	Processing and post production facilities; Rules on composition/ reformulation
Retail	Price controls; rules on promotion/ advertising
Food service	Improving skills/training/knowledge; Planning; Procurement rules/ standards; Rules/ standards on provision
Final consumption	Beverage container policy; Breastfeeding promotion; Community projects; Dietary guidelines; Education; Food coupons; Food for work; In kind food transfer; Interventions to improve intake/absorption of micronutrients; Public information campaigns; School feeding; Soup kitchen and food pantries; Subsidy; Tax on sugar sweetened beverages; Tax on unhealthy foods; Tax or fee on ag, fish, for or hunting; VAT on food
Multiple	Collaboration; Food safety measures; Labelling; Other - governance/ institutions

Natural resource mgmt	Climate change mitigation and adaptation; Conservation and management of natural resources; Ecosystem and habitat protection; Emission rights; Land ownership, tenure and titling; Land policy; Renewable energy and energy efficiency; Water policies and regulations
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Parsons and Barling (2021) also provided a taxonomy of *types* of policy levers that describe the nature of the intervention. The types include: economic and financial (a heterogeneous category including taxes and subsidies on inputs, agricultural production and trade); certification and standards; direct food provision; governance and organization; information and communication; market intervention; regulations; technology and innovation; policy frameworks and non specified/ hybrid. The FSPD revised these categories slightly to better match the taxonomy used in used by the OECD in its producer support estimates (see OECD, 2016).

The resulting taxonomy of types of policy levers used by the FSPD was: producer subsidy, trade policy, regulations, consumer subsidy, information to consumers, tax on consumer, tax on producer and public goods. Table 2 shows how policies were categorized by type of policy lever. For instance, producer subsidies include numerous policies such as agricultural market interventions, fertilizer subsidies or support for irrigation infrastructure.

Table 2: Typology of levers in the FSPD taxonomy and policy lever included

Type of lever	Policies included
Producer subsidy	Agricultural market intervention (eg. price, procurement, etc); Climate change mitigation and adaptation; Conservation and management of natural resources; Data, including national market info system; Ecosystem and habitat protection; Establishment or modification of food stock; Exemption, reduction or increase in tax on agricultural inputs; Fertiliser distribution; Fertiliser subsidies/vouchers; General input measures; Improving skills/training/knowledge; Knowledge - agricultural extension and training; Knowledge – agricultural research and technology; Labelling; Livestock and livestock feed distribution; Machinery support (subsidies or distribution); Market intervention: local input production/provision; Other - governance/ institutions; Other production support; Product certification; Production subsidy; Renewable energy and energy efficiency; Seed distribution; Seed subsidies/vouchers; Seed tech and quality assurance; Standards: food safety/ quality/ traceability; Support for agricultural insurance or risk management; Support for cooperatives; Support for farmer/ community markets; Support for finance and credit; Support to irrigation infrastructure; Support to productive assets
Tax on producer	Emission rights; Farm income or other unspecified agricultural tax; Tax or fee on agriculture, fisheries, forestry or hunting
Consumer subsidy	Community projects; Food coupons; Food for work; In kind food transfer; Interventions to improve intake/absorption of micronutrients; Price controls; Release of food stock; School feeding; Soup kitchen and food pantries
Tax on consumer	Beverage container policy; Tax on sugar sweetened beverages; Tax on unhealthy foods; Tax on unhealthy foods; VAT on food

Information to consumers	Breastfeeding promotion; Dietary guidelines; Education; Public information campaigns
Trade policy	Common market/economic unions; Customs union; Other export promotion measures; Other export restrictions; Export ban; Export promotion - improved sanitary and phytosanitary standards; Export quota; Export subsidy; Export tax; Free or preferential trade agreement; Government procurement through imports; Import - antidumping duties, countervailing duties, etc; Import - non tariff barrier - sanitary phytosanitary measures (sps); Import - non tariff barrier - technical barriers to trade; Import - other import restrictions; Import - tariff-rate quota; Import ban; Import quota; Import subsidy; Import tariff; Other trade-related measures; Trade facilitation
Regulations	Competition policy; Dietary guidelines; Food safety measures; Land ownership, tenure and titling; Land policy; Planning; Procurement rules/ standards; Rules on composition/ reformulation; Rules on promotion/ advertising; Rules/ standards on provision; Water policies and regulations
Public goods	Processing and post production facilities; Rural roads and transport infrastructure

The fourth step was to identify source databases for inclusion in the FSPD. The taxonomy was used as an organizing framework to consolidate three existing databases of policies: the Food and Agriculture Policy Decision Analysis (FAPDA) database (FAO, 2021), the NOURISHING database (World Cancer Research Fund International, 2021) and the Policy Instruments for the Environment (PINE) database (OECD, 2021b). The source databases were chosen based on expert advice on data quality and reliability as well as the need to ensure global country coverage as well as coverage of government policies (eg. economic and financial decisions or regulations) throughout the food system (from agricultural inputs and farming through food processing and manufacturing to final consumption) that affect environmental sustainability, inclusion and dietary health.

The three databases vary in terms of country coverage, segments of the food system covered, types of policies and means of data collection. For details see the first section of Appendix 1 on Source Databases Used for the Food System Policy Database.

Additional databases were also considered, but not included because they did not offer the country and/ or policy coverage found in FAPDA, Nourishing and PINE. Some were identified as worthwhile to consider in the future; these are: the Global Database on the Implementation of Nutrition Action (GINA) (WHO, 2021); the Climate Policy Database (New Climate Institute, 2021) and the Agricultural Market Information System (AMIS) (OECD, 2021b). The GINA database would make it possible for the FSPD to have more comprehensive coverage of the final consumption and perhaps other segments. The Climate Policy Database might be useful for supplementing information on natural resource management related policies in the farming sector, however overlap with policies introduced from other databases would need to be addressed. The AMIS database might be useful for supplementing information on trade policies as well as production subsidies in the FSEC policy database, however there would be significant overlap that would require identification that is beyond the scope of work for version 1.0 of the FSPD. Further information may be found in section two of Appendix 1.

3. The Food System Policy Database

This section of the paper describes the methodology followed in building the database, followed by a description of the database. It concludes with a consideration of the uses for the database as well as its limitations.

3.1 Methodology for building the database

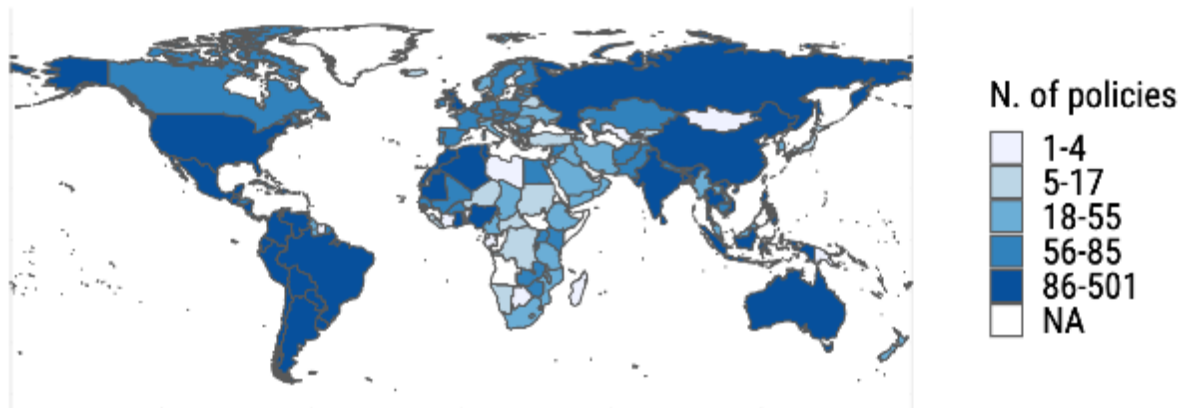
Building the FSPD involved multiple steps which are described briefly here (for full details see Section 3 of Appendix 1). The first step was to identify the sources of information; these were the Nourishing, PINE, FAPDA policy and FAPDA framework databases. Next, exclusion criteria were applied so that any policies unrelated to food and agriculture as well as decisions made by corporations rather than governments were removed. Third, policies from FAPDA at the EU wide level were applied to 28 EU member states. Fourth, any policies mentioning COVID-19 were identified and a dummy variable created to indicate whether a policy description included the acronym COVID. Fifth, the databases were merged. Sixth, the policies and frameworks were then assigned to food system levers. Seventh, levers were assigned to segments, and a typology of types of policy levers. Lastly, variables were created to indicate for which policies the policy description contained words indicating a stated objectives of improving environmental sustainability, inclusion or dietary health.

