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Review

Assessing Food Policies for Sustainability Transitions: A Scoping Review of Evaluation Methods

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Abstract

Food policies play a crucial role in promoting sustainability transitions, but their evaluation needs an effort to be explored. This study carried out a scoping literature review to examine the evaluation methodologies used for food policies. Using the PRISMA approach, the paper analyses 88 scientific articles retrieved from Scopus and Web of Science, identifying key research topics, methodologies, and indicators used in food policy assessment. Results highlight a predominance of qualitative methods, while quantitative approaches remain limited. Moreover, the study identifies a growing trend in integrating sustainability and governance into evaluation frameworks. The findings suggest the need for more robust and standardized quantitative evaluation tools to support evidence-based policymaking. This study contributes to the literature by providing a structured overview of evaluation methods and proposing future research directions to construct indices for food policy assessments.

Keywords: local food policies; food policy evaluation; scoping review; sustainability transition; assessment frameworks

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1. Introduction

Today, local food policy is recognized as a multi-faceted system that faces various challenges, including food shortages, public health problems, and local economic growth. Its significance is also tied to its role in promoting social inclusion and improving environmental management [1]. Consequently, policymakers have begun to integrate food policy into local governance frameworks [2].

The word "local" within the context of the food system is commonly linked to sustainability for several reasons: (i) environmental benefits, such as reducing carbon emissions due to the proximity between producers and consumers; (ii) economic advantages, as it supports local economies and small-scale producers; and (iii) social benefits, as it strengthens communities and promotes food security while reducing inequalities [3]. While local food systems are expanding, their economic and health impacts are still undetermined [4]. In fact, more recent studies point out the difficulties of assessing local food policies compared with national policies, because such assessments face challenges like lack of data, limited funding, and the need for contextual adjustments [5]. In addition, local governments face multilevel governance problems, such as gaps between municipal and regional authority,

food-agriculture governance, and urban–rural divides [6]. Successful and functional integrated local food policies require intensive organizational resources, including designated units, staff training, and adequate funding. Despite these obstacles, the evaluation process is productive and helps to define policy issues that motivate action [5].

In this scenario, cities represent a key unit for experimenting with food policies, as they host institutions that are closest to citizens and are more influenced by civil society initiatives. At the same time, it is in the urban context—where 60% of the global population now resides—that the "unsustainability" of food production, transportation, processing, and consumption systems becomes most evident, particularly regarding consumer health [7,8]. Cities are organisms that consume resources and pollute the environment [9,10]; concurrently, they play a leading role in transitioning the food chain toward sustainability [11,12], fostering a renewed relationship between urban and rural areas [13,14].

Following the "Milan Urban Food Policy Pact" (MUFPP), an increasing number of European cities are experimenting with sustainable local food policies, implementing concrete programs such as social supermarkets, urban agriculture initiatives, farmers' markets, and food donation incentives [15,16]. In Italy, for example, many cities have developed and implemented their own local food policies, particularly since Expo 2015, demonstrating the practical application of MUFPP principles.

However, political agendas and scientific studies have primarily focused on the early stages of the policy process—namely, policy formulation and implementation—neglecting the analysis of evaluation [17].

This study aims to bridge this gap by examining the state of the art in evaluation methods for food policies. Specifically, the research questions are: (i) What are the main topics related to food policies analyzed in the literature? (ii) What specific thematic areas, methodological approaches, and types of data collection are recommended for future research to advance the field of food policy? (iii) Which empirical and analytical methodologies, both qualitative and quantitative, are most commonly used to evaluate food policies, and which indicators or measures are employed?

Considering that the research question investigates unexplored topics, the scoping literature review seems an adequate method, based on orderly, replicable, and transparent procedures.

This study contributes to the food policy literature by:

- identifying processes and evaluation methods associated with food policies to develop a comprehensive understanding of the concept;
- exploring future research directions for studying and evaluating food policies.

2. Theoretical Framework

Food policies focus on how food is produced, processed, distributed, bought, or supplied. The first international organization to specifically address food policies was the FAO (Food and Agriculture Organization). It was established in 1945 and has three main goals: (i) improving nutrition and living standards for the people in their areas; (ii) enhancing the efficiency of producing and distributing all food and agricultural products; and (iii) improving the conditions of rural populations, which helps support a growing world economy. Later, in 1975, the International Food Policy Research Institute (IFPRI) was established to provide policy-based solutions to sustainably reduce poverty, hunger, and malnutrition in developing countries.

Within food policies, a first distinction can be made within food policies: those aimed at ensuring food security [18] and those focused on food safety, which rely on EU Regulation 178/2002 for legal support. However, these two areas should not be viewed as separate. In fact, European food policies balance the right to have enough food with the right to

quality food. Since the 1970s, and increasingly from the 1980s onwards, food policies have been closely linked to protecting the environment. In the 1990s, environmental policies became common in Europe. From 2015 onwards, after the approval of the Paris Agreement, protecting the environment has included the need to adjust to climate change and adopt practices that limit greenhouse gas emissions. Finally, the Farm to Fork (F2F) Strategy has committed to promoting the global shift to sustainable food systems in standard-setting bodies and leading efforts on international sustainability standards. This strategy also aims to improve the conditions for rural populations and contribute to a growing world economy.

The scientific literature shows that there is no single definition of food policy that everyone agrees on. Some authors [19] group food policies into three categories: (i) policies examined by their outcomes, meaning the measures taken by governments or other entities to manage aspects of the food system; (ii) studies of the institutional setups that govern food systems; and (iii) food policy as a set of ideas about how to manage food systems. Early research concentrated on agricultural production and food security [20], but recent studies focus more on consumption, food quality, the connections between food and health, and sustainability. Crises such as the 2006 global food crisis, the 2013 financial crisis, and the COVID-19 pandemic have brought renewed attention to food security [21] while recent global events, including the Russian–Ukrainian war, have highlighted resilience, equity, and gender-related issues [22–24].

Traditionally, studies focused on regions that implemented food policies earlier, often overlooking more recent adopters and the unique challenges, opportunities, and innovations that emerge in these newer contexts due to differences in local governance, urban development, socio-economic conditions, and stakeholder engagement [25]. Moreover, increasing environmental and economic crises underscore the need for greater integration of food policies. However, research remains limited on how such integration—across health, environment, markets, society, and urban planning—affects food system transformation. As food governance evolves toward multi-stakeholder models, systematic evaluation of the development, implementation, and impact of local food policies becomes essential [26].

3. Materials and Methods

To achieve the aim of the study, a scoping literature review was conducted to map the existing scientific literature on the evaluation of local food policies. Specifically, to develop a replicable, detailed, and transparent process for analyzing documents, this research followed the PRISMA approach [27].

First of all, a specific search query was designed to capture evaluations of food policies or programs. Despite the framework of sustainability transition within which food policies are developed, the query was deliberately designed with a broad scope to include evaluations of food policies, regardless of whether terms such as “sustainable” or “transition” appeared in the title or abstract. Given the strong link between food policy and sustainability, studies on sustainable development and transition naturally appeared among the results, and adding these specific terms could have unnecessarily narrowed the search and excluded relevant work. More specifically, two databases were consulted: Scopus and Web of Science.

In Scopus, the query included TITLE-ABS-KEY (“food program*” OR “food polic*”) AND TITLE-ABS-KEY (“assessment” OR “evaluation”) AND PUBYEAR > 2014 AND PUBYEAR < 2025, limited to articles or reviews, final publication stage, journal sources, English language, and all in open access, while excluding a wide range of subject areas such as medicine, nursing, engineering, psychology, and others. In Web of Science, the search combined ALL = (“food polic*” OR “food program*”) with TS = (assessment OR

evaluation), filtered for open access, publication years 2015–2024, article or review article types, English language, and excluding fields such as nutrition, public health, business economics, engineering, and computer science.

For each database, exclusion criteria were applied to select only eligible articles. Specifically, only papers published after 2014 were included, as the Milan Urban Food Policy Pact (MUFPP) was signed in 2015, the same year the 2030 Agenda for Sustainable Development was adopted. Additionally, only open access scientific documents were considered to ensure transparency and replicability. Articles without a complete final version (e.g., full-text PDF not accessible) were excluded.

