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An Ecological Whole-Of-Food Systems Framework for Regulating Ultra-Processed Foods

Tanita Northcott[1] | Mark Lawrence[2,3] | Christine Parker[4] | Belinda Reeve[5] | Priscila Machado[2,3] | Kim Anastasiou[6] | Francesco Branca[7] | Mauro Brero[8] | Arun Gupta[9] | Paula Johns[10] | Sirinya Phulkerd[11] | Sameera Mahomedy[12] | Katherine Shats[13] | Scott Slater[2] | Lindsey Smith Taillie[14] | Benjamin Wood[15] | Phillip Baker[6]

[1]Faculty of Law, Monash University, Clayton, Australia | [2]School of Exercise and Nutrition Sciences, Deakin University, Geelong, Australia | [3]Institute for Physical Activity and Nutrition, Deakin University, Geelong, Australia | [4]Melbourne Law School, The University of Melbourne, Melbourne, Australia | [5]The University of Sydney Law School, The University of Sydney, Sydney, Australia | [6]Charles Perkins Centre & Sydney School of Public Health, The University of Sydney, Sydney, Australia | [7]Institute of Global Health, University of Geneva, Geneva, Switzerland | [8]United Nations Children's Fund (UNICEF), Brussels, Belgium | [9]Breastfeeding Promotion Network of India, Delhi, India | [10]ACT Health Promotion, Rio de Janeiro, Brazil | [11]Institute for Population and Social Research, Mahidol University, Thailand | [12]SAMRC/Wits Centre for Health Economics and Decision Science—PRICELESS SA, School of Public Health, University of the Witwatersrand, Johannesburg, South Africa | [13]United Nations Children's Fund (UNICEF), New York, New York, USA | [14]Carolina Population Center, Department of Nutrition, Gillings Global School of Public Health, The University of North Carolina, Chapel Hill, North Carolina, USA | [15]Global Centre for Preventive Health and Nutrition, Institute for Health Transformation, Deakin University, Melbourne, Australia

Correspondence: Tanita Northcott (tanita.northcott@monash.edu)

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ABSTRACT

Background: Ultra-processed foods (UPFs) are a leading contributor to diet-related chronic disease and socio-ecological harm. Despite increasing recognition of these impacts, regulatory responses remain fragmented, focused on isolated actions and individual behavior change, and often legitimize rather than challenge the power of UPF corporations.

Objective: This study aims to identify and synthesize policy actions and regulatory measures to reduce the share of UPFs in population diets and control industry practices, using an ecological approach to regulation.

Methods: We conducted a framework synthesis of academic and gray literature, guided by ecological regulation theory and three systems frameworks: the High-Level Panel of Experts food systems framework, Intervention Level Framework, and Food Systems Governance Principles. Data were coded by food system component, sub-component, and intervention level, and synthesized into a final framework.

Results: We identified 59 recommendations across four food system components (governance, supply chains, food environments, and systemic drivers) ranging from upstream paradigm shifts to downstream regulatory actions. The framework integrates four key principles of ecological regulation: ecological orientation, synergistic interactions, plurality of actors, and diversity of measures. Examples from Brazil, Chile, and Mexico illustrate their application in practice.

Conclusion: This is the first synthesis to apply ecological regulation to food policy design, offering a systems-based alternative to conventional regulatory approaches. It supports the design of integrated, structural interventions to address the complex drivers of UPF proliferation and guide national and international policy responses.

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1 | Introduction

The rise of ultra-processed foods (UPFs) in human diets is harming human and planetary health. UPFs, as defined by the Nova food classification system, are "branded, commercial formulations made from cheap ingredients, with little or no whole food, designed to compete with the other three Nova groups and their preparation as dishes and meals, and maximise corporate profits" [1]. UPF examples include soft drinks, industrially-produced breads and snacks, breakfast cereals, instant noodles and confectionery [2]. UPFs displace long-established diets centered on whole and minimally processed foods [1, 3]. The UPF industry originated in the high-income countries (HICs) of North America and Western Europe, before globalizing rapidly from the 1980s across low- and middle-income countries (LMICs) [4, 5]. This industry and its marketing practices are a key driver of the nutrition transition, with ultra-processed diets contributing to deteriorating diet quality, higher rates of diet-related chronic diseases and undernutrition, beginning in childhood [1, 6–8].

The health impacts of UPFs are not simply based on their nutrient profiles, but also mechanisms related to changes to the food matrix, industrial ingredients such as additives and their impacts on the gut microflora, and contamination from ultra-processing by-products and plastic packaging [9–11]. UPFs are designed and marketed to encourage over-consumption, leading to unnecessary environmental impacts from the production of nutritionally nonessential foods, such as GHG emissions, plastic pollution, biodiversity loss, and depletion of natural resources [12–14]. UPF systems also impact culture, livelihoods, and resource distribution across the wider food economy. The loss of food cultures has been described as a "major externality" of UPF systems [15], as the rise of UPFs in diets can supplant local and place-based models of food production and supply, and whole and minimally processed foods of nutritional and cultural importance [16, 17]. UPF systems are also problematic from a distributional perspective, because the profits accumulating to UPF corporations disproportionately flow to HIC-based shareholders, whereas LMIC populations and lower income groups in HICs bear a large proportion of the health, social and environmental costs [5, 18–20].

The multi-faceted harms of UPFs establish a strong case for UPF regulation [21–24]. Fifteen countries, beginning with Brazil in 2014, now have dietary guidelines that recommend to limit or avoid UPFs [25, 26]. Existing food policies that regulate UPFs are generally based on nutrient profiling models that do not account for food processing [27], and in their current form, can encourage UPF reformulation instead of protecting and promoting Nova 1–3 foods in diets [28, 29]. Additionally, current regulatory interventions are skewed toward informational measures to shape consumer choice, rather than policies aimed at addressing the commercial and structural drivers of UPF systems [4, 30, 31]. This unfairly places responsibility on individuals without mitigating the commercial and structural forces that shape people's choices, deflecting blame from large corporate actors and abdicating the state's role in taking stronger regulatory action [32].

Many whole-of-food systems factors underpin the rise of UPFs, including globalized agri-food supply chains reliant on cheap inputs and advanced processing technologies; the widespread availability, affordability and intensive marketing of UPFs in food environments; demographic changes, such as urbanization and rising incomes; and broader commercial drivers, such as trade liberalization and the financialisation of food systems [33, 34]. Prior work has conceptualized the UPF problem as an emergent property of today's commercialized and industrial food systems, anchored to neo-liberal capitalist values and corporate logics of profit maximization, capital accumulation and personal responsibility [33, 35]. Given the systemic nature of the UPF problem, effective policy responses require systemic interventions across the entire food system.

Despite the need to address the rise of UPFs in human diets as a food systems phenomenon, existing food policy frameworks lack a systems-oriented foundation [33]. The current approach to food regulation has been described as "instrumental" regulation [36]. Instrumental regulation focuses on isolated regulatory measures designed to address narrowly defined food policy issues while minimizing disruption to business activities, based on the assumption that market competition is inherently beneficial [36]. Yet fragmented regulatory regimes are readily exploited by UPF manufacturers, at considerable health, distributional and environmental costs [37–39]. Further, current regulatory approaches often rely on self- or co-regulation, which frame UPF corporations as "part of the solution" despite commercial conflicts of interest, reinforcing their political and economic power [40, 41]. UPF corporations actively obstruct stronger UPF regulation, using strategies like lobbying, political donations, sponsoring research, litigation to challenge policy measures, and co-opting food governance through public-private partnerships and multi-stakeholder initiatives [42, 43]. Therefore, to be effective in curbing ultra-processed diets, policy and regulation must not only tackle UPFs systemically but also seek to curb corporate power in food policy and governance [5].

Parker and Haines' theory of ecological regulation recognizes the need for a cascade of interventions to address the whole-of-food systems nature of the UPF problem [33, 36]. Ecological regulation seeks to reorient food systems, or other harmful systems, in a socially just and ecologically resilient direction [44]. Unlike instrumental regulation, which reflects dominant business-friendly frames in contemporary food systems and relies primarily on markets to manage externalities, an ecological approach to regulation emphasizes that nature imposes boundaries on human activities beyond the market's control [45]. It posits that regulation should promote socio-ecological flourishing, guiding a series of cohesive measures that catalyze systemic change [46]. An ecological approach to regulation provides a rich theoretical foundation to ground the proposed global health objectives of the UPF response—to prevent or halt the rise of UPFs, reduce sales and consumption where it is high, and promote diets abundant in fresh and minimally processed foods [5, 47, 48].

To our knowledge, no prior studies have systematically reviewed policies and regulatory measures recommended in the literature to address UPF systems, using ecological regulation theory to guide the analysis. The aim of this study is to construct an ecological regulation framework for UPF reduction and control. The study objectives are to: first, identify recommended regulatory measures and real-world policy examples; second, map

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the recommendations in relation to the relevant component, sub-component and level of UPF systems; and third, develop a framework for the ecological regulation of UPF systems and inform a new approach to policy design. The overall goal of the study is to support policy and regulatory efforts to drive down UPFs in human diets, reduce obesity and diet-related chronic disease burdens, and protect and promote healthy, just, and sustainable food systems.

2 | Methods

We used a theoretically grounded framework synthesis method to organize and analyze qualitative data from multiple disciplines. Framework synthesis is well suited to exploring the complexity of UPF systems and policy responses [49–51]. Using data triangulation, we drew on academic, gray and policy literature to identify recommended and real-world regulatory measures for UPFs. Recommendations were synthesized into an ecological regulation framework for UPF reduction and control. Our methods followed five steps: 1) developing the initial framework; 2) systematic literature search and identification of illustrative policy examples; 3) data screening; 4) data extraction, analysis and synthesis; and 5) constructing the final framework.

2.1 | Developing the Initial Framework

We used Parker and Haines' theory of ecological regulation, outlined in the Introduction, to guide the framework development (Figure 1) [36]. We identified four guiding principles: ecological orientation, interactions, plurality of regulatory actors, and diversity of measures (Figure 1; Supporting Information File 1—Table S1). First, like all human and business activities, regulation should not harm human and planetary health or deepen social inequities, but should respect ecological limits and advance social justice, orienting regulatory measures toward socio-ecological goals rather than prioritizing market interests and capitalist goals [36, 46]. Second, regulatory measures interact dynamically; single interventions may be counterproductive in isolation but amplified when synergistic, and should evolve in response to evidence on health, equity and sustainability [52]. Third, ecological regulation prioritizes participatory governance structures that redress power imbalances and give voice to marginalized groups (e.g., workers), other species (e.g., animals) and natural ecologies (e.g., environments) [44, 45]. Finally, it values diverse measures in "regulatory ecosystems" that work together to support a socially just and sustainable future, while resisting "monocultures"—used here to describe dominant ways of organizing UPF systems and practices, including limited diversity in regulatory strategies and governance arrangements—that can create systemic vulnerabilities [53].