3.2 Description of the resulting database

The FSPD contains nearly 11,900 policies and 3,700 frameworks related to the agrifood system with wide geographical coverage. Policies refer to decisions made by government (such as laws or presidential instructions) and frameworks refer to plans by government that include several policy decisions designed to achieve a broad goal such as improving rural development or achieving food security.

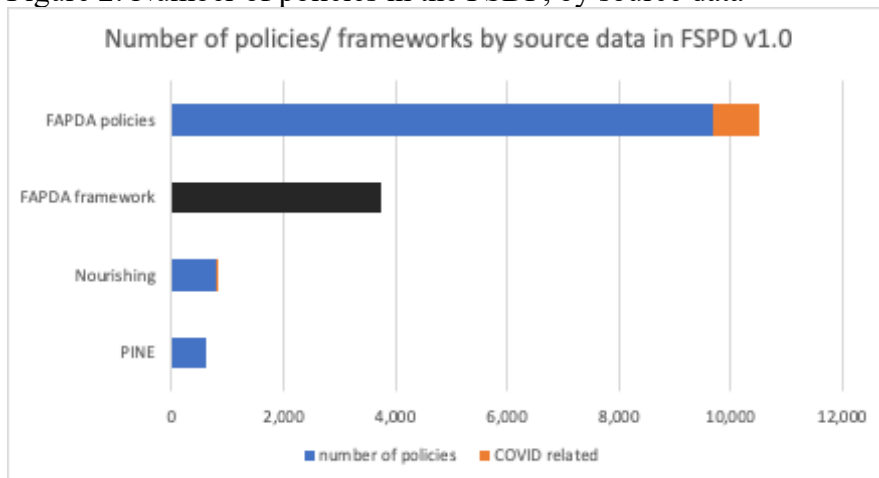
The map in Figure 1 shows the number of policies in each of the countries of the database. Half of the countries have more than 42 policies reported. For many countries in Sub-Saharan Africa only a few policies have been reported.

Figure 1: Number of policies in the FSPD, by country



This article focuses on identifying patterns in about 11,000 policies. It is limited to policy decisions (shown in blue in Figure 2) and does not include analysis of the frameworks (shown in black in Figure 2) or policies related to COVID-19 (shown in orange in Figure 2) that are included in the database.

Figure 2: Number of policies in the FSDP, by source data



4. Key patterns in food system policies

Exploring existing food system policies highlights a number of common patterns, and some interesting differences across categories of countries. The following sections provide details of these patterns, firstly by segment, then by type of policy and finally by stated policy objective.

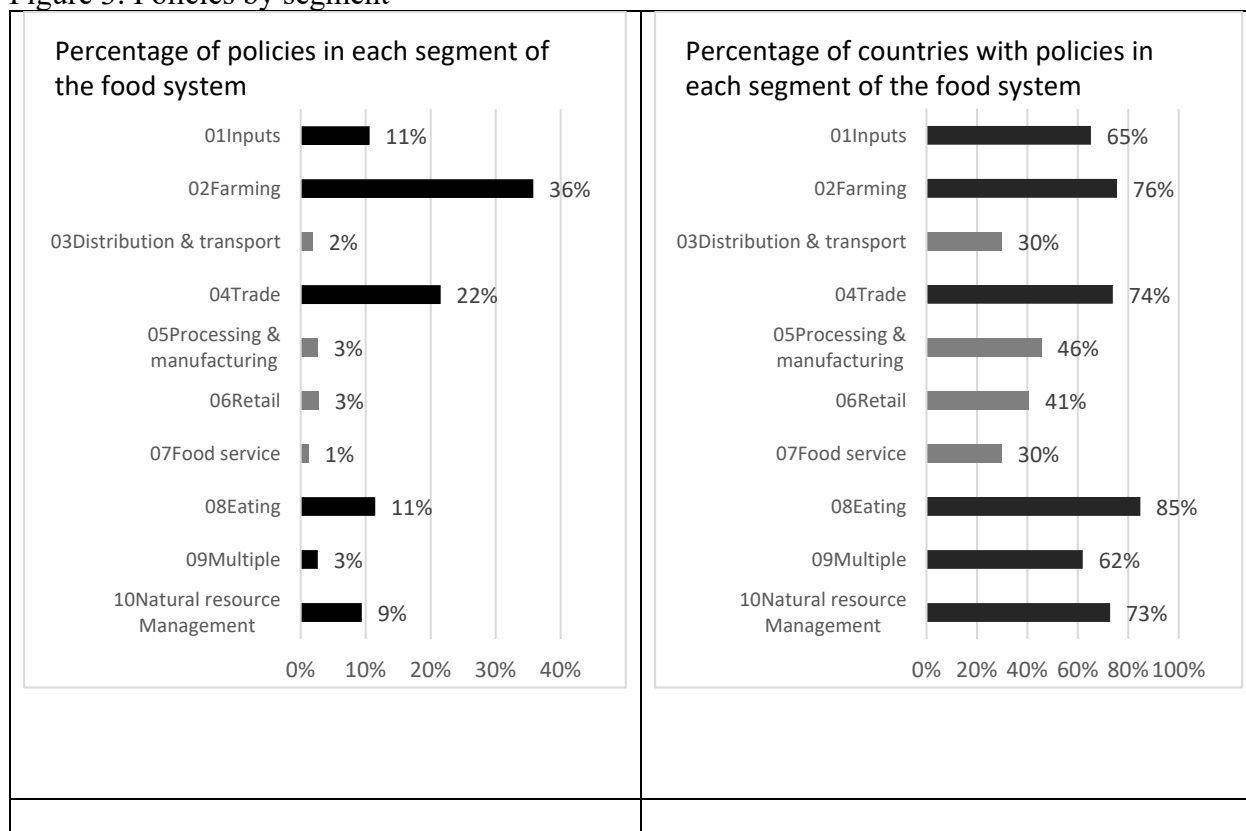
4.1 Differences by segment of the food system

This section describes policies as related to the segments of the food value chain that they impact using a taxonomy based largely on that developed by Parsons and Barling (2021) and described in Section 2 of this paper. The value chain runs from inputs to agriculture to farming, distribution and transport, trade, processing and manufacturing, retail, food service and up through the final consumption segment. Final consumption includes policy levers which are aimed directly at changing consumer behavior. An example would be dietary guidelines. There is a category for policies that impact multiple segments of the food value chain; these include for example food safety measures that might be implemented at both the farming and processing level. There is also a category for policies related to natural resource management, some of which are oriented toward agriculture only and others which aim to influence multiple sectors including agriculture.

Figure 3a on the left shows the share of policies in the FSEC policy database that fall in a given segment. Figure 3b shows the share of countries with policies in a given segment. For example, farming related policies, the 2nd bar from the top, are the most numerous. We see in the chart on the left that farming related policies represent 36% of all policies in the database. In the chart on the right we see that they have been established by 76% of the countries covered by the database. Only a small share of policies in the database are aimed at segments toward the middle of the value chain – these are depicted by the grey bars which show that only 1 – 3% of policies are in the distribution and transport, processing and manufacturing, retail or food service segment. As shown in the figure on the right, policies in those segments are in place in only about 30 to 45% of the countries in the database.