From Scopus, 1278 documents were initially identified. Before screening, 491 were excluded for being published before 2014, 73 for not being scientific articles, 9 due to unavailability in their final version, 2 for not being published in scientific journals, 35 for being written in languages other than English, and 197 for not being open access. This left 471 documents for the screening phase, of which 124 met the eligibility criteria.

From Web of Science, 1760 documents were initially identified. Among these, 664 were removed for not being open access, 215 for being published before 2014, 18 for not being scientific articles, and 6 for being written in languages other than English, leaving 857 documents for screening.

Duplicate entries across both databases were identified and removed using Microsoft Excel. First, a cross-database comparison was conducted based on document titles, using Excel's automatic conditional formatting to flag exact matches. A final manual check was then performed to ensure that no duplicates remained. After this de-duplication process, the final dataset consisted of 88 documents, which were used for analysis. All these steps of identification, screening, eligibility assessment, and inclusion are illustrated in the PRISMA flowchart (Figure 1). This scoping review was conducted without prior registration, as the protocol was developed retrospectively.

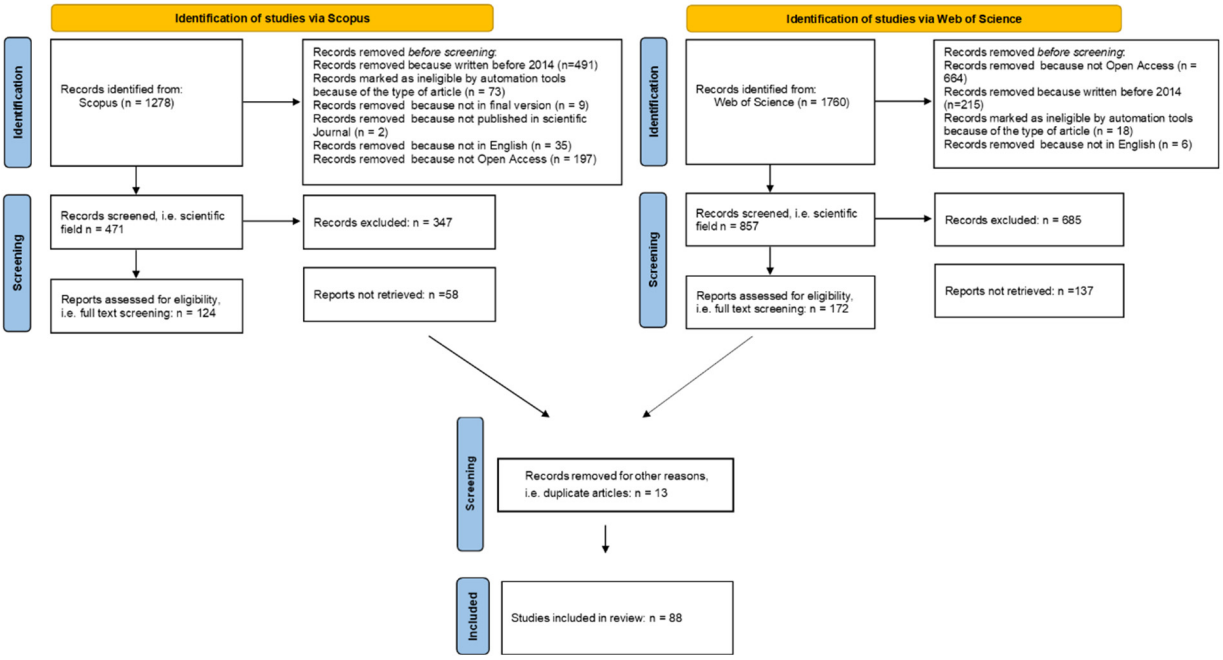

Figure 1. PRISMA flow chart.

4. Results

A document analysis protocol was established for this database, based on the exploration of several aspects: the article's main topic, the methodology used, the study's

objective, the identification of a specific study setting, the identification of specific food policies or programs included in the studies, the exploration of indicators used for food policy evaluation, the results obtained in individual studies, and future research perspectives. This protocol for analyzing scientific documents was used by three researchers, reducing the risk of subjective selection bias. All 88 documents were inspected and summarized in Appendix A (Table A1), and their analysis produced both descriptive and substantive results.

4.1. Descriptive Results

The descriptive results can be categorized into three main types: (i) the temporal trends in publications on food policies, (ii) the distribution of publications across scientific journals, and (iii) the geographical contexts analyzed as case studies.

As a first result, it is evident that the number of publications has increased over the years, with the highest number of papers published in 2023 (Figure 2). Figure 2 is a bar chart showing the annual publication trend, with the *x*-axis representing the publication year and the *y*-axis representing the number of articles published. A positive trendline has been added to highlight the overall increasing trend over time.

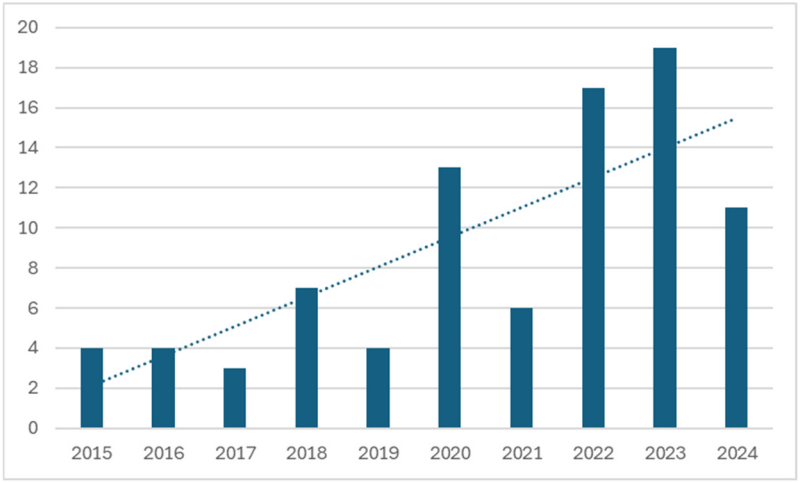

Figure 2. Trend of publications on topic over time.

The increase in the number of publications can be explained by the growing relevance of food policy issues, and increasing interest in social awareness of food security challenges [28]. Indeed, there are different selected articles focused on hunger, malnutrition, and food inequalities [29,30]

There is also a growing focus on interconnected topics such as sustainability and climate change [31,32], where the negative effects of climate change, the importance of food systems, and their ability to counteract these effects have been highlighted. Additionally, there has been an important interest in the production and consumption of healthy foods [33,34].

Table 1 shows the journals in which the selected documents were published. In this trend, the highest number of papers were published in the *Journal of Agriculture, Food Systems*, and *Community Development*, covering themes such as agricultural development, food policies, and their impacts on communities [35,36].

In addition, Table 2 summarizes the most frequently chosen geographical contexts for case studies on food policies. The most analyzed country is the United States, with studies examining topics such as food system monitoring and evaluation during the COVID-19 emergency [37]. This pattern seems to reflect the focus of our query on systematic

evaluations of food policies. In many other countries, particularly in parts of Africa, research appears to concentrate more on the situation or implementation of policies rather than on formal evaluations, which could explain their lower representation in our results.

Table 1. Distribution of papers across scientific journals.

Journals	No. of Articles
Journal of Agriculture, Food Systems, and Community Development	11
Food Policy	8
Agriculture and Human Values	4
Food Security	4
Cities	3
Frontiers in Sustainable Food Systems	3
Geoforum	3
Land	3
Renewable Agriculture and Food Systems	3
Science of the Total Environment	3
Annual Review of Resource Economics	2
European Urban and Regional Studies	2
Foods	2
PLOS One	2
Agricultural and Resource Economics Review	1
American Journal of Agricultural Economics	1
Applied Geography	1
Bio-Based and Applied Economics	1
City, Culture and Society	1
Current Research in Nutrition and Food Science	1
Ecology and Society	1
Economics and Environment	1
Ecosystem Services	1
Environmental and Sustainability Indicators	1
Environmental Evidence	1
Environmental Management	1
Environmental Science and Policy	1
Food Control	1
Futures	1
Global Food Security	1
Health and Peace	1
International Planning Studies	1
Italian Journal of Agronomy	1
Italian Review of Agricultural Economics	1
Journal of Development Economics	1
Journal of Disaster Risk Studies	1
Journal of Entrepreneurial and Organizational Diversity	1
Local Environment	1
Nature	1
Nature Food	1
Nutrition & Food Science	1
Outlook on Agriculture	1
Oxford Development Studies	1
Q Open	1
Sustainability Science	1
Territory, Politics, Governance	1
The International Journal of Life Cycle	1
Transdisciplinary Journal of Engineering & Science	1
Waste Management	1

Table 2. Geographical contexts analyzed in reviewed articles.