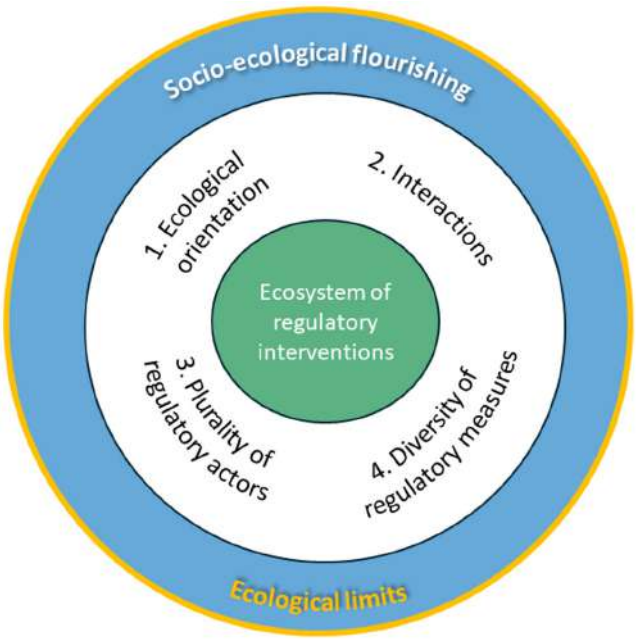

FIGURE 1 | An ecological approach to regulation. This figure has been created based on the relevant theoretical literature.

We used three systems frameworks to analyze the data. We used the High-Level Panel of Experts on Food Security and Nutrition (HLPE) food system conceptual framework to code recommendations into components (e.g., food supply chains, drivers of food systems) and sub-components (see Supporting Information File 1—Table S2) [54]. Similar to other food systems policy analyses [55], we adapted the HLPE framework to include a "food systems governance" component, informed by Slater and colleagues' Food System Governance Principles [56]. We also used the Intervention Level Framework (ILF) to provide an organizing structure for the five levels of intervention across the food system based on the potential for systems transformation: paradigm, goals, structure, feedback and delays, and structural elements (see Supporting Information File 1—Table S3) [57].

The HLPE framework is widely used as a conceptual framework in food systems research to structure food systems analysis [58–61], and has informed policy-oriented initiatives and food systems governance processes at the global level [62–64]. The ILF is a systems science approach used to guide systems policy design [65], previously applied in empirical studies to code and classify recommendations on obesity policy [65], the social determinants of health [66], and food systems transformation [56]. All three frameworks are consistent with the guiding principles of ecological regulation, and have been used in prior work to analyze UPF policy responses from a food systems perspective [33]. These frameworks were integrated into an initial framework (Figure 2; Supporting Information File 1—Table S4).

2.2 | Systematic Literature Search and Identification of Policy Examples

We used a systematic search strategy to identify relevant literature and a structured process for collecting sources of interest. We searched EBSCOhost in May 2024, which included 10 databases that covered various disciplines and fields relevant to UPF regulation (Table 1). Search terms focused on UPFs and regulation and were refined through preliminary searches into an optimal search string (Table 1). We limited the results to peer-reviewed English publications from 2009 (when the Nova system was proposed).

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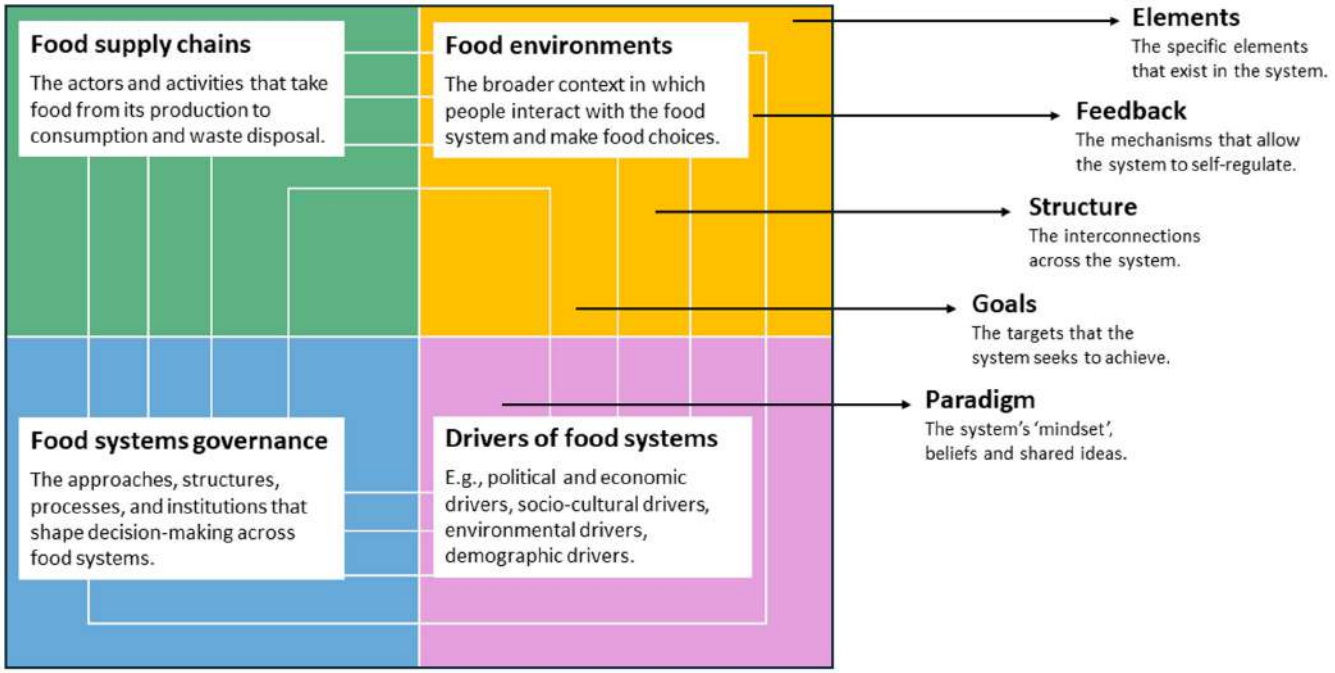

FIGURE 2 | Broad descriptions of the food systems components and levels used in the analysis. This figure has been created based on a consolidation of the HLPE's food systems conceptual framework and Slater et al.'s Food System Governance Principles framework represented in four components), mapped to Malhi et al.'s Intervention Level Framework (represented in five levels).

TABLE 1 | Search terms. Table 1 describes the two key concepts used in the search strategy, the associated search terms and search fields.

Search concept	Search terms	Search fields
UPF	ultra-processed OR ultraprocessed OR "ultra processed"	Title or abstract
Regulation	policy* OR policies OR law* OR regulat* OR legislat* OR interven* OR legal OR rule* OR lever* OR action* OR strateg* OR governance* OR government* OR standard* OR control* OR agreement* OR treaty	Text
Databases included in search		
Academic Search Complete, Business Source Complete, Environment Complete, Global Health, GreenFILE, Health Policy Reference Center, Legal Source, MEDLINE Complete, Political Science Complete, SocINDEX with Full Text		

After de-duplication, the results ($n = 1538$) were supplemented with branching searches ($n = 12$). Given the limited coverage of legal sources, we conducted additional searches for the terms either "ultra-processed food" OR "ultraprocessed food" in law-specific databases (INFORMIT, Lexis+, Westlaw Australia, HeinOnline) to identify relevant secondary legal materials ($n = 14$). Searches were updated in September 2024 and April 2026 to identify new academic materials published after the initial search query ($n = 2706$ total academic sources).

We searched Google Advanced and institutional websites of major global food policy and governance organizations for reports in English containing any of the terms "ultra-processed food" OR "ultraprocessed food". Organizations included the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), the Pan American Health Organization, the International Fund for Agricultural Development, the United Nations Children's Fund, the World Food Programme, International Panel of Experts on Sustainable Food Systems, the Committee on World Food Security, the HLPE, CGIAR and the Special Rapporteurs on the Right to Food and the Right to Health. Searches were conducted in July 2024 and April 2026 ($n = 39$).

We identified illustrative real-world UPF policy examples from the literature and expertise of the research team, focusing on three exemplar nations: Mexico, Chile and Brazil. Policy materials included primary sources, specifically legislative documents from the FAO and WHO legal and policy databases ($n = 10$), and secondary sources, such as academic journal articles ($n = 8$) and other media articles and websites ($n = 3$).

2.3 | Data Screening

TN screened titles and abstracts (or table of contents and executive summaries) of results using the inclusion and exclusion criteria (Table 2). To ensure a consistent approach, ambiguous cases were discussed with the research team. TN then screened the full text of the remaining results for relevance, including

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TABLE 2 | Inclusion and exclusion criteria for title and abstract screening. Table 2 outlines the inclusion and exclusion criteria used to guide the data screening.

Inclusion criteria	Exclusion criteria
• The scope and aims are focused on UPFs. • The source discusses policy implications and regulatory recommendations in sufficient detail for coding and analysis, even if briefly. • The source address national policy actions or regulatory actions by public institutions. • Complete full-text is accessible and in English.	• The source mentions UPFs, but it is not the focus. • The source lacks policy relevance or does not contain specific, codable policy or regulatory recommendations. Sources that contain generic references to policy action without detail are insufficient for inclusion. • The source address community or clinical interventions, or industry self-regulatory measures, but not actions by public institutions. • The source is incomplete (e.g., abstract only, study protocol paper, conference article) or does not constitute a report or article (e.g., news article, opinion piece, press release).

targeted searches of the text for the search terms. This reduced the dataset to 418 academic papers and 23 reports.