We conclude that the segments that are least regulated by government policies are toward the middle of the value chain. This would suggest that government places fewer food system specific constraints on and provides less support for private sector actors involved in distribution and transport, processing and manufacturing, retail and food service than it does for actors in the input sector, farming, trade and final consumption. To put this succinctly, our first finding is that there are fewer food system policies relevant to segments toward the middle of the food value chain.

Figure 3: Policies by segment



Note: The results in these figures are based on analysis of all 11,072 policies and 184 countries in the FSPD.

Table 3 shows the two most common levers for each segment of the food system; here one might consider two segments of interest, such as inputs to agriculture and final consumption. Regarding inputs to agriculture (shown in italics in the table) one finds that the two most widespread policies (ie they are found in a larger share of countries than are other levers in the agricultural input segment) are: distribution of seeds (found in 23% of countries) and machinery (found in 27% of countries). Other policies included under the input segment are: fertilizer subsidies and vouchers, livestock and livestock feed distribution as well as local input procurement. Considering the final consumption segment, the two most widespread policies are dietary guidelines (found in 44% of countries) and school feeding (found in 42% of countries). Other policies included in final consumption are: taxes on sugar sweetened beverages, public information campaigns and food assistance policies other than school feeding.

Table 3: Top two most widespread policy levers in each segment of the food system (share of countries with a given policy lever)

01 inputs	04 trade	07 food service
Machinery support (subsidies or distribution) (27%)	Import tariff (53%)	Rules/ standards on provision (29%)
Seed distribution (23%)	Import ban (36%)	Improving skills/ training knowledge (3%)
02 farming	05 processing & manufacturing	08 final consumption
Agricultural market intervention (eg. price, procurement, etc) (53%)	Rules on composition/ reformulation (34%)	Dietary guidelines (44%)
Standards: food safety/ quality/ traceability (47%)	Processing and post production facilities (25%)	School feeding (42%)
03 distribution & transport	06 retail	10 Natural resource management
Establishment or modification of food stock (24%)	Price controls (28%)	Climate change mitigation adaptation (33%)
Rural roads and transport infrastructure (14%)	Rules on promotion/ advertising (15%)	Ecosystem and habitat protection (33%)

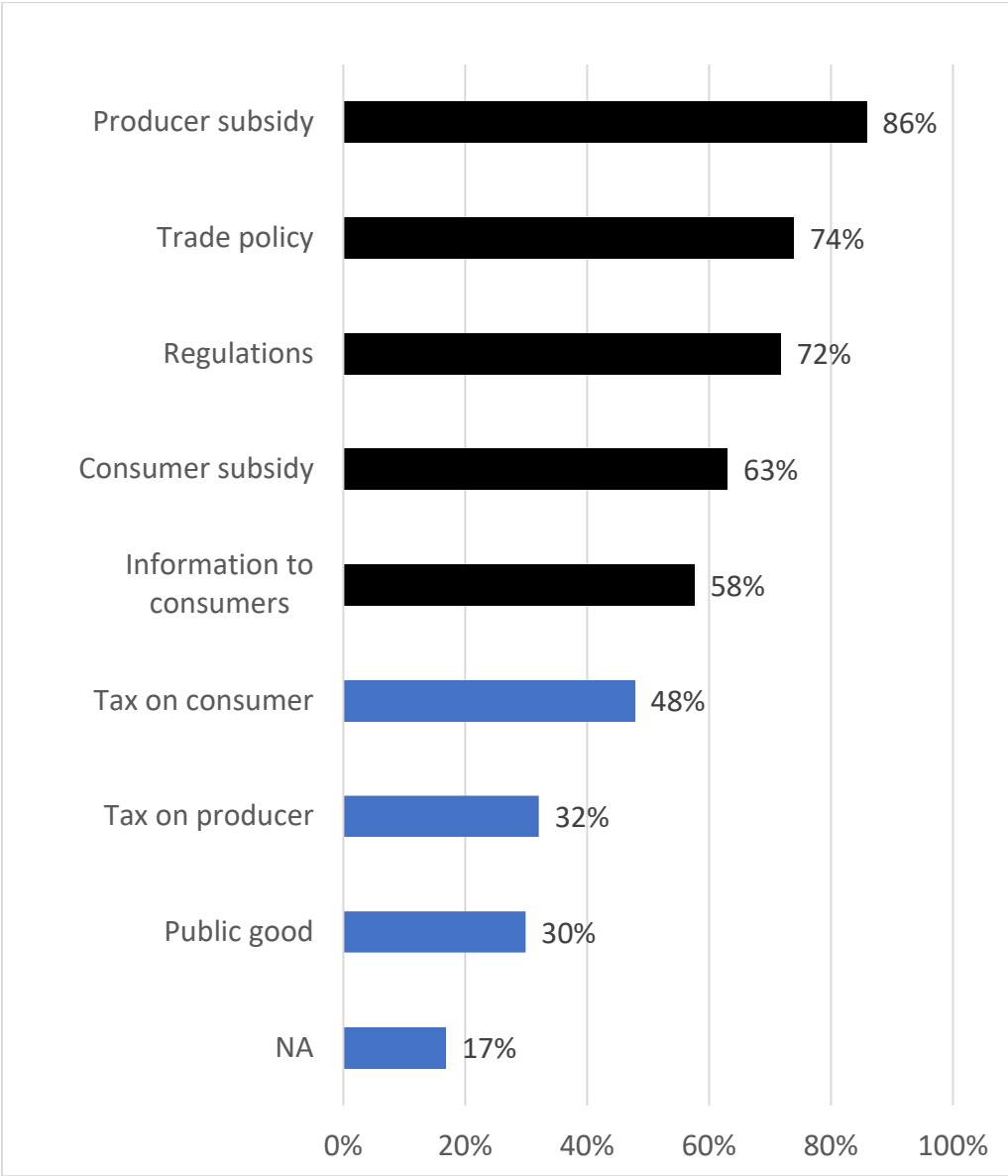
Note: For definitions of each of the levers see Annex 2.

4.2 Policies by type of lever

Policies can also be grouped using a taxonomy of types of levers. Parsons and Barling (2021) have developed one such taxonomy which was simplified for use in this article. The FSPD taxonomy groups policies according to whether they are policies to provide information to consumers, consumer subsidies, producer subsidies, taxes on the consumer, taxes on the producer, public goods, regulations or trade measures. It classifies education about healthy diets, public information campaigns on healthy diets and dietary guidelines as policies to inform consumers. For producer subsidies the taxonomy corresponds closely to the producer support estimates (PSE) as defined by the OECD (2016) and used in work such as a recent study on repurposing agricultural subsidies (FAO, UNDP and UNEP, 2021). Annex 2 provides full details on which lever is classified as what part of the taxonomy.

At the global level producer subsidies are by far the most widespread policies (86% of countries have them). These are represented by the black bar at the top of Figure 4. They include *inter alia* inputs provided to farmers, price support measures, agricultural extension and research as well as finance and insurance services for farmers (details are in Annex 2). Subsidies (for both producers and consumers) are more widespread than taxes with subsidies being present in a majority of countries and taxes only in a minority of countries. Furthermore, there are numerous other kinds of policies (beyond subsidies and taxes) that a majority of countries use; these are: trade policies, regulations and policies to inform consumers.