Country	No.	Country	No.
United States	17	Italy	6
Spain	6	United Kingdom	4
Canada	3	France	2
Poland	2	Kenya	2
Bangladesh	2	China	2
Brazil	2	Sweden	1
Austria	1	Switzerland	1
Portugal	1	India	1
Indonesia	1	Australia	1
Zimbabwe	1	Rwanda	1
Saudi Arabia	1	Hungary	1
Germany	1	Slovenia	1
New Zealand	1	Peru	1

In conclusion, the descriptive analysis highlights three key insights. First of all, there is a visible increase in publications on food policies over the past decade but a concentration of studies about food policy evaluation in specific journals, with a notable prevalence in journals addressing agricultural development and community-level impacts. Finally, most of the case studies come from high-income countries, particularly the United States, and there are fewer formal policy evaluations from low-income areas. These patterns set the point for the following analysis, which looks more closely at the objectives, methods, and indicators used in the reviewed studies.

4.2. Substantive Results

The substantive results were derived from a thorough analysis of the selected sample. Considering that policies can be described through objectives, methodology, and indicators, the analysis was structured to examine these key elements in the context of the food policy studies reviewed.

4.2.1. Substantive Results: The Main Goals

The topic of food policies is broad, but this first category of results helps establish its boundaries. As illustrated in Table 3, the general macro-categories (or macro-areas) explored in the reviewed scientific documents have been grouped together. Among these, food policies and sustainability are the most frequently discussed topics. Each macro area covers a number of subtopics or particular issues. For example, integrating sustainable approaches into urban agriculture and food systems in Chinese cities, enhances food and environmentally sustainable. Fei et al. [31] describe a sustainable food system while Ran et al. [38] conducted a literature review assessing the effects of public policy interventions aimed at environmentally sustainable consumption. They substantiate that taxation, labeling, and subsidized policies construct sustainable consumption. Cambeses-Franco et al. [39] studied the inclusion of environmental issues concerning dietary guidelines in Europe and the United States. They argue that some countries are trying to sustain their policy guidelines; however, cross-regional policy harmonization is still lacking. Sibbing et al. [5] write on the subject of food policy integration and perform a comparative assessment of policies in the Netherlands and report that although many food challenges have been addressed, policy integration is not comprehensive. While signs of food policy integration appear on paper, it remains unclear whether these approaches are effectively implemented in practice, and the assumption that integration strengthens intervention effectiveness remains under-studied.

Table 3. Overview of topics in selected articles.

Macro Topic	Specific Subtopics	Frequency	%
FOOD POLICIES AND SUSTAINABILITY	Integration of food policies, sustainable diets, food recovery, environmental policies, food security programs, public policies influencing food behavior, innovations in food systems, sustainable food consumption, local food markets.	20	22.7
AGRICULTURE AND CULTIVATION	Urban agriculture, metropolitan agriculture, commercial urban agriculture, agroecology, farm-to-school food procurement, seasonal food storage.	12	13.6
FOOD SYSTEMS AND FOOD HUBS	Local food systems, food hubs, food supply chains based on food, perceptions of family farmers, food consumption, implementation of local food programs.	11	12.5
HEALTH AND NUTRITION	Healthy food consumption, food justice, malnutrition, obesity, access to food, food security.	10	11.4
POLICY INTEGRATION AND GOVERNANCE	Coherence and integration of food policies, governance of urban food systems, governance of food systems, food policy design, complexity of food systems.	10	11.4
PUBLIC HEALTH AND OBESITY	Public policy interventions for environmentally sustainable food consumption, health taxes on food systems.	6	6.8
ENVIRONMENTAL IMPACT AND RESOURCES	Environmental sustainability, water-energy-food nexus, climate impact, resilience of food security, water use.	7	8.0
ECONOMIC AND SOCIAL ISSUES	Social justice in food systems, equity and inclusion in food systems, sustainable public procurement (SPP).	5	5.7
FOOD WASTE AND FOOD SECURITY	Waste management in agriculture, reduction of food waste, food donation programs.	4	4.5
MONITORING AND EVALUATION OF FOOD SYSTEMS	Monitoring of food systems, food system indicators, system assessment capacity, food system evaluation.	3	3.4

4.2.2. Substantive Results: The Main Methodology

The second category of substantive results focuses on the different methodologies employed in the scientific literature for evaluating food policies (Table 4).

Table 4 provides a summary of the methodologies identified in the review, alongside the number of scientific articles that have used them. It is important to note that the total number of methodologies listed exceeds the number of papers because some studies use more than one method. The last two rows, case study (74) and mixed methods (21), are not additional methods but indicate how many of the papers employed these approaches, often in combination with other methodologies.

Qualitative methodologies are particularly prominent, with literature reviews being the most frequently used approach. For instance, Steils and Obaidalahe [40] investigated food literacy and potential biases that distort knowledge through a comprehensive literature review. Similarly, Buscaroli et al. [41] identified major food safety risks by reviewing the existing literature on the subject.

On the other hand, quantitative methodologies often involve analytical, statistical, or econometric models. A notable example is the work by Krasnoff et al. [42], who applied a Social Accounting Matrix (SAM) to estimate the economic impact of a program, specifically comparing food expenditures in Buffalo's school district across different time periods.

Table 4. Key evaluation methods for food policies.

Methodology	Number of Articles
Literature review	24
Focus groups	6
Interviews	19
Dataset analysis	5
Document analysis	6
Netnography	1
Content analysis	4
Comparative study	3
Observation	3
Conceptual modeling	4
Analytical/statistical modeling (e.g., LCA, IMPLAN)	7
Principal Component Analysis (PCA)	1
Policy Environment Network (PEN) approach	1
Latent Dirichlet Allocation (LDA)	1
Econometric analysis	4
Surveys	5
Life cycle assessment (LCA)	3
Carbon footprint analysis	1
Laboratory experiments	4
Cost–benefit analysis	1
Photovoice experiments	1
Multi-Criteria Decision-Making (MCDM)	1
Nutritional value analysis	1
Game theory analysis	1
Water footprint assessment	1
Ecological footprint assessment	1
Ecological assessment	1
Geographic data analysis	1
Case study	74
Mixed methods	21

Despite the frequent use of quantitative techniques, this literature review highlights a distinct lack of quantitative evaluation approaches in food policy research. The methodologies primarily favor qualitative analyses. Figure 3 illustrates the specific percentages of methodologies adopted in the reviewed studies, showing that 32% of the 88 articles employed quantitative approaches, while 68% relied on qualitative methods.

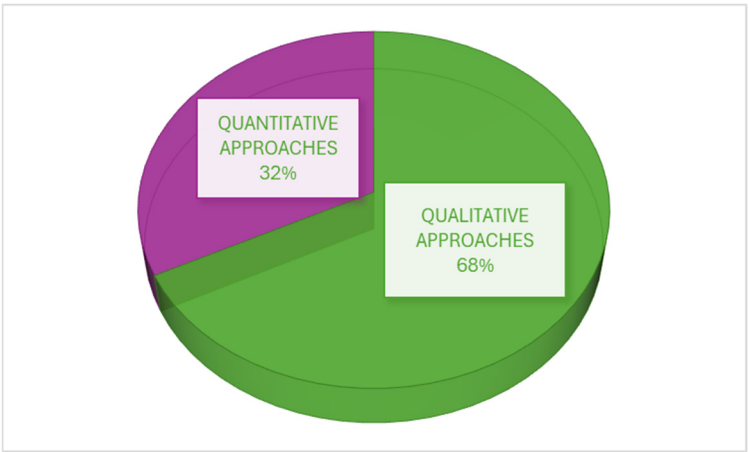

Figure 3. Percentage of methodologies used in selected articles.