2.4 | Data Extraction, Analysis and Synthesis

We extracted recommendations for public institutions, including policy approaches, governance mechanisms, policy actions and regulatory measures that address key issues in UPF systems. Data were recorded in an Excel spreadsheet, capturing publication details, recommendations, examples, and commentary relevant to the ecological regulation principles. We also extracted recommendations promoting Nova 1–3 foods, as such policies help to reduce the share of UPFs in diets [48]. Our search strategy did not include specific terms for Nova 1–3 foods. We trialed broader search terms to capture such policies; however, they returned a substantially larger volume of results that were not feasible to screen and review as they ultimately included any food-related policy. As many included sources contained recommendations on Nova 1–3 foods, extracting them was a practical way to capture this dimension of regulation for UPF reduction and control.

We identified the public institutions that could be targeted for adopting and implementing each recommendation. As most source materials did not indicate the relevant public institutions, we drew on existing food policy analyses of the current roles and responsibilities of Australian government departments and agencies [67, 68]. We designated recommendations related to the system's paradigm, goals or structures, as requiring whole-of-government coordination [67–70]. Where possible, we converted the names of departments and agencies into descriptive language (e.g., "national statistics agency" instead of "Australian Bureau of Statistics"), noting that the responsible public institutions and the terminology used varies across countries. We also considered the complementary roles for intergovernmental organizations and subnational governments.

TN developed codes based on the three frameworks (see Supporting Information File 1—Tables 2–3). Recommendations were coded by food systems component, sub-component and intervention level. New sub-components for "commercial drivers" and "economic access and distribution drivers" were added inductively to reflect emerging themes. Similar recommendations were grouped. A random 10% subset was double-coded by TN and SS as an internal robustness check, with inter-coder differences resolved by consensus.

After coding 100 documents, it was observed that no new recommendations were emerging. Following discussions with the senior author (PB), TN coded an additional 20 documents, focusing on recent publications to ensure any new ideas were captured. We determined that data saturation had been reached ($n = 120$), and further analysis was unlikely to yield new recommendations [71].

2.5 | Constructing the Final Framework

The final framework was constructed from the synthesized data through iterative revision and refinement informed by co-author feedback.

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3 | Results

The results are presented in two parts. First, we compiled a framework (Table 3) presenting synthesized recommendations for UPF reduction and control, organized by food systems component, sub-component and level of intervention. Recommendations included policy approaches, governance mechanisms, policy actions and regulatory measures that could form part of a national government's response to UPFs. Second, we examined how the four guiding principles of ecological regulation are reflected across the dataset. This analysis offers insights into how regulation can be harnessed in line with ecological principles to support systemic change.

3.1 | Ecological Regulation Framework for UPF Reduction and Control

We identified 59 recommendations across four food systems components (Table 3), numbered for ease of reference. Table 3 is structured as follows: the first column identifies the food systems component, the second specifies the sub-component, the third describes the recommendation, the fourth lists the relevant institution(s) targeted, and the final column shows the level of intervention. In total, 16 recommendations relate to food systems governance, 11 to food supply chains, 15 to food environments, and 17 to broader food systems drivers. The recommendations span all five levels of intervention: five target the dominant food systems paradigm, seven address food systems goals, 18 relate to food systems structures, five to feedback and delays in food systems, and 24 describe specific regulatory measures to change elements of UPF systems. The recommendations target a wide range of public institutions, including federal departments and agencies responsible for health, trade, agriculture, education, media and communications, competition and consumer protection, as well as intergovernmental organizations and subnational governments.

To illustrate real-world applications, we include panels highlighting selected policy and regulatory measures implemented in exemplar nations: Mexico, Chile and Brazil. These examples are not exhaustive, nor intended to imply the absence of similar measures in other countries. Rather, they illustrate leading policy approaches, actions and regulatory measures aligned with the recommendations in Table 3 and ecological regulation principles.

3.2 | Ecological Regulation Principles

Table 3 presents a dynamic, interacting set of recommendations. This section provides guidance on how to conceptualize, develop and implement the recommendations as part of a broader ecological regulation approach.

3.2.1 | Ecological Orientation

The literature reflected the need for policy and regulation to redirect the current destructive trajectory of UPF dominance, to ensure that markets operate within socio-ecological limits [20, 88]. Many called for food systems to be reoriented toward social equity and population and planetary health [33, 89–91]. Some critiqued the extractive forces, capitalist logic and neoliberal structures that underpin UPF systems, emphasizing a key role for regulation to curtail the power of the UPF industry [5, 35, 42, 92–95]. For example, many recommendations proposed that governments remove the economic incentives that support large-scale commodity crop production and make UPFs cheap to produce [21, 22, 35, 92, 96–98]. Other recommendations promoted a broader social and political agenda addressing structural inequities in food systems, including calls for reforms such as a universal basic income, which would expand access to resources for people and families to source and prepare healthy foods, and fair work conditions

Panel 1: Illustrative examples of current policy approaches and actions for UPF reduction and control (Mexico).

Mexico's policy landscape illustrates how governments can harness law and regulation to tackle the UPF problem, including creating synergies between policy tools [72]. The General Law on Appropriate and Sustainable Food (2024) (LGAAS by its Spanish acronym) enshrines socio-economic considerations in a national legal framework that addresses the entire food system and adopts a human rights approach. The LGAAS emphasizes food sovereignty and the consumption of domestically produced agricultural products. It creates a legal mechanism for the State to ensure that all Mexican people are provided with "culturally appropriate food" through social programs, restaurant and school regulations, and state-sponsored grain reserves [73]. The LGAAS also provides for civil society representation in food systems governance and safeguards against conflicts of interest in decision-making processes [5, 74].

Recent reform to Mexico's General Education Law for healthy school food environments (passed in 2023, in effect in 2025) takes a rights-based approach to school food environments, prohibiting the sale and promotion of UPFs and sugary drinks with warning labels in schools and mandating the promotion of healthy eating. The law establishes General Guidelines for the sale and distribution of prepared and processed foods and beverages in schools, which embed principles of sustainability for school foods, local food sourcing and freedom from conflicts of interest, to protect the rights to health and food of students [75].

Mexico has also introduced sugar-sweetened beverage and nonessential energy-dense food taxes in 2014; front-of-pack (FOP) warning labels in 2020, based on a nutrient profiling model that incorporates nutrients of concern and other UPF markers such as non-nutritive sweeteners; progressively strengthened marketing restrictions to children; and updated national dietary guidelines focused on health and sustainability. Mexico's suite of UPF-related regulatory reforms was driven by broad, coordinated coalitions made up of civil society organizations, academic advocates, political champions, social movements, and UN agencies [5].

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Panel 2: Illustrative examples of current policy approaches and actions for UPF reduction and control (Chile).

Chile has introduced a set of mutually reinforcing policies at different levels of the food environment related to UPF reduction and control. Chile's Food Labelling and Advertising Law 20.606 (2016), fully implemented in 2019, uses an underlying nutrient profiling model to identify unhealthy foods high in energy, saturated fats, sugars or salt that are subject to comprehensive regulation, including FOP warning labels, broad mass-media marketing restrictions to children, and bans on the promotion, distribution and sales of labeled products in specified settings like schools [47, 76]. This is complemented by an ultra-processed beverage tax law (Ley 20.780). Although these policies are not based on the Nova definition, their intent and application largely cover the same types of products as UPFs [27].

The implementation and enforcement of Chile's Law 20.606 demonstrate a multi-sectoral approach to food systems policy design. The Ministry of Health introduced and implemented the law, while the Ministry of Education plays a role in enforcing food restrictions in schools, and consumer protection agencies monitor compliance with labelling and advertising requirements [76]. The law faced opposition from the Ministry of Economy, the Ministry of Agriculture, and the Ministry of Foreign Affairs, due to concerns over economic impacts and international relations. These concerns were addressed through inter-ministerial coordination mechanisms chaired by the Ministry of Health, which presented the public health arguments to address the other ministries' concerns. The ministries reached a consensus that reducing obesity, particularly among children, was a national priority, agreeing that the law was vital for population health [77].

Panel 3: Illustrative examples of current policy approaches and actions for UPF reduction and control (Brazil).

Brazil is another national exemplar for its UPF policy response, particularly its school food policy. Since Law No. 11.947 was implemented in 2009, Brazil's progressive national school feeding program (Programa Nacional de Alimentação Escolar; PNAE) has incorporated a world-first farm-to-plate procurement requirement mandating that at least 30% of federal funds for school meals be used to purchase locally sourced food from small-scale, family farmers. Brazil's Resolution No. 6 of 8 May 2020 revised the allocation of federal funding for the PNAE to cap the proportion of school meal funds spent on processed foods and UPFs (reduced from 20% to 15% as of February 2025, and scheduled to decrease to 10% by 2026) and increase the minimum expenditure on unprocessed and minimally processed foods (to 90% by 2026). It also prohibits the use of school meal funds to buy certain UPFs (such as soft drinks, sweetened cereals or cereals with additives, and chocolate bars) and limits the frequency of certain UPFs on school menus [78–80]. The PNAE demonstrates an intersectoral approach that uses procurement to support local family farmers, tackle power asymmetries and drive broader change in local food systems. While the PNAE sets broad national procurement rules and financial restrictions for school meals, it does not directly prohibit the sale or marketing of UPFs in schools (at the time of writing, Bill No. 4501, 2020, which would prohibit UPF marketing in public and private schools nationwide, is currently under assessment) [81]. The PNAE legislation also requires that nutritionists be involved in preparing school meal menus to prioritize culturally relevant foods.

The PNAE is one example, among others, of a national food policy that has been shaped by a Brazilian participatory governance structure, the National Council for Food and Nutrition Security (CONSEA), which unites civil society and government to make food policy recommendations. Most recently reinstated in 2023, CONSEA has played a key role in institutionalizing the human right to food and embedding principles of food sovereignty and agroecology in national policy discourse [82]. Brazil has also enacted the Right to Adequate Food in its Constitution (2010) and established public infrastructure, such as food banks and community kitchens, for food and nutrition security to fulfill this constitutional commitment [83].

The PNAE also operates in the context of Brazil's Dietary Guidelines (2014), the first national dietary guidelines worldwide to include Nova recommendations to reduce UPFs, which take a holistic approach to healthy and sustainable diets, and are a tool to support the orientation of food and nutrition policy actions. The principles that shape the Guidelines emphasize that a healthy diet is more than just nutrients and must come from sustainable food systems that protect traditional dietary patterns. They also address the need to "avoid UPFs" because of their negative impacts on health, culture, and the environment [84].