Figure 4: Share of countries with a certain type of policy lever, using the policy lever taxonomy

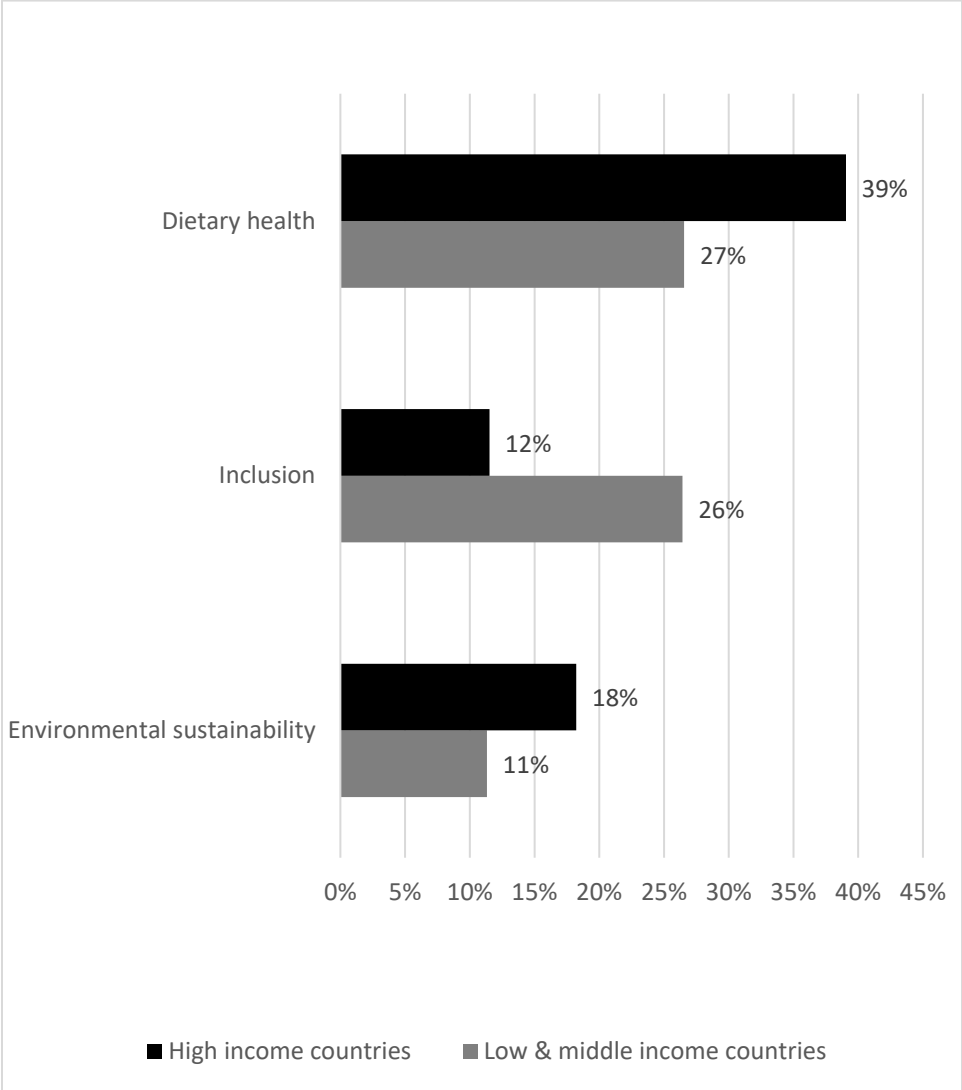


Note: The results in these figures are based on analysis of all 11,072 policies and 184 countries in the FSPD.

4.3 Stated policy objectives

A word search was performed to identify objectives stated in the policy description or implied by the policy type. Often food security³ is thought of as the key objective related to the food system. This database goes beyond simply looking at food security and considers improved dietary health as well as more inclusive or more environmentally sustainable food systems (for details on how the objective variables were constructed see Appendix 1 part 3). As shown in Figure 5, in high income countries the largest number of policies state objectives related to dietary health and environmental sustainability, with a smaller share of policies stating inclusion as an objective. In low- and middle-income countries a large share of policies state objectives related to dietary health and inclusion, with a smaller share of policies stating objectives related to environmental sustainability.

Figure 5: Share of policies stating a given objective, by income group



³ “...when all people at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (World Food Summit, 1996).

Note: The results in these figures are based on analysis of all 11,072 policies and 184 countries in the FSPD.

More specifically, Table 4 shows, by stated policy objective, the five policy levers most frequently stating that given policy objective and it does so by country income group. As for dietary health, dietary guidelines are a key policy for countries regardless of income group. In high income countries other policies that frequently state dietary health objectives include regulations such as labelling; rules and standards on provision; and standards on food safety, for example. In low- and middle-income countries, rather than regulations for encouraging healthier diets, producer subsidies in the form of support for finance and credit and agricultural market interventions are used as well as public information campaigns. This may reflect the relative challenge of enforcing regulations in lower- and middle-income countries. In terms of policies stating environmental objectives, in high income countries often these are energy related policies, production subsidies or standards regarding the way food is produced. In low- and middle-income countries policies often stating environmental objectives include climate change mitigation and adaptation policies as well as land policies.

Finally, both school feeding and in-kind food transfers are among the most frequently listed inclusion related policies in countries at all income levels. Other policies that are clearly oriented toward inclusion are production support, agricultural insurance support and import tariffs in high income countries; in low- and middle-income countries inclusion is a stated objective in many policies supporting farmers with finance and credit or agricultural extension and training or support to the population more generally via modification of food stocks.

Table 4: Five policies most frequently stating a given objective, by country income group

Stated Objective:	High income countries	Low and middle income countries
Dietary health	<ul style="list-style-type: none"> Labelling Rules/ standards on provision Dietary guidelines Standards: food safety/ quality/ traceability General input measures 	<ul style="list-style-type: none"> Dietary guidelines General input measures Support for finance and credit Agricultural market intervention (eg. price, procurement, etc) Public information campaigns
Environmental	<ul style="list-style-type: none"> Ecosystem and habitat protection Renewable energy and energy efficiency Other production support Standards: food safety/ quality/ traceability Production subsidy 	<ul style="list-style-type: none"> Climate change mitigation & adaptation Land policy Land ownership, tenure and titling Conservation and Management of natural resources Ecosystem and habitat protection
Inclusion	<ul style="list-style-type: none"> School feeding In kind food transfer Other production support Support for agricultural insurance Import tariff 	<ul style="list-style-type: none"> School feeding In kind food transfer Support for finance and credit Establishment or modification of food stock Agricultural extension and training

5. Conclusions

This article described the Food System Policy Database version 1.0 (FSPD v1.0), a new resource, which is a purpose-built database that compiles available information on government policies impacting the food system. For ease of use and interpretation the data are harmonized and classified in different ways. It describes which policies are adopted by what countries throughout the world and reveals a heterogeneity in terms of policies adopted. It highlights patterns across and within different groups of countries and across types of policies. Such patterns result both from the revealed preferences of policymakers as well as gaps in information gathered by international organizations. In this initial form, the FSPD v1.0 provides some interesting insights that can inform the design of policy agendas for the food system transformation.

An overarching point emerging from this work is the great heterogeneity in food system policies adopted around the world. Some broad patterns do, however, emerge; they include the following:

- Most food system policies are concentrated at the producer end or at the consumer end of food systems. The segments that are least regulated by government policies are toward the middle of the value chain.
- By far the most widespread type of policy levers are producer subsidies. Producer and consumer subsidies are present in a majority of countries while taxes are present in a minority of countries. Countries nevertheless rely on a variety of tools, with a majority of countries using trade policies, regulations and policies to inform consumers.
- Policies stating objectives related to dietary health or environmental sustainability are most common in the high-income country category, with policies stating inclusion as an objective being less common. In the category of low- and middle-income countries numerous policies state objectives related to dietary health and inclusion, with a smaller share of policies stating objectives related to environmental sustainability.

Policy Implications

Unsurprisingly, given its focus, the development of a Food Systems Policy Database, and the subsequent analysis of the data, have important implications for policy and for policy research. We highlight three key implications here, and others are identified throughout the paper.