4.2.3. Literature-Based Indicators

This section summarizes the indicators used for food policy analysis identified in the selected papers.

For example, Asiki et al. [43], Romaniuk et al. [44], and Lakerveld et al. [45] used the Healthy Food Environment Policy Index (Food-EPI), developed by the International Network for Food and Obesity/NCDs Research, Monitoring, and Action Support (INFORMAS), to compare national policy actions with international best practices. The index has two main components: (i) policy areas that affect sustainable food choices, such as labeling, pricing, and trade, and (ii) infrastructure support areas, such as governance, leadership, and monitoring [43]. Its clear methodology allows for consistent cross-country comparisons and highlights specific gaps in policy implementation [44]. Moreover, its structure, which involves expert participation, can enhance credibility and foster consensus. However, local factors might limit its usefulness, making some benchmarks unrealistic or less relevant in certain contexts. In addition, its focus on national policies may overlook local or regional dynamics, which are particularly important in local food systems.

Among the papers reviewed, Karetny et al. [32] used the Sustainable Food System Policy Index to assess the presence of sustainability-related goals in local food policy plans. Specifically, this index evaluates 26 thematic areas considered necessary for a sustainable food system, related to the three dimensions of sustainability: economic, social, and environmental. The index relies on a binary 0–1 code, where 0 indicates the absence of certain topics in the food plan, and 1 indicates their presence. This process allows for the identification of neglected policy sectors, providing a solid basis for recommendations aimed at improving policies and promoting sustainable food systems while ensuring international consistency and comparability.

Moreover, the interconnection between food system goals and the broader economic environment was operationalized by Hansson et al. [46] through the Food System Sustainability House, a conceptual model designed to represent the sustainability of national food systems. The model consists of three components: the ceiling, representing the social goals of the food system, such as ensuring healthy, safe, and adequate diets for all and promoting fairness, equity, and ethics in food systems; the floor, symbolizing the environmental foundations—climate stability, biodiversity conservation, sustainable use of natural resources, and the maintenance of clean air and water—considered essential ecological prerequisites; and the walls, representing the enabling conditions, namely the economic system (ensuring profitability and resilience of food-related businesses) and governance (ensuring that actors operate within environmental limits while contributing to social objectives). Hansson et al. [46] also propose a set of variables and indicators for each component, enabling the framework's operationalization in empirical assessments. For example, the ceiling can be measured through the average daily nutrient intake compared to dietary reference values (based on national dietary surveys) or through market concentration indices (e.g., Lerner Index) to assess fairness and equity. The floor includes indicators such as greenhouse gas emissions from food production (measured in Mt CO_2-equivalents using national statistics and integrated methods such as PRINCE) and pollinator abundance and diversity (from national agricultural monitoring programs). The walls can be assessed through metrics such as the percentage of emissions covered by price-based policies (derived from national policy analyses) and the average return on capital in the food sector (based on national business registers). Hansson et al. [46] tested this tool in Sweden to assess national food system sustainability and to find trade-offs between environmental limits and social goals.

Among other indicators emerging from the analysis of the papers included in this thesis, the Food Metrics Indicators were identified. Following the study by Freudenberg

et al. [47], the Food Metrics Indicators framework is comprised of 37 sub-indicators, which are organized into five primary policy goals, each associated with particular thematic metrics. Focusing first on nutritional well-being, associated metrics include the average daily intake of fruits and vegetables, the percentage of adults meeting the recommended dietary guidelines, and the prevalence of diet-related chronic diseases. For the second policy goal, food security, metrics include the proportion of households with adequate food access, enrollment of children in free school meal programs, and availability of fresh fruits and vegetables in retail stores. For the third policy goal, economic and community development through food, relevant metrics include the number and size of farmers' markets, percentage of institutional procurement sourced locally, and share of food businesses locally owned. For the fourth goal, sustainable food systems, the framework tracks food waste diversion from landfills, land allocated for agriculture, and carbon emissions associated with the food supply chain. For the last policy goal, which is to support workforce in the food sector, the metrics include prevalence of fair wage agreements, percentage of employees eligible for health benefits, and compliance with safety standards at the workplace. All together, these indicators are designed to form one framework which enhances the evaluation of food policy by health, sustainability, social justice, and economic resilience.

5. Discussion

As highlighted in the previous chapters, the need for a quantitative assessment of local food policies is emphasized in the literature. In this context, the possibility of using indicators or quantitative measures could on one hand help researchers strengthen the existing literature on food policies, and on the other support policymakers in basing their strategies on quantitative indicators. To support this research thread, this study offers a list of indicators or variables to consider for a future index to evaluate local food policies. Table 5 attempts to summarize the key aspects identified in the papers analyzed.

Table 5. Indicators for assessing local food policies.

Dimension	Variables	Indicators	Sources
Policy Coherence	-	-	[48–50]
Integration	Level of coordination between sectors and connection with other areas (e.g., environment, economy, education).	Level of coordination between sectors	[5,36,48,49,51]
Governance and Leadership	Involvement of key actors; social justice.	Number and quality of participation initiatives (e.g., local communities, children)	[37,52]
Metabolic Efficiency	Optimal energy consumption in agricultural systems.	Percentage of non-renewable resources used	[53]
Biodiversity Conservation	Energy-landscape integration.	Presence of measures to preserve habitats and species	[53]
Ecosystem Services	Nutrient recycling in soil, carbon storage, agricultural production.	Environmental indicators (e.g., carbon stock)	[53]
Footprint and Environmental Impact	Life cycle assessment (LCA); nutrient demand.	Carbon footprint and nutrient demand	[54,55]
Eating Behaviors	Eating habits, physical activity, and sedentary behaviors.	Frequency of physical activity, consumption of healthy foods	[45]

Table 5. *Cont.*

Dimension	Variables	Indicators	Sources
Social Acceptance	Public acceptance of food policies.	Feedback and evaluations from stakeholders	[56]
Structural and Operational Challenges	Institutional obstacles, lack of coordination, inadequate funding.	Number and type of challenges reported	[51]
Food System Sustainability	Healthy and adequate diet.	Average intake of critical nutrients relative to dietary guidelines	[46]
Food Safety	Foodborne diseases.	Clinical cases of foodborne diseases (per year and per number of individuals)	[46,57]
Food Availability	National production.	Nutrients and fruit/vegetables produced nationally relative to population need	[46]
Just and Fair Food Systems	Working conditions.	Absence of occupational disease due to work-related accidents	[46]
Biodiversity Conservation	Terrestrial biodiversity.	Abundance and diversity of pollinators	[46]
Natural Resource Management	Water use.	Total blue water used for food production	[46]
Governance	Effectiveness and efficiency, equality and equity, accountability, responsiveness, transparency, participation, protection of human rights and food.	-	[31,46,58]
Economic Viability	Return on capital.	Total return on capital (%) for food companies	[46]
Diversity in Production	Level of diversity.	Entropy index	[46]
Innovation in Urban Food Policy	-	Number of recognitions in the “Milan Pact Awards”	[59]
Active Integrated Government Body	-	Presence of an active governmental body for food policies	[59]
Active Multi-Stakeholder Structure	-	Presence of an active food planning structure	[59]
Integrated Food Policy Strategy	-	Presence of an integrated food policy strategy	[59]
Policy Development Mapping	-	Presence of a local initiative inventory used for food policy development	[59]
Policy Development Monitoring	-	Presence of a mechanism to collect and analyze urban food system data	[59]
Information and Awareness	Awareness of food consumption and production models.	-	[57]
Support Structures and Tools	Robust data framework and indicators, educational campaigns, and participatory food governance.	-	[57]
Administrative and Governmental Capacity	Adequate human resources with knowledge and skills, trans-departmental structure or coordination mechanisms, organizational autonomy.	-	[57]

Table 5. *Cont.*

Dimension	Variables	Indicators	Sources
Articulation with Other Government Levels	Regulations and government incentives (e.g., sustainable public procurement).	-	[57]
Local Government Functions	Integration of food issues in territorial planning, promotion of urban–rural connections, coordination mechanisms among stakeholders in governance.	-	[57]
Strategic Policies	Strong political commitment to healthy and sustainable diets, strategies to reallocate priorities in agricultural production and promote agri-food innovation, plans to reduce food waste, incentives to reconnect farmers and citizens.	-	[57]
Food Security	Per capita food production.	-	[57]
Sustainable Environment	Policies and institutions for environmental sustainability.	-	[57]
Social Protection	Social coverage policies.	-	[57]
Arable Land	Hectares of arable land.	-	[57]
Agricultural Credit	Total agricultural credit.	-	[57]
Technology and Information	Percentage of the population using the internet.	-	[57]
Agricultural Employment	Percentage of employment in agriculture.	-	[57]

The table provides a detailed analysis of the dimensions and indicators related to food sustainability, governance, and the integration of policies to improve food systems. The examined dimensions encompass various aspects, such as agricultural system efficiency, biodiversity conservation, social well-being, economic resilience, and environmental integrity. Each dimension is associated with specific variables and indicators that reflect the policies, practices, and behaviors influencing the global food system.