Brazil is also notable for its local municipality actions to operationalize the UPF concept in local laws that complement the national school food policy in their jurisdictions. In January 2023, the City Council of Niterói in Brazil passed legislation (Law No. 3766/2023) prohibiting the sale, marketing and distribution of products that contribute to childhood obesity in schools, including UPFs. Globally, this is the first law to codify the UPF concept (albeit at a municipal level). The law includes a definition of UPFs that refers to ingredients, additives and production processes, and lists examples of products that should be prohibited (such as soft drinks, biscuits and cakes) [85]. In July 2023, the City of Rio de Janeiro passed a similar law (Law No. 7.987/2023) that prohibits the sale and offer of UPFs in all preschool and elementary public and private schools. Rio de Janeiro's Law and related Regulatory Decree No. 52842/2023 contain complementary definitions based on the Brazilian Dietary Guidelines [86]. A similar law (Law 65/2023) has also been passed in the City of Ribeirão Preto [87].

The voices of advocates have been an important factor in countering industry opposition to the laws in Brazil. In relation to the successful enactment of the Rio de Janeiro law, advocates have noted that "[a]pproving such a law has brought attention to the topic from the press, expanded the debate on UPP *[ultra-processed products]* risks to more people, as well as inspired other municipalities and states to file or resubmit similar bills. This has always been our strategy, to create a movement that exposes the urgency of a national legislation to regulate school food environment based on the approval of local laws" [86].

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TABLE 3 | Ecological regulation framework of recommendations for UPF reduction and control, by food systems component, sub-component and level. This table presents 59 synthesized policy recommendations identified through framework synthesis, organized by component and sub-component of food systems and level of intervention based on the Intervention Level Framework (ILF). Each recommendation is accompanied by a general indication of the relevant public institution(s) targeted, drawing on existing mandates and terminologies used in the Australian context, and therefore can be adapted to different contexts. While the "public institutions targeted" column has not specifically mentioned legislative bodies, we note that progress on many of the recommendations would involve legislation. The table is intended to support policy design and systems-oriented regulatory action aligned with ecological regulation principles. Abbreviations used in Table 3 that do not appear in full in the manuscript include: Brazil, Russia, India, China, and South Africa (BRICS); Codex Alimentarius Commission (CAC); Committee on World Food Security (CFS); International Monetary Fund (IMF); Organization for Economic Co-operation and Development (OECD); Prime Minister and Cabinet (PMC); World Trade Organization (WTO).

Food systems component	Sub-component	Description of approach or action	Public institution(s) targeted	Level
Food systems governance	Policy approach	1. Human rights and social justice, recognizing food and health as fundamental rights and addressing structural inequities in food systems. Includes constitutionally enshrined rights and mandatory obligations under national and international law (Panels 1 and 3).	PMC (lead), coordinated across whole-of-government; human rights commissions; intergovernmental organizations (e.g., UN).	Paradigm
		2. Holistic, ecological approaches to nutritional science that consider not only nutrients but also the food matrix and other food components, dietary patterns, and the biological, social, cultural and environmental dimensions.	PMC (lead), coordinated across whole-of-government.	Paradigm
		3. Food sovereignty, asserting communities' rights to define local, culturally appropriate food systems. Policies support shifting power from large corporations to farmers, local producers, community groups and participatory public institutions (Panels 1 and 3).	PMC (lead), coordinated across whole-of-government.	Paradigm
		4. Degrowth and sufficiency, prioritizing ecological limits, social wellbeing and redistribution over economic growth. Policies scale down extractive food systems and unnecessary (or less necessary) consumption, and redirect resources to low-input, community-based and care-focused food provisioning.	PMC (lead), coordinated across whole-of-government.	Paradigm
		5. Agroecology and regenerative economies, grounding food production and supply in ecological principles and socially embedded economic models and forms of governance. Policies support small- and medium-scale producers and markets over monocultures and extractive agribusiness (Panels 1 and 3).	PMC (lead), coordinated across whole-of-government.	Paradigm
	Policy design	6. Systems policy design, emphasizing coordinated, multi-leverage interventions across the food system to drive synergistic, sustainable outcomes.	PMC (lead), coordinated across whole-of-government.	Goals
		7. Policy coherence across sectors, aligning food system policy goals to ensure they are mutually reinforcing and not contradictory (Panel 2).	PMC (lead), coordinated across whole-of-government.	Goals
		8. Enforcement mechanisms, establishing clear government powers and sanctions for non-compliance to ensure effective implementation (Panel 2).	Responsible Minister (lead), coordinated across departments & agencies.	Goals
		9. Implementation plans with clear responsibilities, timelines, coordination structures, and allocated resources to support effective delivery.	Responsible Minister (lead), coordinated across departments & agencies.	Goals

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TABLE 3 | (Continued)

Food systems component	Sub-component	Description of approach or action	Public institution(s) targeted	Level
		10. Legal operationalisation of the UPF concept, including incorporation into dietary guidance, adaptation of nutrient profile models to add UPF markers, and integration into food and nutrition surveillance systems (Panel 3).	Responsible Minister (lead), coordinated across departments & agencies, including food standards agency; intergovernmental organizations (e.g., CAC, WHO, FAO).	Structure
	Coordination and power dynamics	11. Structural coordination mechanisms, aligning public strategies, plans, policies and initiatives through cross-sector engagement, including formal structures such as interdepartmental or ministerial committees (Panels 2 and 3).	PMC (lead), coordinated across whole-of-government.	Structure
		12. Democratic and participatory governance structures, such as Food Policy Councils, ensuring diverse government and civil society voices in food systems decision-making and redressing power imbalances, (Panels 1 and 3).	PMC (lead), coordinated across whole-of-government; food standards agency; intergovernmental organizations (e.g., CAC, CFS).	Structure
		13. Safeguards against conflicts of interest, including rules on "revolving door" practices; restrictions on industry involvement in scientific research, expert committees, professional organizations and standard-setting processes; and mandatory disclosure requirements (Panel 1).	PMC (lead), coordinated across whole-of-government; food standards agency; intergovernmental organizations (e.g., CAC, CFS).	Structure
		14. Mandatory disclosure of corporate political activity to enhance transparency and address the commercial determinants of health, including public reporting of political donations, lobbying activities and marketing expenditure.	PMC (lead), coordinated across whole-of-government.	Feedback
	Monitoring and policy evaluation	15. Investment in food system monitoring and surveillance to assess, understand, benchmark, evaluate and report on key food system components (e.g., food supply, food environments, dietary intake) using globally consistent, evidence-based indicators.	PMC (lead); Health; Agriculture, Water and Environment; national statistics agency; food standards agency; intergovernmental organizations (e.g., FAO, WHO).	Feedback
		16. Investment in monitoring and evaluation of food policy actions to assess implementation, identify policy trade-offs, track impacts on UPF markets and diets, and provide evidence to inform future actions.	Responsible Minister (lead); intergovernmental organizations (e.g., WHO).	Feedback

(Continues)

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TABLE 3 | (Continued)

Food systems component	Sub-component	Description of approach or action	Public institution(s) targeted	Level
Food supply chains	Production	17. Reform of agricultural structures and trade policies to reduce the emphasis on large-scale, export-oriented and intensive commodity crop production and support agro-ecological practices.	Treasury; Finance; Foreign Affairs and Trade; Agriculture, Water and Environment; intergovernmental organizations (e.g., WTO, regional trade blocs).	Structure
		18. Policies that abolish or repurpose subsidies for UPF commodity crops (e.g., corn, wheat, rice).	Treasury; Finance; Agriculture, Water and Environment.	Elements
		19. Economic incentives, such as subsidies, credit, insurance, preferential programs for women, Indigenous Peoples, youth and marginalized groups, to support small-scale agroecological producers to invest in land, operations and equipment.	Treasury; Finance; Agriculture, Water and Environment; Social Services; Health.	Elements
		20. Policies to promote sustainable, low-input farming practices to improve agrobiodiversity and reduce land and soil degradation and eutrophication.	Agriculture, Water and Environment; Industry, Science, Energy and Resources.	Elements
	Processing and packaging	21. Policies to reduce plastic pollution, including mandatory production reduction targets, elimination of unnecessary food packaging and extended producer responsibility laws, underpinned by safety, sustainability, transparency, and essentiality criteria.	PMC (lead), coordinated across whole-of-government; intergovernmental organizations (e.g., UN, BRICS).	Structure
		22. Policies to reduce reliance on fossil fuels in food processing and packaging, mitigating emissions, climate impacts, food loss and packaging waste.	Agriculture, Water and Environment; Industry, Science, Energy and Resources; Health.	Elements
		23. Policies that abolish subsidies for UPF ingredients (e.g., corn, soy, and sugar) and repurpose them to support provisioning of diverse Nova groups 1–3 foods.	Treasury; Finance; Agriculture, Water and Environment.	Elements
		24. Economic incentives, such as tax and subsidy structures, to support food manufacturers to develop less processed alternatives to UPFs, using processing to enhance the shelf life, sensory appeal, and convenience of whole foods.	Treasury; Finance; Industry, Science, Energy and Resources.	Elements
	Retail and markets	25. Legislative and regulatory frameworks, alongside public investment in infrastructure, to support development and scaling-up of community-based food enterprises (e.g., produce markets, cooperatives and communal kitchens).	Treasury; Finance; Infrastructure, Transport, Regional Development and Communications; subnational governments.	Structure
		26. Mandatory requirements for large food retailers, including supermarkets and fast food chains, to report UPF sales as a proportion of total sales, enabling transparency and accountability.	Treasury; Health; competition and consumer protection agency.	Feedback
		27. Incentives, such as fiscal and logistical subsidies, for small- and medium-sized food enterprises, including informal traders, to promote and sell less processed foods, particularly in high-traffic public places (e.g., bus terminals, street near schools, corner stores).	Treasury; Finance; Agriculture, Water and Environment; Industry, Science, Energy and Resources; subnational governments.	Elements
Food environments	Economic access (affordability)	28. Taxes on UPFs to discourage production, purchasing and consumption, encouraging dietary shifts toward healthier options (Panels 1 and 2).	Treasury; Finance; tax authorities.	Elements

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TABLE 3 | (Continued)