First, the FSPD helps address the fragmentation of food system relevant policies across multiple ministries. This fragmentation means it can be difficult, if not impossible, for policy makers tasked with food system reform to have a clear overview/ baseline of existing policies impacting the food system. Such an overview is crucial for the pursuit of a systems approach to transforming food systems, which requires the coordination and coherence of a wide-ranging portfolio of policy activities related to food (Parsons and Barling, 2021). The FSPD represents a first step in the process of creating country-level policy profiles which could serve as the basis for comprehensive audits of relevant policies. As noted in the paper, having a picture of the policies in place enables

policy makers to begin to answer a range of pressing questions about the approach to food systems transformation, including: how does our portfolio compare to other country approaches; how coherent is our policy mix with our objectives; which objectives are we tackling with which levers; where are there gaps; and how coherent is the mix of policies being delivered.

Second, the FSPD identifies a varying density of policies at different segments of the food chain, with segments toward the middle of the food chain least regulated, and most interventions directed to the producer or consumer ends of the chain. One implication of this differential in policy density is the need for policymakers to explicitly assess their coverage of the middle of the chain to understand any particular (negative) impacts on the food system. For example, there is widespread debate about the distributional implications of market concentration in the food system, and in particular the concentration of power in the middle segments of the chain (processing and manufacturing, retail and food services) (Deconinck, 2021). An inverse relationship between market concentration and policy density suggests the need to better understand and address how concentration is linked to negative food system outcomes around poverty and equity, and the requirements for policies which may help to ensure more inclusive value chains.

Finally, the dataset shows that the most widespread type of policy levers for which we have information are producer subsidies. The pervasiveness of agricultural subsidies suggests that recent calls to repurpose agricultural subsidies (FAO, UNDP and UNEP, 2021) have a large potential to impact the food system in countries throughout the world.

Limitations of the database

This exercise, the first of its kind, has clear limitations, due to the characteristics of the data available. As this database consolidates existing databases of policies that have been approved in their countries' legislative processes, it does not provide information on implementation or effectiveness of those policies. Policies in the database might also have expired, however the example of the legislative framework for the public distribution system in India being shaped in the 1950s shows how long term the effects of some policies might be. Valuable as it would be to have information on the implementation, effectiveness or current status of policies, we are not aware of any existing database that would provide such information.

Similarly, more detailed information on implementation arrangements could strengthen the analysis of whether policies are part of “integrated strategies” or not. Integrated strategies can help address the synergies and trade-offs which characterize the pursuit of different objectives. To analyze the integrated nature of different interventions, it would be useful to know whether policies are jointly implemented by different agencies (for example, adopting common targeting criteria) or by a single entity. More primary research on analyzing the distinguishing features of integrated interventions could help guide the identification of suitable markers to be added to the existing information in the datasets.

Some limitations also relate to policy coverage. This exercise is conceived to capture food system specific policies. It does not cover however general policies that impact the agrifood system as

well as other sectors of the economy; these would include, for example, labour regulations or general regulations on transport which might apply also to food systems.

Further, while by combining sources we obtain broad coverage of policies, validation exercises have highlighted some omissions. For instance, although some countries have established soup kitchens that policy is not listed for those countries. Such omissions are not systematic, but their identification is a priority for further iterations of this database.

Concerning EU policies, the FAPDA database records them only at European level. As a first approximation, all EU policies have been attributed to Member States. Exception and delays in the application of directives or in the translation of regulations into national law are therefore currently omitted by the database, but may be incorporated in future updates.

Future iterations could create state, city and local level variables. For example, in Canada and Nigeria about 65% of policies are made and/ or implemented at the state level. In the United States nearly 80% of policies mention one or more states. Given agricultural policies are implemented at the state level in some countries and national level in others it would seem important to distinguish this feature in order to have a more comprehensive description of each of the numerous policy entries.

Finally, decisions made by corporations are missing largely due to the lack of information on them. Expanding beyond the limited focus on government decisions to include corporate decisions as well would afford a greater understanding of the decisions that affect the food system.

It is clear that these limitations could be addressed by extending the scope of the database. In order to address these limitations future iterations of the database might do the following:

- Include information on the implementation or current status of policies

- Reflect the results of systematic reviews or expert consultations on the effectiveness of different kinds of policies to derive a list of preferred policies to compare systematically with the list of policies currently adopted.

- Add information on relevant policies from other sectors of the economy; these would include, for example, labour regulations or general regulations on transport which might apply also to food systems.

- Incorporate information on how countries have or have not implemented EU wide policies. Create a variable describing the level at which a policy has been designed, whether state, city or local level.

- Include corporate policies, depending on the availability of comprehensive sources.

Future iterations could also incorporate a country-based validation exercise to check the data against the policy on the ground. Policies could be removed if irrelevant or a variable created to indicate they are expired. Validation would also mean including policies that are missing from

certain countries. To do this, it would be necessary to merge additional databases with the FSPD as well as consult country level experts and literature.

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2. Appendix 1: Additional information on the policy database

1. Source databases used for the Food System Policy Database

The three source databases for the FSPD vary in many ways, most notably in terms of country and policy coverage. Such differences are described in the text that follows as well as in Table 1.

The FAPDA database is a collection of policy decisions made by government (such as laws or presidential instructions) and frameworks (plans by government that include several policy decisions designed to achieve a broad goal such as improving rural development or achieving food security). FAPDA policy decisions and frameworks relate to agriculture and food for about 180 countries and 7 regional groupings, including the European Union (FAO, 2021). There are more than 120 types of policy decisions included and the number of policy decisions totals more than 13,000. FAPDA contains policy decisions that directly impact each segment of the food system with the exception of food service. There are about 3,800 frameworks which are grouped according to 25 issues that they address which include agricultural development, natural resource related issues, socio-economic development and trade. For this paper we focus on analysis of the policy decisions only given they allow us to consider the more specific tools used to transform the food system. FAO identifies government policy decisions and frameworks through submissions from FAO country and regional offices as well as ongoing review of websites, donor reports and OECD data and official statements including laws, bills, decrees, ministerial circulars or presidential instructions (FAO, 2015).

The NOURISHING database covers policies meant to promote healthy diets and reduce obesity. It includes nearly 850 policies implemented by 135 different countries. Most high-income countries are covered as well as several middle income countries in Latin America and the Caribbean as well as East Asia and the Pacific; there is information on only a few low-income countries as well as only a few countries in Sub-Saharan Africa and South Asia. There are 17 types of policy decisions and nearly 800 policy decisions included. Policies included are related to each segment of the food system with the exception of inputs to agriculture, farming and distribution and transport. Policies are identified through an ongoing global scan which considers sources such as newsletters, listserves, policy databases, websites and media. A more comprehensive scan is undertaken for European countries whereby keyword searches are performed on national legislative databases and keyword searches are also performed on ministry websites. Results are verified by in country experts.

The PINE database includes 35,000 policy decisions meant to improve environmental sustainability and natural resource management in the agrifood system as well as other sectors of the economy. For the FSPD we considered 650 of those policies that are related to food systems (policies that impact agriculture, food trade, food processing, retail, food service and final consumption). These are found in 57 countries, including most OECD member states and some other countries, many of which are classified as middle income (OECD, 2021a). There is little coverage of Sub-Saharan Africa and no policies in South Asia are covered. Policies are grouped according to whether they are taxes, fees, charges, tradable permits, deposit refund systems, subsidies or voluntary approaches.