The proposed analysis offers an overview of the key dimensions that determine the sustainability of food systems. Understanding and measuring these variables is crucial for developing more effective food policies that can address the global challenges related to health, the environment, and social justice. The data and indicators provided can serve as a foundation for informed policy decisions and the improvement of food strategies at the global level.

6. Conclusions

This study aims to address the existing gap by exploring current advancements in valuation techniques for food policies. It examines the main topics discussed in the literature, identifies future research directions, and analyzes the most commonly used methodologies for evaluating food policies. The review highlights a significant lack of solid and homogeneous quantitative data, which limits the ability to assess policy effectiveness through measurable indicators. While qualitative studies provide valuable insights into specific contexts, their limited generalizability constrains broader applicability and policy transfer. To overcome these limitations, future research should prioritize the collection of standardized quantitative data and the development of analytical tools—such as predictive models and machine learning approaches—that can integrate heterogeneous datasets and support evidence-based decision-making across diverse food policy contexts.

The absence of such data also affects the possibility of utilizing analytical tools based on so-called big data, such as machine learning—applied particularly to improve food security, quality, and the resilience of the food supply chain—and predictive modeling. More specifically, the use of big data and machine learning in the context of food policy evaluation is emerging, but the literature is sparse. It is hypothesized that these technologies will enhance the nutritional well-being and food security of populations and even fortify supply chains by offering more timely and accurate insights than traditional methodologies. According to Biermann et al. [60], mobile and environmental data, for example, enable more accurate predictions of poverty in Senegal. Additionally, data mining techniques applied to surveillance records in Nicaragua identified populations that were acutely food insecure. Furthermore, predictive algorithms have been used to forecast certain crop yields and optimize crop selection. Also, supply chains have been monitored for safety with early warnings of risks and trends. However, these approaches will not be easily adopted due to biases, data quality and accessibility, as well as the analytical capability of policy and program decision-makers. These geared frameworks for food policy could more actively support responsive, targeted, and evidence-based interventions with big data and machine learning through equity-driven capacity-building, standardized data protocols, and addressing these gaps [60].

To generalize evaluations of food policies, which are locally oriented, it is necessary to identify principles, strategies, and methods developed in a specific context and apply them to a variety of other contexts, maintaining consistency of results. The scientific literature examined is still quite deficient in this respect.

However, within the analyzed landscape, an interesting presence of systemic quantitative indices emerges, such as Food-EPI or the Sustainable Food System Policy Index. While analyzing individual policies, these studies aim to look at the food system as a whole and develop indicators that can connect macro-level goals, such as those defined by the Sustainable Development Goals (SDGs), with micro-level goals, which may vary significantly based on the specificities of the policies or contexts in which they are applied. This dialogue between different levels allows for the construction of a more coherent and integrated structure, promoting the adoption of synergistic and scalable approaches.

This study represents a first step toward supporting evidence-informed decision-making in the public sector and among local stakeholders. The proposed evaluations and indicators could help guide more structured and rational policy decisions [61], while accounting for the complexity and multidisciplinarity of food policy objectives may contribute to enhancing internal policy coherence and more efficient resource use [50]. Additionally, the findings of this review may foster knowledge exchange between researchers and policymakers, supporting the development of more informed and evidence-based policies [62]. However, it is important to note that the practical applicability of these indicators and frameworks has not yet been empirically tested, and further work is needed to validate their effectiveness in real-world contexts.

Despite its relevant contribution to the field of food policies, this study has several limitations. First, the period examined is limited to 2015–2024. Second, we searched for relevant documents using the aforementioned keywords, assuming that the research would include at least one of these terms in the title, abstract, or keywords. Third, we selected only open access resources. This choice was made to ensure that all readers, regardless of institutional subscriptions, can access the same set of documents, avoiding bias due to unequal access to subscription-based content. Moreover, this approach aligns with the EU's commitment to promoting open access, which fosters wider dissemination of research, supports more efficient science, and stimulates innovation in both the public and private sectors [63]. Fourth, the study was limited to English-language publications, which

may introduce language bias and potentially exclude relevant research published in other languages. Finally, we did not include regional or specialized databases beyond the main international sources, which could lead to database selection bias. We also did not apply formal methodological quality assessment tools in selecting articles. As a scoping review, our aim was to explore and map key research topics, methodologies, and indicators in food policy assessment rather than to formally appraise study quality.

In conclusion, the study aims to provide a comprehensive framework for the methodology of food policy evaluation; the findings indicate that while some efforts have been made to define quantitative indicators and the importance of monitoring is clear, policymakers require more tools to guide action or assess the progress made.

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Appendix A

Table A1. Selected papers.

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[40]	Netnographic approach	N/A	Investigating how food literacy is co-constructed on social media and identifying potential sources of bias leading to knowledge distortion	Food literacy constructed by consumers online is not always qualitative due to potential bias in contributions	Test results quantitatively to assess the importance and impact of different distortion biases; explore co-construction practices in other domains
[48]	Desk-based review of literature and documents	United Kingdom	Providing a snapshot of Secondary School Food Policy (SSFP) across devolved nations	Need for a coherent, whole-school approach to food supported by long-term resources and child engagement; importance of reviewing food curriculum, linking to school meals, and enhancing monitoring/reporting of standards	Difficulty comparing policies due to variations in education structures
[64]	Dataset analysis	United Kingdom	Describing existing UK food expenditure and diet datasets	No dataset suitable for reliable monitoring or prediction of sustainable diet transitions	Develop a coherent single instrument combining individual motivations, behaviors, and food consumption over time

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[5]	Content analysis	The Netherlands	Assessing the extent to which food has been integrated across municipal policies	Various food challenges are integrated across municipal policies	Extend analysis from outputs to outcomes to assess societal effects
[51]	Focus group analysis (In Vivo coding; Structural coding)	California	Understand current produce recovery system and determine major chal-lenges/opportunities	Key obstacles: long-term funding, regulatory tensions, need for more coordination along emergency food supply chain; critique of organizational categorization	Broaden research to represent wider food recovery movement; explore in-depth processes across more diverse organizations
[53]	Socioecological Integrated Analysis; multi-criteria indicator evaluation	Barcelona	Identify strategic factors for sustainable land-use planning to strengthen ecosystem services from agricultural systems	Industrial agriculture model has low energy efficiency, high carbon footprint; integration of farming, forestry, and livestock could improve sustainability	Develop multidimensional approaches for planning agroecosystems as metropolitan green infrastructures
[45]	Policy framework analysis; case studies	Seven European countries and New Zealand	Assess public policies impacting diet, physical activity, sedentary behavior	Produced Food Environment Policy Index (Food-EPI) and prototype PA-EPI	Use PEN framework for further comparative policy evaluation
[65]	Statistical adjustment method; literature synthesis	N/A	Assess how agroecology can be scaled up for sustainable, resilient agri-food systems	Lack of integrated research between agroecology and food systems	Develop overarching analytical framework linking agroecology, sustainability dimensions, and SDGs, with operationalization strategies
[46]	Conceptual framework design	Sweden	Develop national indicator framework for food system sustainability transition	Introduced "Food System Sustainability House"	Adapt framework for decision-making by individual actors
[66]	Regional IO framework (IMPLAN) and analysis-by-parts	USA	Evaluate economic impacts of food hubs on regional economies and participating farms	Developed a replicable empirical framework	Collect more farm-level data
[56]	Literature review, interviews, ANOVA analysis	Poland	Assess use of higher VAT tax rate on junk food	Higher VAT can promote sustainable consumption if paired with protective measures	Need better quantification along food supply chain