Food systems component	Sub-component	Description of approach or action	Public institution(s) targeted	Level
		29. Subsidies to improve access to and affordability of whole and minimally processed foods (including clean drinking water).	Finance; Agriculture, Water and Environment; Social Services.	Elements
	Food availability and physical access (proximity)	30. Food procurement policies to promote healthier and more sustainable diets in public settings (e.g., schools, hospitals, prisons, government buildings), prioritizing locally sourced, minimally processed foods from smallholder and agroecological producers (Panels 1 and 3).	Health; Education, Skills and Employment; Finance; Agriculture, Water and Environment; Social Services; subnational governments.	Structure
		31. School food policies to create UPF-free environments in schools and promote healthier options, including restricting UPF availability in school cafeterias, vending machines and meal programs, increasing minimally processed foods, and integrating nutrition education into the curriculum (Panel 1, 2 and 3).	Education, Skills and Employment; Health; national curriculum authorities; subnational governments.	Structure
		32. Urban planning and zoning laws to reduce fast food outlet density, particularly near schools and disadvantaged areas, while increasing access to healthy food retailers and vendors (e.g., public markets).	PMC; subnational governments.	Elements
	Promotion, advertising and information	33. Food-based dietary guidelines that recommend limiting or avoiding UPFs, promote diets abundant in minimally processed foods, incorporate sociocultural and environmental considerations, and support policy coherence (Panels 1 and 3).	Health; national public health research councils or advisory bodies.	Elements
		34. Comprehensive mandatory regulation of UPF marketing across all media and settings, including digital platforms and child-focused environments, that restricts advertising, packaging, point-of-sale marketing and discounts, product placement, sponsorship, and brand marketing, particularly where directed at children ($\leq$18 years), infants and toddlers (Panels 1 and 2).	Health; Education, Skills and Employment; communications and media authority.	Elements
		35. Regulation of FOP UPF labelling, including mandating warning labels on packaging (including infant and toddler foods), prohibiting nutrient and health claims, and requiring statements on the environmental impacts of production (Panels 1 and 2).	Food standards agency; Health; competition and consumer protection agency; intergovernmental organizations (e.g., CAC).	Elements
		36. Public education and counter-advertising campaigns to raise awareness of UPF-related harms to human and planetary health.	Health; competition and consumer protection agency.	Elements
		37. Education on new laws and regulatory measures to support implementation and understanding of food labelling, marketing and composition requirements.	Food standards agency.	Elements
		38. Initiatives to improve availability of minimally processed foods in large food retailers, such as supermarkets and fast food chains, including layout requirements (e.g., limiting UPFs at checkouts and on middle shelves, increasing visibility of whole foods) or menu warning labels.	Competition and consumer protection agency; food standards agency; subnational governments.	Elements

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TABLE 3 | (Continued)

Food systems component	Sub-component	Description of approach or action	Public institution(s) targeted	Level
	Food quality and safety	39. Alignment of food regulatory objectives with public health and environmental sustainability considerations, beyond acute food safety risks.	Food standards agency; Health; Agriculture, Water and Environment; intergovernmental organizations (e.g., CAC, UN).	Goals
		40. Integration of food processing considerations into food standards, including eligibility for reformulation or fortification, sustainability or health claims, and mandatory disclosure of UPF markers in ingredient lists.	Food standards agency; Health; intergovernmental organizations (e.g., CAC, UN).	Elements
		41. Expansion of food risk assessment criteria beyond food safety to address social, ecological and long-term public health outcomes.	Food standards agency; Health; intergovernmental organizations (e.g., CAC, UN).	Elements
		42. Expanded regulation of industrial ingredients and UPF composition, including additives, additive "cocktails", processing aids and food engineering for overconsumption, through strengthened pre-market authorisation and review procedures in response to emerging health and ecological evidence (e.g., removal of industry self-determined safety classifications, additive limits, oversight of cumulative exposure).	Food standards agency; Health; intergovernmental organizations (e.g., CAC, UN).	Elements
Drivers of food systems	Political drivers	43. Prioritization of public health and sustainable food systems goals in public investment and economic development policies, including those seeking to strengthen traditional and local food industries provisioning foods in Nova groups 1–3.	PMC; Treasury; Finance; Foreign Affairs and Trade.	Goals
		44. Reorientation of agricultural trade policies, including WTO frameworks, toward sustainability, prioritizing the right to food and supporting local and regional markets.	PMC; Agriculture, Water and Environment; Foreign Affairs and Trade; intergovernmental organizations (e.g., WTO, UN).	Goals
		45. Incorporation of public health and environmental objectives into international trade and investment agreements, including regulation of foreign direct investment and reform of public health exceptions, investor protections, and dispute settlement mechanisms, to support policy coherence between trade and health and strong domestic food policy action.	PMC; Foreign Affairs and Trade; Health; intergovernmental organizations (e.g., WHO, WTO).	Structure
		46. Representation of public health interests in international food standards and trade negotiations, to ensure alignment with human rights, equity, and planetary health goals.	PMC; Health; food standards agency; intergovernmental organizations (e.g., FAO, CAC, WTO).	Structure
		47. Reform of financial regulations to require Environmental, Social, and Governance (ESG) disclosure and promote supply chain transparency, prohibit misleading claims (e.g., "health-washing", "green-washing"), regulate speculative investments in agricultural land, and support sustainable finance initiatives.	Treasury; Finance; Agriculture, Water and Environment; competition and consumer protection agency.	Feedback

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TABLE 3 | (Continued)

Food systems component	Sub-component	Description of approach or action	Public institution(s) targeted	Level
	Commercial drivers	48. Reform of taxation policy, including measures to address corporate tax avoidance, prohibit the deductibility of UPF marketing and sponsorship expenses, and tax UPF advertising expenditure, with revenue directed to public health nutrition programs and independent research.	Treasury; Finance; tax authorities; intergovernmental organizations (e.g., OECD).	Elements
		49. Reform of competition law to address corporate monopolization, including scrutiny of mergers and acquisitions, limits on vertical integration and regulation of pricing practices to prevent anti-competitive conduct.	Treasury; competition and consumer protection agency.	Elements
		50. Reform of corporations law, including redefining corporate purpose to prioritize citizen-consumer interests, regulating ESG and corporate social responsibility initiatives, and considering public ownership of key agri-food corporations.	Treasury; Finance; competition and consumer protection agency.	Elements
		51. Reduction and/or cancelation of sovereign debt to free up domestic resources for sustainable food systems transformation and reduce dependence on export-oriented intensive agriculture and fossil fuel production to generate foreign exchange.	PMC; Finance; Foreign Affairs and Trade; intergovernmental organizations (e.g., IMF, World Bank, UN).	Elements
	Economic access and distribution drivers	52. Nutrition-sensitive social protection programs, including cash transfers, vouchers and in-kind food assistance, to improve access to healthy foods (Panel 1).	Social Services; Finance; Health.	Structure
		53. Nutrition-sensitive healthcare programs to support the provision of dietary advice aligned with food-based dietary guidelines incorporating food processing.	Health; national public health research councils or advisory bodies.	Structure
		54. Fair income and employment support policies, including minimum wage, income support, grants, and paid maternity leave.	PMC (lead), coordinated across whole-of-government.	Structure
		55. Policies that recognize, support, and redistribute unpaid care work, including measures to promote breastfeeding, improve gender equity, and reduce women's disproportionate care and food work burdens.	PMC (lead), coordinated across whole-of-government.	Structure
		56. Policies to reduce poverty and inequality, including universal basic income, broader redistributive measures, and labour laws to improve work conditions.	PMC (lead), coordinated across whole-of-government.	Structure
	Environmental drivers	57. Policies that build resilience to climate-related disruptions, including investments in local and regional food markets, short supply chains, and water and sanitation infrastructure.	PMC (lead), coordinated across whole-of-government.	Structure
		58. Policies to reduce reliance on fossil fuels, petrochemicals and pesticides across food supply chains, including agricultural inputs, processing, packaging and distribution, to decrease pollution, emissions and climate impacts.	Agriculture, Water and Environment; Industry, Science, Energy and Resources.	Elements
		59. Policies that build resilience to global disruptions (e.g., conflicts and pandemics), including regulating corporate concentration in food systems, investing in small-scale food production and reforming social safety nets for farming populations to support fair and equitable livelihoods.	PMC (lead), coordinated across whole-of-government.	Structure

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to stop the exploitation of vulnerable workers in food supply chains and support the livelihoods of primary producers and retailers in informal food retail settings [34, 99].

Many referred to a human rights approach as a core foundation for food systems transformation (see Panels 1 and 3) [5, 32, 93, 100]. A human rights approach resonates with the ecological regulation of food systems as human rights provide a frame for the non-market value of food, invite consideration of broader social justice conditions in food systems, and sharpens the focus on collective responsibilities rather than individualistic narratives [44]. Some noted that there are already available human rights instruments, particularly international and domestic legal frameworks, that can support governments to entrench human rights in food systems regulation [93]. This illustrates how ecological goals can be "braced" to existing rights-based legal frameworks [101]. Sources posited that using a human rights approach can reorient policy issues around fundamental principles: for instance, it can reposition trade and investment agendas around a core right to food [17], or reimagine restrictions on UPF marketing or constraints on UPF industry interference in policy processes as necessary protections of rights for vulnerable groups, such as children and young people [102–105]. Similarly, calls for agroecological approaches focused on the need to revalue agroecological food systems as a cornerstone of healthy and affordable foods, dietary diversity, environmental sustainability, and resilience to climate change and food system shocks, reflective of ecological regulation principles (see Panels 1 and 3) [17, 106, 107].

3.2.2 | Interactions

Sources consistently emphasized the importance of mutually reinforcing, synergistic measures to address the rise of UPFs in human diets (see Panels 1, 2 and 3) [23, 32, 35, 47, 48, 93, 94, 97, 106, 108]. The potential for interactions was not limited to multiple UPF-specific measures. Many sources identified intersections between measures to restrict UPF production and consumption, and actions to promote the accessibility, availability and affordability of fresh and minimally processed foods [23, 25, 48]. For example, taxation and marketing restrictions on UPFs were seen as more effective when combined with incentives for the production and sale of unprocessed and minimally processed foods (see Panels 1, 2 and 3) [95, 109, 110]. Some suggested that UPF tax revenue should be reinvested in public health nutrition education, subsidies for initiatives that increase access and affordability of fresh food for vulnerable, lower-income households and communities, funding for potable drinking water in schools or public places, or cash transfers [48, 106, 108, 109, 111].

Various sources described consumer education initiatives, such as media campaigns and nutrition advice, as limited in isolation but complementary to structural measures, like procurement policies or fiscal policies [23, 97]. Similarly, school food policy actions, such as measures to increase healthier cafeteria options and implement nutrition education in the curriculum, were recommended to accompany restrictions on UPF sales and promotion in schools to have an amplified impact on healthier food preferences (see Panels 1, 2 and 3) [48, 112]. It was reiterated that there is no "one-size-fits-all" policy solution; countries will need to customize the design of national policies to their specific contexts [48, 89, 97, 98, 100, 113].