Table 1: Characteristics of source databases included in the FSPD

	Database:			
	Food and Agriculture Policy Decision Analysis (FAPDA)		NOURISHING	Policy Instruments for the Environment (PINE)
	FAPDA policy decision database	FAPDA framework database		
Broad topic covered	Food and agricultural production; Natural resource management; Trade; Consumer policies, especially food assistance	25 issues including food and agriculture specific issues as well as more general natural resource related issues, socio-economic development and trade)	Policies to improve dietary health at the consumer end as well as production and manufacturing	Policies related to natural resource management throughout the economy
Means of data collection	(1) submissions from FAO country and regional offices (2) ongoing review of websites (3) donor reports (4) OECD data (5) review of official statements (eg laws, bills, decrees, ministerial circulars or presidential instructions)	(1) submissions from FAO country and regional offices (2) ongoing review of websites (3) donor reports (4) review of official statements on policy frameworks	Ongoing global scan of sources including newsletters, policy databases, websites, and media. For European countries the scan is more comprehensive; keyword searches are performed on national legislative databases and ministry websites. Results are verified by in country experts.	A search for relevant policies is performed on newsletters, listserves, DCD documents, policy databases, websites, NGOs and media for all countries in the world. For European countries a more detailed scan is performed; it focuses on national government websites as well as country specific media and national legislative databases. Country experts validate the findings.
Number of countries and regional organizations included	159 countries	181 countries	135 countries	54 countries
Income level of countries covered	All income levels	All income levels	Medium and high income All regions except South Asia and Sub-Saharan Africa	Mostly medium and high income
Regions covered	All regions	All regions	All regions except South Asia and Sub-Saharan Africa	All regions except South Asia
Number of types of policy levers/ frameworks	120	25	17	8
Number of policies/ frameworks	>13,000	~3,800	785	~600
Segments of the food system covered	Inputs, Farming, Distribution and Transport, Trade, Processing and Manufacturing, Retail and Eating	NA	Trade, Processing and Manufacturing, Retail, Food Service and Eating.	Inputs, Farming, Eating and Natural Resource Management
Segments missing	Food service	NA	Inputs, Farming and Distribution and Transport	Distribution and Transport, Trade, Processing and Manufacturing, Retail and Food Service
Type of policy instruments covered (based on taxonomy)	All types	NA	Producer subsidies, Trade policies, Regulations, Consumer subsidies, Behavioral policies, Tax on consumers.	Producer subsidies, Regulations, Tax on consumers, Tax on producers.
Type of policy instruments missing	None	NA	Tax on producers and public goods.	Trade policies, Consumer subsidies, Behavioral policies and Public Goods

2. Databases to consider in the future for inclusion in the FSPD

Three additional databases were considered, but ultimately not included in the FSPD; they could be considered in the future. The databases vary in terms of country and policy coverage. Such differences are described in the text that follows as well as in Table 2.

The Global Database on the Implementation of Nutrition Action (GINA) reports on nearly 7000 actions that aim to improve nutritional outcomes in 195 countries throughout the world (WHO, 2021). For those actions reporting a start date the year ranges from 1930 to 2017. Many actions are classified according to a specific type of nutritional change that is targeted (eg. iron supplementation, multiple micronutrient supplementation or promotion of fruit and vegetable intake) rather than the policy lever used to effect such change. Reclassifying such policies according to the taxonomy used by the FSEC policy database (segment of the food system and food policy lever) would be a worthwhile, though non-trivial exercise.

The Climate Policy Database reports on about 400 actions and some plans (eg. Nationally Determined Contributions (NDCs)) intended for the mitigation of the effects of climate change (New Climate Institute, 2021). The database includes information for all sectors of the economy and can be filtered for policies related to agriculture and forestry; policies are reported for seventy-nine countries and the European Union. Many of the food system related policies considered relate to reducing the energy used by or promoting carbon sequestration by the agricultural sector; others aim to improve forestry management.

The Agricultural Market Information System (AMIS) policy database is an extensive database that includes information on domestic and trade related policies related to four agricultural commodities in 27 countries as well as the European Union as a whole (OECD, 2021). Among the most numerous policies include direct payment support to farmers, export subsidies, import tariffs and tariff quotas. At the time of writing this paper, the database was being updated and therefore not available for use.

Table 2: Characteristics of databases to consider in the future for inclusion in the FSPD

	Global Database on the Implementation of Nutrition Action (GINA)	The Climate Policy Database	The Agricultural Market Information System (AMIS)
Organization responsible	WHO	New Climate Institute	OECD
Broad topic covered	Healthy diets	Agricultural and other policies related to climate change	Trade and agricultural production subsidies related to four agricultural commodities
Number of countries and regional organizations included	195	79 countries and the European Union	27 countries and the European Union
Number of policies/frameworks	7,000	400	Under revision
Reason not included	Most policies are classified by type of dietary health problem being addressed rather than the type of policy	Overlap would be significant	Limited in terms of commodity coverage and overlap may be significant

3. Steps involved in building the FSPD

A seven-step process was used to build the FSEC policy database; this is depicted in Figure 1 below. The first step was to identify the sources of information; these were the Nourishing, PINE, FAPDA policy and FAPDA framework databases.

Second, exclusion criteria were applied so that any policies unrelated to food and agriculture as well as decisions made by corporations rather than governments were removed. For FAPDA this meant removing policies related to taxes not specific to food or agriculture (eg. general income tax), social protection policies involving transfers of cash, policies related to employment and salaries and macroeconomic policies. As a result about 14,000 policies from FAPDA were assigned to a particular segment of the food system. The segments of the food system are: inputs, farming, distribution and transport, trade, processing and manufacturing, retail, food service, eating, multiple and natural resource related. and classified according to lever as described in the taxonomy presented in Annex 2. For the NOURISHING database the majority of policies were easily identified as fitting a particular segment and lever and classified accordingly. Policies for which the segment and lever were unclear were dropped from the database; as a result about 780 out of the 850 policies in the database were added to the FSEC database. The NOURISHING database contained only a very general description of each policy and information on the timeframe of only a few policies. The PINE database covered all sectors of the economy and the number of policy levers in the original dataset totaled nearly 35,000. A keyword search was therefore performed to identify which policies were relevant to food and agriculture; once those policies were identified they were assigned to the relevant segment and classified according to policy lever; this added about 600 policies to the database.

Third, policies for European countries were treated differently by the various databases; FAPDA reports 47 EU wide regulations and directives, while policies are reported at the EU country level in the PINE and Nourishing databases. In order to harmonize the treatment of European countries by each of the three databases and erring on the side of inclusion, each of the 47 EU wide policies were assigned to the 28 countries that were member states during the more recent time frame covered by the databases. Only policies established by national governments or subnational entities (e.g., cities, regions, counties) were included; policies introduced by supranational entities other than the European Union (e.g., Southern Common Market, Andean Community) were excluded.

Fourth, some policies included in the FAPDA and NOURISHING data mention COVID-19; they were flagged in the database and a dummy variable created. The COVID-19 related policies were not included in the analysis described in this paper since they are more of a short term effort in response to an emergency that is unique and worthy of separate analysis.