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[67]	Secondary data analysis, interviews	North Carolina	Identify conditions affecting local food market development	Success depends more on institutional than local conditions	Research on how agencies can facilitate necessary infrastructure and networks
[43]	Healthy Food Environment Policy Index	Kenya	Assess extent of government action on healthy food environments	Most actions still in development phase	Study implementation processes
[68]	Surveys and interviews	India	Test link between food security programs and well-being	Qualitative evidence links food security to reduced hunger and improved well-being	Explore causal pathways
[55]	Preliminary analysis of catering service structure; carbon footprint analysis	Italy	Quantify climate change reduction potential of three green public procurement (GPP) policies in school catering services	61–70% of GHGs emitted in production, 6–11% in provisioning, 24–28% in urban distribution. Policies targeting production practices have the highest potential; transport-related policies can have controversial effects	Couple carbon footprint analysis with other indicators (ecological, water footprint, full LCA) to evaluate overall environmental sustainability
[54]	Spatially explicit material flow analysis; life cycle assessment	Spain	Assess potential benefits and trade-offs of nutrient circularity using municipal solid waste (OMSW) compost in urban agriculture	Compost from 50% of selectively collected OMSW can substitute 8% of NPK demand; increasing to 21% with improved collection and compost infrastructure. Environmental benefits substantial, with up to 95–1.049% impact reduction	Explore broader nutrient circularity scenarios; improve infrastructure to maximize substitution and environmental gains
[69]	Quantitative Story-Telling (QST) with socio-institutional analysis	Canary Islands	Apply QST to study non-conventional water sources (AWR) for water and agricultural governance	Mainstream support for AWR reflects wider meta-narratives and socio-technical imaginaries	Address underrepresentation of local knowledge (farmers, civil society, women); improve continuity and participation in engagement processes; manage diversity and power asymmetries

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[70]	Literature review; conceptual analysis of urban governance and collective consumption	United States	Explore how experimental governance around food consumption can foster transformative urban sustainability	Catalytic points of transformation at urban level can support broader sustainability transitions; transformative policy should increase governance capacity, engage stakeholders, and foster new alliances	Examine practical mechanisms for long-term transformative governance; study multi-stakeholder engagement strategies in urban food systems
[71]	Pre-interview survey; semi-structured interviews; thematic analysis using NVivo	Florida, USA	Characterize commercial urban farms and identify barriers, opportunities, and informational needs	CUA operations face typical small farm barriers plus local regulatory challenges; urban location is a key advantage; operators see potential for future growth	Expand research with larger sample sizes for generalizability; study policy interventions to reduce regulatory barriers
[72]	Literature review; multi-phased, practice-oriented, participatory backcasting	Thailand	Examine operationalization of practice-oriented futures policy development in urban food policy	Interventions were both conventional and practice-oriented. Participants' agency perception and practice memory influenced generation of practice-oriented interventions. Narrative and drama helped illustrate future scenarios. Government seen as key driver; siloed governance is an obstacle	Future research could focus on foresight approaches within food policy councils to better leverage social practice complexity; account for author biases in scenario creation
[34]	Online self-administered and validated questionnaire	Saudi Arabia	Measure prevalence of healthy food consumption and effect of Saudi food policies	Most Saudis do not comply with dietary guidelines, are physically inactive, and use apps/social media that influence food choices. Calorie label awareness is increasing, but policy effects on weight take time	Address multiple variables in future studies; improve accuracy given recall and social desirability biases in self-reported tools

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[35]	Advocacy coalition framework; qualitative semi-structured survey	Will County, IL, USA	Examine stakeholder perspectives to design food policies and community-based local food system	Stakeholders exhibited overlapping and divergent viewpoints (Pragmatic, Environmental/Food Justice, Visionary). Coalition-building and collaboration can empower communities, promote food justice, and support local food system identity	Further research could explore mechanisms to strengthen coalition-building and collaboration for local food system transformation
[73]	Scoping review	–	Create open access database of food system indicators for local food system assessment	Extracted 384 indicators	Expand search to identify additional indicators; assess practical use of database in food system evaluations
[74]	Sensory evaluation and hedonic testing	7 countries in Africa, Asia, Latin America	Understand consumers' acceptance of foods made with biofortified staple crops	Crops with visible nutrition traits generally accepted even without nutritional information; crops with invisible traits had mixed acceptance	Further research on long-term exposure, branding, competing products, promotion, and drivers of acceptance of invisible vs. visible traits; methodological work on loss aversion in experimental design
[75]	Living lab approach within Trans-disciplinary Action Research	Trento, Italy	Discuss preliminary results of Nutrire Trento to analyze potentialities and critical aspects	Impasse likely due to power tensions among "extended peer communities" with different values, priorities, interests, and capacities. Tensions between participatory table and institutional environment; local executive power ignored municipal council decisions	Explore ways to resolve power tensions and improve institutional capacity to implement and sustain dialogue within living labs
[39]	Nutritional quality analysis (NRD9.3, health gain score) + life cycle assessment (carbon and water footprints)	EU and USA	Compare dietary guidelines across countries	High adherence generally benefits both nutritional and environmental indicators. Italian case best environmentally; Spanish MD best nutritionally	Refine carbon footprint data for diverse food items; incorporate more detailed geographical and food-specific variability to improve diet-environment assessments

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[42]	Input–output model (IMPLAN SAM)	USA	Assess economic impact of public incentives for farm-to-school food purchases	Net positive value-added impacts; for every USD 1 lost in GDP to support program, USD 1.06 expected added GDP	Expand analysis to multiple school districts and years; account for broader market and demographic conditions; explore alternative metrics and empirical approaches
[38]	Systematic map/literature review	N/A	Examine evidence on effects of public policy interventions	Evidence dominated by non-intrusive instruments (labels, info campaigns, menu design); need research beyond lab settings; collaboration with public/private stakeholders essential	Conduct studies outside Europe/North America; scale up impact evaluations; strengthen multidisciplinary research and real-world policy implementation studies
[8]	Multi-actor approach; literature review; semi-structured interviews, focus groups, online survey	Austria	Contribute to research/policy on sustainable diets by understanding how different actors frame, negotiate, enact SD objectives	Identified synergies, tensions, trade-offs affecting policy implementation; context-dependent drivers (e.g., retailer density), public procurement, out-of-home consumption, community-supported agriculture	Conduct micro-level participatory analyses with citizens, especially vulnerable groups; strengthen multi-actor participatory methodologies; link macro- and micro-level analyses for policy insights
[76]	Stylized model of seasonal frictions + cost–benefit analysis	Indonesia	Test whether seasonal storage and credit programs improve well-being by raising consumption and health or reducing seasonal fluctuations	Storage program increased staple retention and non-food consumption but had no effect on health; credit program increased reported income; programs cost-effective for adapting to seasonality	Examine scaled-up consumption impacts and unpack program operation channels; improve food intake and staple inventory measurement
[77]	Five-day audit of donated food using standardized assessment	Australia	Assess safety and quality of food donations at an Australian food bank	96% of 84,996 kg donations satisfactory; 4% unsafe/potentially unsafe/unsuitable, mostly from supermarkets	Assess nutritional quality and suitability for meals; better capture hazardous food volumes; inform food bank policy for increasing demand