There was some discussion of the need for regulation to adapt to avoid unintended effects. For instance, some called for regulation and verification of value claims, like "local" or "family farmer", to resist corporate co-optation [17], or reform of food standards so that fortified UPFs cannot make potentially misleading nutritional claims [98, 114]. Others noted that policies based on nutrient profiling models often promote reformulation as a policy objective, which can incentivize more processing (e.g., increased use of sweeteners and additives to reduce sugar content), without adequate monitoring of broader impacts on food environments [48]. Some recommended supporting manufacturers to develop less processed alternatives to UPFs using processing methods that enhance the shelf life, sensory appeal, and convenience of whole foods, rather than incentivizing nutrient-centric reformulation of UPFs, and also emphasized that any UPF reformulation policies should be accompanied by measures to improve the affordability and accessibility of whole and minimally processed foods [25, 100, 115, 116]. Others pointed out that monitoring and evaluation is essential to ensure that policy actions meet their objectives and do not lead to other harms, while also gathering evidence to inform future interventions [110, 116, 117].

3.2.3 | Plurality of Regulatory Actors

Sources recognized that the UPF industry is a dominant force in global food systems, comprised of transnational corporations that accumulate capital and influence [5, 48, 92]. Ecological regulation critiques the regulatory governance structures of UPF systems that currently legitimize a concentration of power in UPF corporations, reinforcing corporate-industrial monocultures in UPF systems. New governance mechanisms are required to address the economic and political power asymmetries currently shaping policy design and regulatory processes (see Panel 3) [96]. Recommendations included structural measures to reduce the influence of dominant UPF industry actors and corporate interests on policy and regulation; for example, democratic and participatory governance structures that ensure diverse public sector and civil society interests are represented in food systems decision-making, and robust conflict of interest frameworks to limit the role of UPF corporations in designing and implementing measures to regulate the health, social and environmental impacts of UPFs given their commercial biases [35, 88, 118].

Sources also underscored the importance of the equitable inclusion of diverse voices in regulatory spaces, to ensure a balanced distribution of power in political discussions [42, 96]. Recommendations included support for democratic and participatory governance structures; for example, embedding the participation of smaller food producers, workers and civil society into trade and investment dialogues to shape regulation that supports diverse local and regional food markets [17], or engaging a diversity of voices, particularly civil society organizations representing health, human rights, consumer protection and environmental interests, in the regulatory governance of food

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systems (see Panel 3) [90]. Others recommended that governments support diverse corporate forms and community-based approaches, such as cooperatives and social enterprises, as alternatives to the current monoculture of large corporations focused on profit maximization and shareholder primacy [17, 35, 46, 48].

Recommendations called for regulatory solutions that engage a broad range of public institutions and departments (see Panel 2). Although Table 3 targets existing national departments and agencies based on their current food policy mandates and responsibilities in Australia, the recommendations that emerged from the literature suggest that new structures may be required to address the prevailing challenges of fragmented governance, such as dedicated ministerial roles (e.g., a food or hunger minister) or coordinating bodies like food policy councils to reflect a plurality of perspectives on food policy issues [69, 96].

3.2.4 | Diversity of Regulatory Measures

Many recommendations positioned law and regulation as essential tools for healthy and sustainable food systems, highlighting the importance of multi-component policies that use diverse measures (see Panels 1, 2 and 3) [23, 30, 42, 48, 119]. Recommended measures included bans on government subsidies of intensive agriculture [21, 97, 98], comprehensive restrictions on UPF advertising [32, 47, 108, 120, 121], taxation reform to address corporate tax avoidance and remove tax incentives for marketing activities [20, 122, 123], and strong conflict of interest measures to separate the UPF industry from policy processes [88, 93, 100, 124]. It was noted that regulatory design should be based on scientific evidence to support public health, to counter the UPF industry's use of regulatory measures, such as health claims, as marketing tools to advance their commercial interests [111]. While recommendations focused on dismantling legal structures and incentives that support UPF corporations, a recurring theme was the need to simultaneously invest in policies that support local and regional food markets and alternative food economies in order to reduce reliance on UPF-dominated supply chains [12, 17, 48, 125].

Some recommendations differentiated between the interests and capacities of different food businesses, noting that smaller food producers will call for different policy solutions and regulatory strategies than large corporations. For instance, institutional public procurement, generally designed for large companies, must be reoriented to reduce operational (e.g., food safety) and organizational (e.g., minimum order size) barriers to entry for smaller scale food providers so that governments can leverage this mechanism to support food systems resilience [17]. While many recommendations focused on large UPF retailers, such as supermarket chains, some highlighted the role of informal and independent traders in UPF environments, particularly urban settings [126, 127]. For example, the increased presence of UPFs and promotional materials near schools and public transport, in outlets like street carts or corner stores, was flagged for stronger regulation, including zoning laws, bans on advertising, and labelling requirements, to protect children's rights [113]. Sources also called for policies to mitigate the socio-economic impact of local retail restrictions on the livelihoods of informal vendors, as well as their families and communities, suggesting initiatives to support informal food vendors to build connections with local farmers and suppliers to make healthier foods more affordable and accessible [99, 113, 125, 128, 129].

4 | Discussion

4.1 | Summary

This study presents a framework for the reduction and control of UPFs using an ecological approach to regulation. The framework outlines "what" UPF policy actions and regulatory measures are recommended, "where" they operate across the components and levels of food systems, and "how" they align with the guiding principles of ecological regulation. The systematic search strategy and ecological regulation analysis used in this study complement and extend existing research by providing a structured synthesis of recommended policy and regulatory measures and analyzing them through an ecological framework.

4.2 | Interpretations

Various recommendations relate to food environments, including restrictions on UPF marketing to children, taxes, FOP labelling, school food policies, and procurement policies in largely public institutions [2, 99, 129–131]. In view of the global shift toward UPF-dominated environments [132], policies that shape food environments are a key component of the UPF regulatory response. However, regulatory measures focused on the consumer-facing dimensions of the UPF system do little to transform its underlying paradigm, goals and structures [31]. Given that current UPF-related regulation worldwide is skewed toward informational measures that change food environments [31], the synthesis of recommendations presented in this paper highlights the breadth of proposed measures and the importance of their interactions in catalyzing food systems change. A whole-of-food systems reorientation is needed, including measures that constrain corporate strategies reinforcing UPF dominance, rather than relying on soft-touch interventions that fail to challenge, and may entrench, the structural drivers of UPF systems.

Our findings underscore the importance of diversity in food production and food economies as a counteracting force to the uniformity inherent in UPF systems. Although UPF systems appear to provide diversity of consumer choice, they are built on uniform foundations and thrive on monocultures—in industrial crops, prevalent processing technologies, ubiquitous additives, dominant transnational corporations, prevailing self-regulatory tools, and shared branding and marketing strategies [14, 92, 103, 133]. Uniformity is reinforced by transnational corporate structures, common ownership and consolidated market control, which favor standardization across product portfolios, production practices and supply chains. In contrast, ecological regulation values diversity of all kinds—of policy tools, regulatory actors and strategies, social and economic practices, and agroecosystems. Our framework reflects this, presenting a range of recommendations that disincentivise monocultures and promote diversity in food systems to support socio-ecological flourishing. Applying an ecological regulation lens to the UPF

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policy response reveals how current governance models and regulatory strategies legitimize corporate concentration and reinforce UPF-driven monocultures. An ecological approach to regulation seeks to transform these dynamics by challenging entrenched corporate interests, extractive production systems and unsustainable financial flows, all factors at play in the UPF problem [36].

Food systems governance is a key focus, particularly mechanisms addressing conflicts of interest and structural imbalances that sustain UPF systems [5, 134]. Our framework includes recommendations that tackle conflicts of interest in different ways across food systems, such as transparency and disclosure requirements for UPF corporate actors, the separation of UPF industry influence from policy processes, and a broader emphasis on democratic, participatory governance structures. In many countries, food supply chains are dominated by a small group of transnational corporations—input suppliers and commodity traders, food manufacturers, distributors, advertising firms, major retailers and food service companies—that shape policies to maintain UPF dominance [40, 122]. This market concentration throughout UPF supply chains displaces smaller food producers and local food traditions and institutions, such as local supply chains and fresh markets [6, 135]. Our framework affirms that addressing these power inequities and facilitating broader participation in regulatory spaces is essential for systemic change.

We identified a strong thread of political, economic and commercial recommendations aimed at restructuring the broader drivers of the UPF system, such as trade and investment frameworks, governance, and financial regulation. These drivers embed corporate logics into food systems. Ecological regulation challenges the dominant paradigms that extract value in the forms of health, equity and natural resources from societies and ecosystems, especially in the Global South, where the power of transnational UPF companies in controlling food markets has been described by some as a kind of "food colonialism" [47]. These forms of extraction of value create additional equity challenges, particularly where governments in LMICs lack the capacity or resources to implement policies to address the consequences of UPF systems for their populations, or may be heavily dependent on the primary production of commodities for UPF markets. We argue that this elevates the responsibility of governments in HICs, particularly in the Global North that host UPF corporations, to take transformative policy and regulatory action that both constrains the dominance of the UPF industry and supports LMICs to mitigate the harms of UPFs on a global scale.

Our findings underscore the need to rethink dominant ideologies to address the distributive injustice and social inequities that characterize modern capitalism and animate UPF systems [20]. Our framework sets out a variety of policy approaches for anchoring policy actions and regulatory measures, including human rights approaches, holistic approaches to nutritional science, food sovereignty, degrowth and sufficiency frames, and agroecological approaches to food production. Shifts in ideologies are transformative as they have ripple effects across other regulatory tools, such as the repurposing of agricultural subsidies or introduction of tax policies to disincentivise UPF production and ensure UPF corporations bear the costs of the harms they create [5]. A human rights approach can shift the paradigm to position governments as duty-bearers and children as rights-holders, a framing that can recast regulatory tools as rights protections (e.g., restrictions on UPF marketing assert the rights of children to a food environment free from commercial exploitation) [100]. This highlights the importance of a just transition to diets low in UPFs, ensuring that policy responses are designed and implemented in ways that are socially equitable and attentive to the lived realities of people most affected by dietary and economic shifts [5].