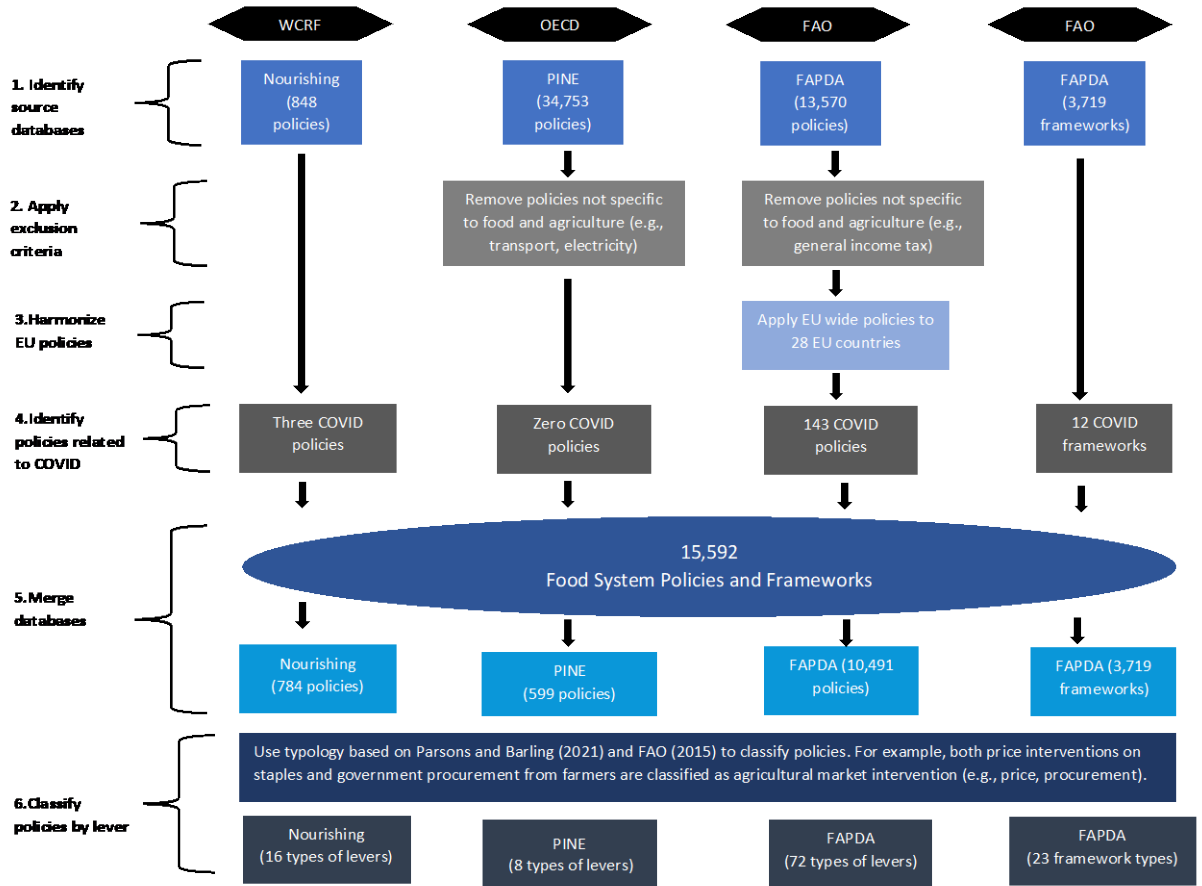
Fifth, the information from FAPDA, NOURISHING and PINE was merged leading to a database of more than 15,500 policies. Sixth, the policies and frameworks were then classified by type of food system lever. The classification is a simplification of that described in the 'Transformation Toolbox' taxonomy developed by Parsons and Barling (2021). The FSPD taxonomy groups policies according to whether they are information to consumers, consumer subsidies, producer subsidies, taxes on the consumer, taxes on the producer, public goods, regulations or trade measures (see Annex 2 for details on which lever is classified as what part of the taxonomy).

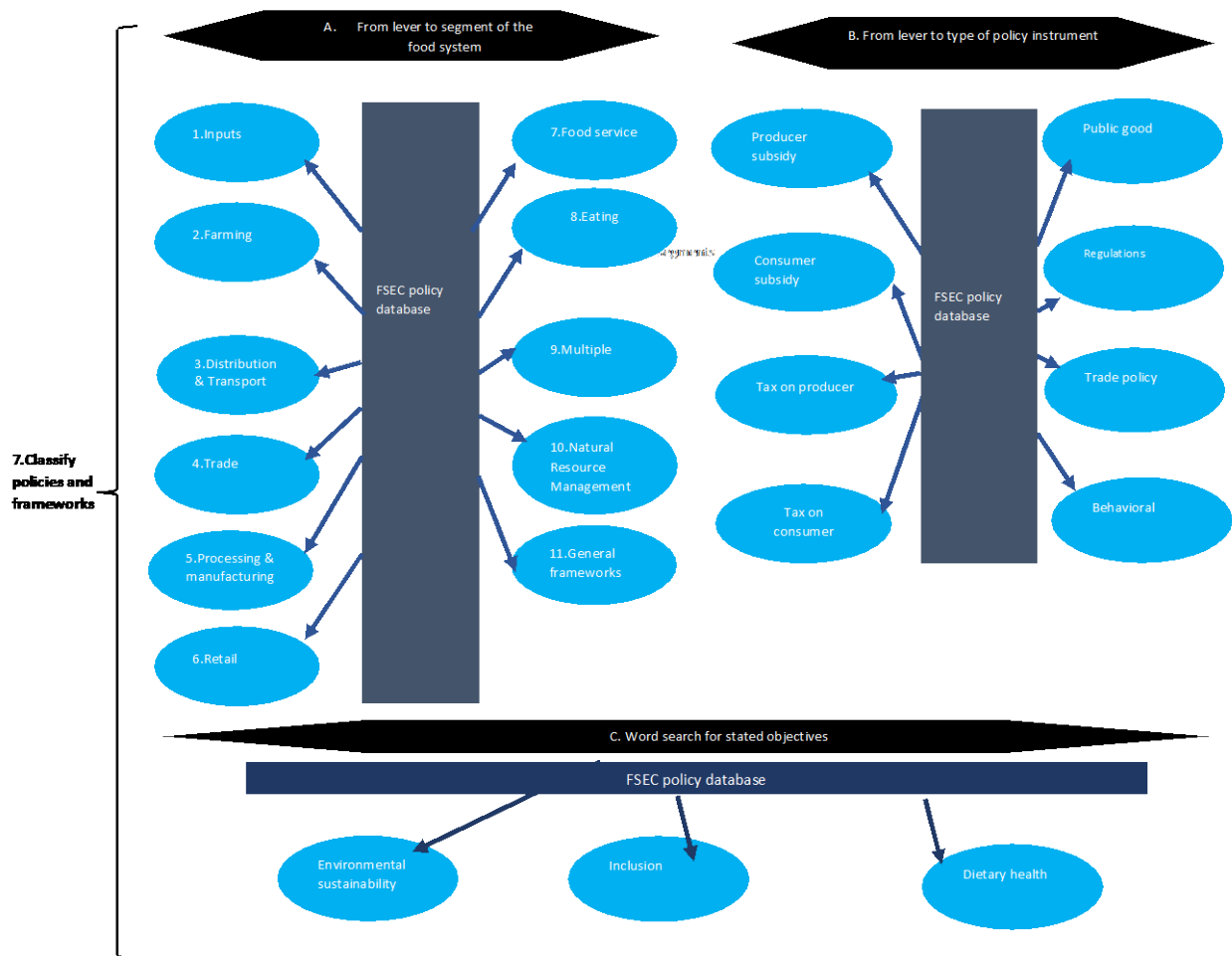
Seventh, variables were created to describe the food system segment affected by a lever, the type of policy instrument represented by a given lever and the objectives stated by a given policy. Annex 2 shows how each lever is classified in terms of the segment and type of policy. More specifically, policies coded 2112 in FAPDA are described as “Fertilizer distribution” and they were assigned to the Inputs segment of the FSDP, and the type of tool is economic or financial (subsidy). Full details on the rules used to classify FAPDA policies as policy levers in the FSPD database are shown in Annex 3. Regarding the FAPDA framework database, frameworks were likewise assigned to segments as applicable; see Annex 4 for details. Rules for assigning policies in the NOURISHING database to segments and levers are shown in Annex 5. Finally, a word search (as shown in Annex 6) was performed on variables in the PINE database in order to classify them by segment, lever and type of policy.

Three dummy variables were created to indicate where a stated objective of a policy aligned with one of the 3 FSEC objectives (improvements in environmental sustainability, inclusion and/ or dietary health). The objectives are not mutually exclusive; that is, one policy could satisfy anywhere from zero to three of the objectives. For the dummy variable on environmental sustainability we performed a word search in English, Spanish and French for climate change, environment, greenhouse gas, CO₂, deforestation, emissions, sustainable (excluding sustainable development goal), global warming, conservation of natur*, protection of natur*, ecosystem and renewable energy*). Some other terms were attempted, but yielded no results. For inclusion a similar word search was performed using the key words poor (excluding poor health and poor diet), low income, low-income, targeted, livelihood, smallholder and vulnerable. Variables from the FAPDA database that describe beneficiaries as well as a variable indicating a policy was targeted were also used. Finally, food assistance (eg. food for work and school feeding) and food stock policies were marked as inclusive.