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[78]	Qualitative mixed methods: scenario chapter analysis, workshop notes, expert survey	Asia, America, Africa, Europe	Evaluate usefulness of scenario archetypes in science-policy processes (IPBES assessments)	Scenario archetypes useful for synthesizing diverse information and enhancing policy relevance; bridge science-policy gap	Combine with collaborative future assessment design; guide interventions for equitable and sustainable futures; overcome expert/time constraints
[79]	Qualitative content analysis + descriptive statistics	Brazil	Explore family farmers' perceptions of public policy impacts on production, markets, food security, and land access	Crop diversification and agroecology increased; credit limited; public procurement stabilized income but increased dependency; food security improved but land access problematic	Develop policies enhancing on-farm autonomy, land access security, and reduce dependence on institutional markets
[80]	Focus groups + semi-structured interviews with farmers, market managers, key informants	USA (Oregon)	Evaluate Oregon's Farm Direct Marketing Law (FDML): use, benefits, barriers, and food safety	FDML clarified regulatory ambiguity and enabled cottage food opportunities; initial uptake limited, benefits expected to scale over time	Expand quantitative assessment for generalizability; monitor scaling of benefits across farmers and communities
[81]	MFSS model integrating food demand and supply based on regional production and dietary patterns	Europe	Assess spatial extent of foodsheds and theoretical self-sufficiency of metropolitan communities	Substantial variation in foodshed extent and self-sufficiency between regions depending on population density, geography, and urban proximity; MFSS model useful for food planning and assessing spatial consequences of food system changes	Explore practical applications of the MFSS model in planning; examine effects of potential changes in regional food systems on self-sufficiency
[82]	Photovoice method: youth document and discuss food system issues with cameras		Study how youth engage with and transform school food systems	Youth learned about food and public policy through documenting and reflecting on their school food environments	Expand to larger or comparative studies; explore long-term impacts on youth civic engagement and policy influence

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[49]	Systematic literature review; bibliometric and thematic analysis	N/A	Review methodologies and trends in Food Policy Coherence and Integration (PCI) research	Europe dominates the literature; most studied policy domains: nutrition and trade, agriculture and environment; quantitative, qualitative, and mixed methods used	Explore PCI at urban or regional level; overcome stakeholder complexity; expand language and database coverage beyond English, Scopus, and Web of Science
[83]	Literature review + decision tree analysis	Canada	Evaluate Canada's National Food Policy regarding food security	FPC aims to improve food security; effectiveness depends on income/price/housing interventions; variation in household food insecurity important; policies promoting local food may not reduce food insecurity	Compare food consumption bundles of food-secure vs. food-insecure households; explore different definitions and measures of food security under policy mandates
[84]	Action research and citizen science with direct observation and participation	Portugal	Evaluate FoodLink network and its role in urban food transition	FoodLink contributes to literature, documents networking process and action plan; existence of network alone insufficient for sustainable food supply; governance and co-learning critical; academia's strategic role positive	Further assess qualitative and participatory methods; monitor implementation of action roadmap; evaluate long-term governance and food planning impacts
[85]	Theory and expert-guided typology; Boolean logic solution formulas to classify countries by policy relevance	N/A	Assess how blue foods can contribute to food system ambitions across nations	Blue foods can provide critical nutrients, healthy alternatives to terrestrial meat, reduce dietary environmental footprints, and support nutrition, economies, and livelihoods under climate change. African and South American nations benefit for nutrient deficiencies; Global North nations for health and environmental gains	Analytical framework identifies countries at high future climate risk; emphasizes need for climate adaptation in blue food systems

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[86]	Multilevel perspective on sociotechnical transitions; multiple streams framework; content analysis	USA (New York)	Track and assess food system changes and policy responses during COVID-19	Policies emphasized support for food businesses and workers, and expanded food access. Most measures were incremental and temporary, but the crisis enabled novel policy approaches	Long-term trajectories of food access/nutrition policy; institutionalizing food as a human right; longitudinal studies; data from tribal governments and organizations
[87]	Literature review, internal UC ANR survey, community interviews	USA (California)	Support urban farming by assessing needs of urban farmers and extension personnel	Preliminary findings highlight engagement of UC ANR staff with urban agriculture and the tools needed by urban farmers	No open access to full study; further studies could expand on findings and implementation of support tools
[59]	Qualitative Comparative Analysis (QCA), fuzzy-set approach	Europe (Milano Urban Food Policy Pact cities)	Determine governance combinations that drive highly innovative urban food policies	Absence of practices like mapping initiatives, integrating government, and monitoring prevents high innovation; governance practices crucial	Generalization to other cities requires testing; further research on unexplained high innovativeness needed
[30]	Literature review; empirical model linking green environment, social protection, and food security	Africa	Evaluate interaction between green environment, social protection, and food security	Improvement in environmental management (+0.81%) and social protection (+1.17%) enhances food security; interaction effect +0.96%	Focused only on food availability dimension; future studies should include access, stability, and utilization dimensions
[88]	Scoping review	Manitoba, Canada	Assess impacts of COVID-19 on food systems and resilience; examine changes in food access and policy responses	Findings organized into: (1) food security policy, funding, programming; (2) food security for individuals, households, vulnerable groups; (3) food systems	Explore community experiences; develop local food systems
[36]	Interviews, focus groups, retrospective pre/post survey	NC State EMFV program, USA	Evaluate pilot program training FCS educators and volunteers in food systems and local food	Need for training in food systems; interest in cross-program collaboration; handling controversial food system issues; intersection with food insecurity	Building cross-program collaborations and addressing controversial topics while integrating evidence-based and community values

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[89]	Multi-Criteria Decision-Making (MCDM), Analytic Hierarchy Process (AHP)	Valencia, Spain	Identify sustainable urban dietary patterns for recommendation or policy	Vegan diet prioritized environmentally; Mediterranean diet ranked best overall considering health, socio-economic, cultural, affordability, social impact, and local production	Compare chosen patterns with current consumption
[90]	Interviews	Pisa, Italy	Examine relationship between farm market orientation and agricultural intensity in periurban systems	Demonstrated relationship between market orientation and agricultural intensity in periurban farms	Develop single agricultural intensity index
[91]	Policy review	Switzerland	Review 20 years of Swiss agricultural policy reforms and lessons for other countries	Key implications: (i) policy goals met at high cost, efficiency needed; (ii) need coherence and coordination for "food system policy"; (iii) cross-compliance measures are effective; (iv) spatial targeting and results-based payments improve outcomes	future research should explore transferability of lessons, causal effects of policy mixes, and integrated policy frameworks to balance food and ecosystem services
[92]	Nutritional analysis, prospective cohort study	Brazil	Compare changes in BMI, waist circumference, and food consumption over 4 years between manufacturing workers in companies participating vs. not participating in the Workers' Food Program (WFP)	Access to WFP associated with increased weight and waist circumference; in some workers, weight gain negatively affected nutritional status	Conduct longitudinal studies in other states; analyze qualitative and quantitative aspects of WFP menus to assess nutritional adequacy
[37]	Secondary qualitative content analysis	United States	Evaluate effectiveness of Food Policy Councils (FPCs) in urban areas regarding leadership, governance, stakeholder engagement, and food justice	FPCs collaborating with both city and county had higher effectiveness and better integration of diversity and inclusion compared to FPCs representing only city or county	Further assess urban FPC effectiveness relative to regional goals and higher-level funding, including USDA support

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[55]	Life cycle assessment (LCA)	Italy (Turin)	Rank sustainable public procurement (GPP) options for climate-friendly catering services based on environmental impact	Some GPP policies highly effective in specific modules, but overall reduction in carbon footprint limited; expert judgments highlight practical implementation challenges	Expand evaluation to additional impact categories
[93]	Participatory serious games	Japan (Kyoto)	Design games to impact anticipatory climate governance and assess implications for developers and stakeholders	Games piloted successfully; strong evaluation allows scaling; games can serve educational and governance purposes	Explore full institutionalization of anticipatory governance games
[29]	Case study questionnaire	Zimbabwe	Assess nutritional vulnerability of pregnant women benefiting from the 2010 Vulnerable Group Feeding Programme	Food baskets and supplements insufficient to meet nutritional needs; women remained vulnerable despite program participation	Government should provide additional provisions for vulnerable pregnant women; monitor progress toward Sustainable Development Goals (SDGs)
[94]	Comparative case study, pragmatic logic model evaluation	Upper-Rhine region (Fribourg, Basel, Mulhouse, Strasbourg)	Analyze success of Food Policy Councils (FPCs) in contributing to food system sustainability, food democracy, and good governance	Mixed results: FPCs mostly lay groundwork for later efforts and face challenges adhering to democratic and good governance principles	Address data gaps, expand sample size to validate causal links between democratic/governance practices and outcomes, adopt longitudinal perspective, apply action research approaches, improve methodological frameworks
[95]	Case study, participant–observer interviews, vulnerability framework, Fault Tree Analysis	Baltimore, U.S.	Increase resilience of Baltimore's urban food system	Identified success factors and challenges for food system resilience	Apply framework in other urban contexts, combine participant observation with longitudinal monitoring