Our framework also shows that UPF regulation inevitably dovetails with measures to make whole and minimally processed foods, and culturally appropriate diets, more accessible and affordable. Many of the recommendations identified in our study—for instance, taxes, FOP labelling, marketing restrictions—reiterate policy actions that have already been proposed to tackle unhealthy foods, often defined based on risk nutrients. However, we posit that the UPF concept is a useful focal point for policy and regulatory attention because it sharpens the rationale for structural action. As Adams and colleagues argue, "the lens of ultra-processed foods offers an opportunity for reconceptualising the policy problem of poor nutrition in a way that strengthens the imperative to deploy structural strategies, rather than simply continuing with reformulation, education, or motivational strategies" (p.4) [99].

Further, the language of "UPF reduction and control"—i.e., a reduction in the production, marketing and consumption of UPFs, and the control of industry practices that generate UPF systems—also reframes the issue from consumer behavior to corporate accountability, enabling a stronger case for upstream, system-level strategies [5]. This echoes the framing of tobacco control, signaling the need for coordinated structural responses. We identified some recommendations that drew directly on lessons from tobacco control, such as a global instrument modeled on Article 5.3 of the WHO Framework Convention on Tobacco Control, designed to prevent disproportionate corporate access to policy spaces and increase transparency [5, 122]. However, like others, we believe that tobacco policy offers other avenues for more robust UPF control measures that merit closer consideration, such as UPF plain packaging or progressive UPF warning labels that increase in size over time [22, 48].

Our study also reveals the limitations of applying analytical frameworks to policy actions in isolation. For example, under the ILF, some measures classified at the "elements" level, considered to be least effective level for transformative intervention, could in practice have system-wide effects. Corporate tax reforms, technically a rule-based change, could be pivotal in enabling the equitable redistribution of corporate income and could have transformative consequences for social justice. Similarly, statutory restrictions on UPF marketing would substantially disrupt UPF business models, while policies to abolish monocrop subsidies that facilitate cheap UPF production would dismantle a central structural pillar of UPF systems. Likewise, policies to reduce reliance on fossil fuels, petrochemicals and plastics may target specific material inputs and production practices within food systems, while generating transformative ripple effects across the system. Although the

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ILF acknowledges such ripple effects, assigning interventions to levels, ranked from least to most effective, can obscure the importance of synergistic interactions among interventions across levels. Ecological regulation addresses this as it recognizes the value of multiple, cascading measures within a complex regulatory "ecosystem" to catalyze food systems transformation.

4.3 | Strengths and Limitations

This study advances conceptual approaches to the emerging field of UPF policy by applying an ecological regulation lens. Our framework integrates a diverse range of regulatory strategies into a coherent regulatory ecosystem, shifting the focus from narrow, consumer-facing interventions to structural, multi-level approaches that address the systemic drivers of UPF dominance. Furthermore, this study explicitly focuses on the UPF concept, which reflects the increasing policy interest in UPF regulation and enabled a synthesis of recommendations from literature relevant to UPF reduction and control. While we focused on UPFs, this study also captured recommendations relating to Nova 1–3 foods that may indirectly reduce UPF consumption, extending the framework's relevance to settings where UPFs are not yet dominant.

This study also has a number of limitations. First, the search strategy focused on the term "ultra-processed", which may have missed literature that uses other common UPF signifiers. Second, while we extracted recommendations related to Nova 1–3 foods from our UPF-focused dataset, this approach only identified a partial subset of policy actions relevant to healthy foods as it was not accompanied by a dedicated search for Nova 1–3 policy actions. Third, the broad aim and objectives of our study necessitated some simplification of policy details in order to concisely present various recommendations. For instance, while we included fiscal measures in our framework, like taxes, we did not analyze design elements, such as the type of tax, the tax rate, the taxable products and the nutrient profile model used to define taxable products. Further, this framework is broad and will need to be tailored to specific countries, regions and contexts. While this paper synthesizes a wide range of recommendations, it does not capture the full extent of the literature on their implementation in policy and practice. These operational aspects warrant further exploration. Future research should assess the cost-effectiveness and region-specific impacts of different combinations of actions. Although we have considered the importance of interactions across measures, a detailed analysis of specific interactions was beyond the scope of this study and will be addressed in a related publication. Finally, the framework study may have missed relevant approaches or actions that lack representation in the literature. Future research could use participatory methods to identify gaps in and refine this framework.

5 | Conclusion

This study developed a framework for UPF regulation grounded in an ecological approach that is often underutilized in the field of food systems governance. This research builds on recent key papers and reports that call for comprehensive, mutually reinforcing and systemic policy action to address the broad components and drivers of UPF systems. Continuing "business-as-usual" in today's food systems is insufficient to bring them back into a safe operating space for human health and socio-ecological flourishing [136]. Under the status quo, the market power and profit maximization imperatives of the UPF industry will continue to feed UPF systems and ultra-processed diets. We propose that our ecological regulation framework for UPF reduction and control offers considerable potential to guide both international and national policy responses on UPFs, particularly as UPFs gain increasing recognition as a global public health issue demanding regulatory attention.

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Conflicts of Interest

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Data Availability Statement

Research data are not shared.

References

1. C. A. Monteiro, M. L. C. Louzada, E. Steele-Martinez, et al., "Ultra-Processed Foods and Human Health: The Main Thesis and the Evidence," *Lancet* 406, no. 10520 (2025): 2667–2684, https://doi.org/10.1016/S0140-6736(25)01565-X.

1467789x, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/obr.70257, Wiley Online Library on [23/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

2. C. A. Monteiro, G. Cannon, M. Lawrence, M. L. Costa Louzada, and P. Pereira Machado, *Ultra-Processed Foods, Diet Quality, and Health Using the NOVA Classification System* (FAO, 2019).

3. C. A. Monteiro, G. Cannon, R. B. Levy, et al., "Ultra-Processed Foods: What They Are and How to Identify Them," *Public Health Nutrition* 22, no. 5 (2019): 936–941, https://doi.org/10.1017/S1368980018003762.

4. P. Baker, P. Machado, T. Santos, et al., "Ultra-Processed Foods and the Nutrition Transition: Global, Regional and National Trends, Food Systems Transformations and Political Economy Drivers," *Obesity Reviews* 21, no. 12 (2020): e13126, https://doi.org/10.1111/obr.13126.

5. P. Baker, S. Slater, M. White, et al., "Towards Unified Global Action on Ultra-Processed Foods: Understanding Commercial Determinants, Countering Corporate Power, and Mobilising a Public Health Response," *Lancet* 406, no. 10520 (2025): 2703–2726, https://doi.org/10.1016/S0140-6736(25)01567-3.

6. B. M. Popkin, C. Corvalan, and L. M. Grummer-Strawn, "Dynamics of the Double Burden of Malnutrition and the Changing Nutrition Reality," *Lancet* 395, no. 10217 (2020): 65–74, https://doi.org/10.1016/S0140-6736(19)32497-3.

7. M. M. Lane, E. Gamage, S. Du, et al., "Ultra-Processed Food Exposure and Adverse Health Outcomes: Umbrella Review of Epidemiological Meta-Analyses," *BMJ* 384 (2024): e077310, https://doi.org/10.1136/bmj-2023-077310.

8. UNICEF, *Ultra-Processed Foods and Children: State-of-the-art Review* (UNICEF, 2025).

9. J. O. Warner, "Artificial Food Additives: Hazardous to Long-Term Health," *Archives of Disease in Childhood* 109 (2024): 882–885, https://doi.org/10.1136/archdischild-2023-326565.

10. J. Yates, S. Kadiyala, M. Deeney, et al., "A Toxic Relationship: Ultra-Processed Foods & Plastics," *Globalization and Health* 20, no. 1 (2024): 74, https://doi.org/10.1186/s12992-024-01078-0.

11. F. Juul, G. Vaidean, and N. Parekh, "Ultra-Processed Foods and Cardiovascular Diseases: Potential Mechanisms of Action," *Advances in Nutrition* 12, no. 5 (2021): 1673–1680, https://doi.org/10.1093/advances/nmab049.

12. K. Anastasiou, P. Baker, M. Hadjikakou, G. A. Hendrie, and M. Lawrence, "A Conceptual Framework for Understanding the Environmental Impacts of Ultra-Processed Foods and Implications for Sustainable Food Systems," *Journal of Cleaner Production* 368 (2022): 133155, https://doi.org/10.1016/j.jclepro.2022.133155.

13. P. Seferidi, G. Scrinis, I. Huybrechts, J. Woods, P. Vineis, and C. Millett, "The Neglected Environmental Impacts of Ultra-Processed Foods," *Lancet Planetary Health* 4, no. 10 (2020): e437–e438, https://doi.org/10.1016/S2542-5196(20)30177-7.

14. F. H. M. Leite, N. Khandpur, G. C. Andrade, et al., "Ultra-Processed Foods Should Be Central to Global Food Systems Dialogue and Action on Biodiversity," *BMJ Global Health* 7, no. 3 (2022): e008269, https://doi.org/10.1136/bmjgh-2021-008269.

15. A. Marrero, C. Nicoson, H. Kelahan, et al., "Equity as a Priority in EAT–Lancet-Aligned Food System Transformations," *Nature Food* 5, no. 10 (2024): 811–817, https://doi.org/10.1038/s43016-024-01047-1.

16. A. Fardet and E. Rock, "Ultra-Processed Foods and Food System Sustainability: What Are the Links?," *Sustainability* 12, no. 15 (2020): 6280.

17. IPES-Food, *Food From Somewhere: Building Food Security and Resilience Through Territorial Markets* (IPES-Food, 2024).

18. C. A. Monteiro and G. Cannon, "The Impact of Transnational "Big Food" Companies on the South: A View From Brazil," *PLoS Medicine* 9, no. 7 (2012): e1001252, https://doi.org/10.1371/journal.pmed.1001252.

19. L. Manderson and S. Jewett, "Risk, Lifestyle and Non-Communicable Diseases of Poverty," *Globalization and Health* 19, no. 1 (2023): 1–9, https://doi.org/10.1186/s12992-023-00914-z.

20. B. Wood, D. McCoy, P. Baker, O. Williams, and G. Sacks, "The Double Burden of Maldistribution: A Descriptive Analysis of Corporate Wealth and Income Distribution in Four Unhealthy Commodity Industries," *Critical Public Health* 33, no. 2 (2023): 135–147, https://doi.org/10.1080/09581596.2021.2019681.