For dietary health policies a dummy variable equaling one was created for any policies that are typically associated with an effort to improve diets. Many of the policies came from the NOURISHING database and they included: dietary guidelines, labelling, rules on composition/ reformulation, public information campaigns, taxes on SSB and unhealthy foods. We also performed a word search in English, French and Spanish on the following terms: vegetable, fruit, diet, nutrient, nutrition, healthy food, junk food, obese, malnutrition, iron and vitamin. Any policies that contained any of those words were also considered to have improved dietary health as a stated objective.

Figure 1: Seven Step Process to Build the Food System Policy Database





Key variables in the database are shown in Table 3.

Table 3: Definitions of key variables included in the FSEC policy database

Variable	Definition
Country	The country or regional group to which the policy applies (there are 192 countries and eight regional groups).
Segment	Refers to 10 food system segments which include inputs, farming transport and distribution, trade, processing and manufacturing, retail, food service, eating, multiple, natural resource management and framework policies. The multiple category includes levers that clearly impact on multiple segments of the food system. The natural resource management category includes some policies related to the management of natural resources for farming only as well as some policies that impact multiple sectors of the economy not just farming.
Lever	This refers to policy levers and frameworks; the policies total about 135. They include, for example, and agricultural input subsidies; taxes on unhealthy foods; dietary guidelines and rules on natural resource management in farming. The database also includes about 30 frameworks that are specific to the agricultural production or agricultural trade segments or that are more general covering socioeconomic development broadly or affecting multiple segments of the food system. A list of the policies and frameworks considered as well as the number of examples identified may be found in Annex 2.
Type of lever	Type of policy instrument represented by the lever. It may be information to consumers, consumer subsidies, producer subsidies, taxes on the consumer, taxes on the producer, public goods, regulations or trade measures.
Policy details	This is a description of the policy or framework. This typically includes a mention of the part of government or regional organization making the decision (eg. Ministry of Agriculture; Ministry of Health or EU Commission), the nature of the decision (eg. requirement for nutrition labels on packaged foods or regulations on farming in order to improve soil quality) and in some cases year in which the decision was made or implemented.
COVID	Equals one when the policy description mentions that the policy was adopted in response to the COVID-19 pandemic.
WB_region	Country income classifications used by the World Bank for FY 2022 (World Bank, 2021).
Income_group	Those regions used by the World Bank for FY 2022 (World Bank, 2021).
FSD_group	This variable is a typology used by the food system dashboard; it is an additional country grouping that has been added to the database to identify different types of food systems. The country groups are: rural and traditional; informal and expanding; emerging and diversifying; modernizing and formalizing and industrialized and consolidated. These categories are based upon ranking and a point system using the value of the following four indicators for each country: agricultural value added per worker; share of dietary energy from staples; supermarkets per 100,000 people and share of population living in urban areas (Johns Hopkins University and Global Alliance for Improved Nutrition, 2021).
Envitarget	This equals one if policy states that it aims to improve some aspect of environmental sustainability.
Inclusion	This equals one if the policy states that it aims to reduce poverty.
Diethealth	This equals one if the policy states that it aims to improve dietary health.

3.

4. Annexes

Annex 1: Transformation toolbox taxonomy of policy levers by segment of the food system

Inputs	Farming	Distribution/Transport	Trade	Processing and Manufacturing	Retail	Food Service	Eating	Food Waste	Multiple/Cross-cutting
Certification of Production Inputs	Agricultural Market Intervention	Agricultural Market Intervention (purchase and storage of food)	Export Subsidies/Taxes	Agricultural Market Intervention (Abattoirs)	Certification of Production Methods/Products	Certification of Production Methods/Products	Community Projects	Collaboration	Finance/Investment (targeting food business impacts)
Framework Policy: Input Use	Certification of Production Methods/Products	Agricultural Market Intervention (Storage, Infrastructure and Distribution Support)	Framework Policy: Export Promotion	Certification of Production Methods/Products	Collaboration	Collaboration	Data (Collection and Application)	Consumer Behaviour Change Measures	Framework Policies: Cross-Cutting
Market Intervention: Local Input Production/Provision	Collaboration	Rules on Food Packaging	Import Tariffs/Duties	Collaboration	Data (Collection and Application)	Composition/Reformulation (Food)	Direct Food Provision	Data (Collection and Application)	<ul style="list-style-type: none"> ○ Circular Economy ○ Food Culture ○ National/Urban Food Strategy ○ Food Security ○ Job Creation ○ Obesity
Rules on Inputs	Community Projects: Agriculture	Standards: Safety/Quality/Traceability	Rules on Import/Export of Foods	Data (Collection and Application)	Direct Food Assistance (Retail Support)	Data (Collection and Application)	Education	Fiscal Incentives	Food Governance Arrangements:
Subsidies for Inputs	Cooperatives (Support for)	Technology/Innovation	Trade Agreements	Framework Policy: Processing/Manufacturing Sector	Finance/Investment/Insurance (Support for)	Framework Policy: Food Service Sector	Food-Based Dietary Guidelines	Food Waste Infrastructure Solutions	<ul style="list-style-type: none"> ○ Bodies ○ Direct Spending/Funding ○ Leadership/Political Will ○ Monitoring, Mapping, Measurement ○ Participation ○ Transparency
Taxes on Inputs	Data (Collection and Application)		Trade Facilitation Arrangements	Improving Skills/Training/Knowledge	Framework Policy: Retail Sector	Framework Policy: Food Culture	Improving Skills/Training/Knowledge	Food Waste Valorisation Initiatives	General Laws impacting across the food chain:
	Finance/Investment/Insurance (Support for)			Labelling	Improving Skills/Training/Knowledge	Improving Skills/Training/Knowledge	Labelling	Framework Policy: Food Waste	<ul style="list-style-type: none"> ○ Animal Welfare ○ Environment ○ Food Integrity ○ Labour ○ Trading Practices
	Framework Policy: Agricultural Production			Rules on Composition/Reformulation	Incentives for Improving Provision	Incentivising Improved Provision	Rules on Promotion/Advertising	Improving Skills/Training/Knowledge	National Security Policies
	Impact Assessment: Agriculture			Rules on Promotion/Advertising	Labelling	Labelling	Public Information/Campaigns	Labelling	Welfare Payments
	Improving Skills/Training/Knowledge			Standards: Safety/Quality/Traceability	Planning	Planning	Subsidies	Rules on Food Waste Reduction	Waivers and Exemptions (from policies)
	Labelling			Taxes	Rules/Standards on Provision (Health/Sustainability)	Rules on Promotion/Advertising	Taxes	Supply Chain Efficiency Initiatives	
	Land Ownership/Reform/Management			Technology/Innovation	Standards: Safety/Quality/Traceability	Rules on Composition/Reformulation	Technology/Innovation	Surplus Food Redistribution Programmes	
	Rules on Natural Resource Management				Technology and Innovation	Rules/Standards on Provision (Health/Sustainability)		Research & Technology	
	Standards: Safety/Quality/Traceability					Standards: Safety/Quality/Traceability		Collaboration	
	Subsidies (for production)					Subsidies		Funding	
	Short Supply Chains (Support for)					Technology/Innovation			
	Taxes applied to (or removed from) agricultural production								
	Technology/Innovation								

Source: Parsons and Barling (2021).

Annex 2: Segments and levers in the FSPD taxonomy, type of lever, number of entries, source data and definition of each lever

See excel file.

Annex 3: From FAPDA to FSPD classifications: FAPDA policy description, policy code, number of observations, and Corresponding FSPD segment, lever and type of tool

See excel file.

Annex 4: From FAPDA Framework to FSPD classifications: FAPDA Framework policy category, Corresponding FSPD segment and lever

See excel file.

Annex 5: From Nourishing to FSPD classifications: Nourishing policy area, policy sub area, number of observations, and corresponding FSPD segment, lever and type of tool

See excel file.

Annex 6: Rules to classify PINE data using FSPD categories: keywords searched, FSPD segment, FSPD lever and FSPD taxonomy

See excel file.