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[32]	Sustainable Food System Policy Index, regression analysis	U.S.	Assess inclusion of social, environmental, and economic sustainability dimensions in local food system plans and relationship with community capitals	Wide range of topics included, but some issues like decision-making participation, financial infrastructure, and natural resource management are underrepresented	Explore tertiary scoring for multidimensional integration, inventory strategies by mechanism of action, expand index-based assessment
[50]	Policy coherence scoring (−3 to +3) comparing water, energy, food policies	Kenya	Assess interconnections and opportunities for coherence among WEF policies in Tana River Basin	Water policy objectives showed most synergies; policy coherence can improve resource management	Apply approach to other regions and at later policy stages, integrate longitudinal assessment
[96]	Lab and field experiments	U.S. (students), Peru (farmers)	Test producer behavior under output price risk	Mixed results: Batra and Ullah model partially supported; Sandmo's predictions not supported; non-linear effects under relaxed assumptions	Test alternative behavioral models (e.g., prospect theory), explore context-specific findings, address experimental simplifications
[97]	Statistical adjustment method combining HCES and 24HR dietary surveys	Bangladesh	Reduce gender bias in household food consumption data for better-targeted fortification interventions	HCES overestimates household-level intake, underestimates women's share; new method reduces bias using small 24HR sample	Validate method in other countries and contexts, collect more disaggregated and detailed intra-household consumption data
[98]	Systematic review	Global	Evaluate effectiveness and policy implications of health taxes on high-fat, sugar, salt foods	Health taxes reduce consumption, raise revenue; effects context-dependent, substitutes and low visibility limit impact	Study long-term impacts, low-income settings, optimize tax design, assess unintended effects
[41]	Literature review	Urban settings (various)	Identify chemical and biological risks in urban agriculture; develop food safety assessment framework	Urban agriculture poses food safety risks; framework helps assess and manage risks	Apply framework across urban settings, gather empirical data, adapt to regulatory contexts
[52]	Qualitative content analysis	Europe	Examine social justice integration in urban food strategies (redistribution, recognition, representation)	Limited integration of social justice; focus on sustainability over equity	Research inclusive governance approaches, assess outcomes for marginalized communities, develop specific indicators

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[99]	Experimental design, ex-post treatment vs. control	Bangladesh	Develop practical framework for resilience impact assessment under data constraints	Framework allows rigorous assessment even in data-scarce settings	Test in diverse geographical and programmatic contexts, improve generalizability
[57]	Sustainability Impact Assessment (SIA) framework	Berlin (Germany), London (UK), Ljubljana (Slovenia), Nairobi (Kenya)	Rapid assessment of short food supply chains (SFSCs) sustainability	SFSCs show social sustainability benefits; economic/environmental trade-offs exist; tool facilitates stakeholder discussions	Apply in additional contexts and food chain types, collect longitudinal data, improve data collection approaches
[61]	Water footprint analysis	N/A	Provide a framework for policymakers to address water stress and optimize water use in food production	Weak correlation between water use and water stress; need for better allocation strategies; support for sustainable intensification	Improve benchmarks for water productivity; study dietary shifts; advance understanding of green water scarcity and granular water productivity
[100]	Ecological footprint accounting	Portugal	Identify contribution of food consumption to ecological overshoot and gaps in national/local food policies	Food consumption accounts for 30% of Portugal's ecological overshoot; local policies poorly coordinated	Explore localized food strategies; improve policy integration, especially in urban areas
[101]	Basket-based choice experiment	N/A	Provide a tool to assess policy impacts on food choices more realistically	Consumers select multiple items; many products are complements rather than substitutes	Explore basket-based choice dynamics in different contexts
[102]	Document review	South Africa	Assess coordination and alignment of food system policies for food security	Policies are fragmented; limited adaptive management; poor monitoring and evaluation	Improve cross-sectoral coordination
[44]	Food-EPI Index	Poland	Assess strength of healthy food environment policies; identify gaps and prioritize improvements	Many indicators rated null/weak; top priority actions include food labeling and school nutrition training	Clarify socio-economic impacts; explore equity considerations in policy evaluation
[103]	Review	N/A	Place evaluation of food/agriculture policies in the context of quantitative policy assessment	Alternative indicators vary over time/context; policies need local adaptation	Further research on validity of alternative indicators

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[104]	Dynamic fixed effects panel data model	China	Analyze impact of rice support policies on farmers' rice acreage decisions	Support policies significantly increased rice area; influenced provincial-level choices	Investigate long-term impacts and environmental consequences; consider regional dynamics
[33]	Longitudinal analysis	England	Evaluate impact of school exclusion zones on number/type of food outlets	Significant changes in number/type of outlets; promoted healthier environments	Study different planning guidance types over time; consider external factors
[105]	Documents, observation, interviews	Valencia	Examine power dynamics in urban food governance and co-existence of governance spaces	Multiple power types coexist; longitudinal/transversal evaluation highlights tensions	Explore relation to new translocal governance instruments; study evolving urban governance frameworks
[58]	FAO-based framework adaptation, interviews, observations	Madrid	Assess effectiveness of urban food governance for food security	Governance mechanisms like UFS and policy platforms do not guarantee effective food security governance	Examine how urban governance can move beyond technocratic structures
[47]	Analysis of Food Metrics Reports	New York	Verify indicators	51% of indicators improved, 40% declined; some limitations	Improve indicators and monitoring tools
[106]	Literature review	N/A	Measure social benefits	Benefits for community cohesion, diet, health; few studies on education/economy	Larger samples, cross-country studies, controlled trials
[107]	Interviews, indicator selection	N/A	Monitor food systems	Selected global indicators and baseline; data gaps exist	Fill data gaps, study system evolution, meet user needs
[108]	Semi-structured interviews	Toronto	Equity and health	Support for evidence on economic, health, and equity impacts; local data needed	Strengthen evidence for policy and risk management
[109]	Literature review and comparative analysis	US	Food Policy Councils impact	Impacts on food equity, local economy, environment, participation	Include more communities; fill gaps in quantitative data
[17]	Agroecological assessment, interviews, document review	Rome	Urban agriculture and local food policy	Strong agroecological potential; fragmented policy support; social and biodiversity benefits	Study food security, biodiversity, inequality; comparative urban studies

Table A1. *Cont.*

Authors	Methodology	Geographical Contexts	Goals	Findings	Key Future Research Avenues
[110]	Document analysis and interviews	US and UK	Trans-local food governance	Local policies boost resilience, reduce inequities, foster alliances	Include social well-being, food justice, sustainability
[111]	Literature and qualitative analysis	N/A	Evidence-based policies	Better integration of research and policy; scientific data supports decisions	Use robust data, quantitative methods, predictive models
[31]	Qualitative analysis, documents, interviews	China	City Region Food Systems	Innovative policies; focus on urban–rural integration and green tech	Study tech role, urban–rural interactions; collect long-term data
[112]	Qualitative policy analysis and interviews	Rwanda	Translating national nutrition policies	Resource and coordination challenges; some progress in community programs	Improve coordination and integrate local initiatives
[113]	Geographic data, spatial analysis, semi-structured interviews	US	Explore role of small non-chain grocers in urban food access	Small non-chain stores provide fresh, diverse food in low-income areas, filling gaps left by supermarkets	Compare urban vs. rural access; evaluate local policies supporting small stores
[114]	LM3 economic analysis	France, Hungary, Italy, Poland, UK	Assess economic impacts of short food supply chains	Short supply chains keep revenue local, generating strong multiplier effects (LM3 > 2)	Capture multiplier differences along the supply chain; compare organic vs. conventional effects
[115]	Interviews	Portugal	Understand why urban food initiatives take time to become policy	Political engagement and funding are critical bottlenecks; gaps in monitoring, governance, and participatory processes slow policy translation	Study mechanisms to accelerate policy adoption and improve governance and evaluation

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