21. R. H. Lustig, "Ultraprocessed Food: Addictive, Toxic, and Ready for Regulation," *Nutrients* 12, no. 11 (2020): 3401, https://doi.org/10.3390/nu12113401.

22. M. Nestle, "Regulating the Food Industry: An Aspirational Agenda," *American Journal of Public Health* 112, no. 6 (2022): 853–858, https://doi.org/10.2105/ajph.2022.306844.

23. M. Touvier, M. L. da Costa Louzada, D. Mozaffarian, P. Baker, F. Juul, and B. Srour, "Ultra-Processed Foods and Cardiometabolic Health: Public Health Policies to Reduce Consumption Cannot Wait," *BMJ (Clinical Research Ed)* 383 (2023): e075294, https://doi.org/10.1136/bmj-2023-075294.

24. D. Mozaffarian, "Regulatory Policy to Address Ultraprocessed Foods," *New England Journal of Medicine* 392, no. 24 (2025): 2393–2396, https://doi.org/10.1056/NEJMp2503241.

25. C. A. Monteiro, M. Lawrence, C. Millett, et al., "The Need to Reshape Global Food Processing: A Call to the United Nations Food Systems Summit," *BMJ Global Health* 6, no. 7 (2021): e006885, https://doi.org/10.1136/bmjgh-2021-006885.

26. FAO, "Dietary Guidelines," accessed April 28, 2026, https://www.fao.org/nutrition/nutrition-education/food-dietary-guidelines/en/.

27. B. M. Popkin, D. R. Miles, L. S. Taillie, and E. K. Dunford, "A Policy Approach to Identifying Food and Beverage Products That Are Ultra-Processed and High in Added Salt, Sugar and Saturated Fat in the United States: A Cross-Sectional Analysis of Packaged Foods," *Lancet Regional Health Americas* 32 (2024): 100713, https://doi.org/10.1016/j.lana.2024.100713.

28. S. Wahnschafft, A. Spiller, and B. A. Graciano, "How Can Advocates Leverage Power to Advance Comprehensive Regulation on Ultra-Processed Foods? Learning From Advocate Experience in Argentina," *Globalization and Health* 20, no. 1 (2024): 68, https://doi.org/10.1186/s12992-024-01069-1.

29. A. Valenzuela, L. Zambrano, R. Velásquez, et al., "Discrepancy Between Food Classification Systems: Evaluation of Nutri-Score, NOVA Classification and Chilean Front-Of-Package Food Warning Labels," *International Journal of Environmental Research and Public Health* 19, no. 22 (2022): 14631, https://doi.org/10.3390/ijerph192214631.

30. N. J. Temple, "A Proposed Strategy Against Obesity: How Government Policy Can Counter the Obesogenic Environment," *Nutrients* 15, no. 13 (2023): 2910, https://doi.org/10.3390/nu15132910.

31. T. Northcott, M. Lawrence, C. Parker, B. Reeve, and P. Baker, "Regulatory Responses to Ultra-Processed Foods Are Skewed Towards Behaviour Change and Not Food System Transformation," *Nature Food* 6 (2025): 273–282, https://doi.org/10.1038/s43016-024-01101-y.

32. S. Vandevijvere, R. De Pauw, S. Djojosoeparto, et al., "Upstream Determinants of Overweight and Obesity in Europe," *Current Obesity Reports* 12, no. 4 (2023): 417–428, https://doi.org/10.1007/s13679-023-00524-1.

33. T. Northcott, M. Lawrence, C. Parker, and P. Baker, "Ecological Regulation for Healthy and Sustainable Food Systems: Responding to the Global Rise of Ultra-Processed Foods," *Agriculture and Human Values* 40, no. 3 (2023): 1333–1358, https://doi.org/10.1007/s10460-022-10412-4.

34. B. Wood, K. Garton, P. Milsom, et al., "Using a Systems Thinking Approach to Map the Global Rise of Ultra-Processed Foods in Population

1467789x, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/obr.70257, Wiley Online Library on [23/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Diets," *Obesity Reviews* 26, no. 4 (2025): e13877, https://doi.org/10.1111/obr.13877.

35. B. Wood, E. Robinson, P. Baker, et al., "What Is the Purpose of Ultra-Processed Food? An Exploratory Analysis of the Financialisation of Ultra-Processed Food Corporations and Implications for Public Health," *Globalization and Health* 19, no. 1 (2023):85, https://doi.org/10.1186/s12992-023-00990-1.

36. C. Parker and F. Haines, "An Ecological Approach to Regulatory Studies?," *Journal of Law and Society* 45, no. 1 (2018): 136–155, https://doi.org/10.1111/jols.12083.

37. C. Ruggeri Laderchi, H. Lotze-Campen, F. DeClerck, et al., *The Economics of the Food System Transformation* (Food System Economics Commission (FSEC), 2024).

38. IPES-Food, *From Uniformity to Diversity: a Paradigm Shift From Industrial Agriculture to Diversified Agroecological Systems* (IPES-Food, 2016).

39. IPES-Food, *Unravelling the Food–Health Nexus: Addressing Practices, Political Economy, and Power Relations to Build Healthier Food Systems* (Global Alliance for the Future of Food and IPES-Food, 2017).

40. A. B. Gilmore, A. Fabbri, F. Baum, et al., "Defining and Conceptualising the Commercial Determinants of Health," *Lancet* 401, no. 10383 (2023): 1194–1213, https://doi.org/10.1016/S0140-6736(23)00013-2.

41. A. V. A. Figueiredo and E. Recine, "The Regulation of Ultra-Processed Food Products: The Challenge of Ruling the Market," *Cadernos de Saúde Pública* 37 (2022): e00207220, https://doi.org/10.1590/0102-311X00207220.

42. T. N. Pereira, G. A. Bortolini, and R. F. Campos, "Barriers and Facilitators Related to the Adoption of Policies to Reduce Ultra-Processed Foods Consumption: A Scoping Review," *International Journal of Environmental Research and Public Health* 20, no. 6 (2023): 4729, https://doi.org/10.3390/ijerph20064729.

43. A. B. Mariath and A. P. B. Martins, "Ultra-Processed Food Industry Regulation for Tackling Obesity and Diet-Related Non-Communicable Diseases in the Brazilian Legislature: Many Proposals, no Enactments," *Public Health Nutrition* 24, no. 10 (2021): 3110–3115, https://doi.org/10.1017/S1368980020002530.

44. C. Parker and H. Johnson, "From Food Chains to Food Webs: Regulating Capitalist Production and Consumption in the Food System," *Annual Review of Law and Social Science* 15 (2019): 205–225, https://doi.org/10.1146/annurev-lawsocsci-101518-042908.

45. C. Parker, R. Carey, F. Haines, and H. Johnson, "Can Labelling Create Transformative Food System Change for Human and Planetary Health? A Case Study of Meat," *International Journal of Health Policy and Management* 10, no. 12 (2021): 923–933, https://doi.org/10.34172/ijhpm.2020.239.

46. C. Parker and F. Haines, "Reconstituting the Contemporary Corporation Through Ecologically Responsive Regulation," *Company and Securities Law Journal* 39, no. 6 (2022): 316.

47. B. M. Popkin, S. Barquera, C. Corvalan, et al., "Towards Unified and Impactful Policies to Reduce Ultra-Processed Food Consumption and Promote Healthier Eating," *Lancet Diabetes & Endocrinology* 9, no. 7 (2021): 462–470, https://doi.org/10.1016/S2213-8587(21)00078-4.

48. G. Scrinis, B. M. Popkin, C. Corvalan, et al., "Policies to Halt and Reverse the Rise in Ultra-Processed Food Production, Marketing, and Consumption," *Lancet* 406, no. 10520 (2025): 2685–2702, https://doi.org/10.1016/S0140-6736(25)01566-1.

49. M. Dixon-Woods, "Using Framework-Based Synthesis for Conducting Reviews of Qualitative Studies," *BMC Medicine* 9, no. 1 (2011): 39, https://doi.org/10.1186/1741-7015-9-39.

50. E. Barnett-Page and J. Thomas, "Methods for the Synthesis of Qualitative Research: A Critical Review," *BMC Medical Research Methodology* 9, no. 1 (2009): 59, https://doi.org/10.1186/1471-2288-9-59.

51. G. Brunton, S. Oliver, and J. Thomas, "Innovations in Framework Synthesis as a Systematic Review Method," *Research Synthesis Methods* 11, no. 3 (2020): 316–330, https://doi.org/10.1002/jrsm.1399.

52. C. Parker and H. Johnson, "Sustainable Healthy Food Choices: The Promise of 'Holistic' Dietary Guidelines as a National and International Policy Springboard," *QUT Law Review* 18, no. 1 (2018): 1–44.

53. C. Parker, F. Haines, and L. Boehm, "The Promise of Ecological Regulation: The Case of Intensive Meat," *Jurimetrics* 59 (2018): 15–42.

54. HLPE, *Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security* (Food and Agriculture Organization of the United Nations (FAO), 2017).

55. B. Reeve, A. M. Thow, P. Baker, J. Hresc, and S. May, "The Role of Australian Local Governments in Creating a Healthy Food Environment: An Analysis of Policy Documents From Six Sydney Local Governments," *Australian and New Zealand Journal of Public Health* 44, no. 2 (2020): 137–144, https://doi.org/10.1111/1753-6405.12968.

56. S. Slater, P. Baker, and M. Lawrence, "An Analysis of the Transformative Potential of Major Food System Report Recommendations," *Global Food Security* 32 (2022): 100610, https://doi.org/10.1016/j.gfs.2022.100610.

57. L. Malhi, O. Karanfil, T. Merth, M. Acheson, A. Palmer, and D. T. Finegood, "Places to Intervene to Make Complex Food Systems More Healthy, Green, Fair, and Affordable," *Journal of Hunger & Environmental Nutrition* 4, no. 3–4 (2009): 466–476, https://doi.org/10.1080/19320240903346448.

58. E. Fourat, E. Blanchart, M. Cué Rio, et al., "Holistic Approaches to Assess the Sustainability of Food Systems in Low- and Middle-Income Countries: A Scoping Review," *PLOS Sustainability and Transformation* 3, no. 7 (2024): e0000117, https://doi.org/10.1371/journal.pstr.0000117.

59. Q. Marshall, J. Fanzo, C. B. Barrett, A. D. Jones, A. Herforth, and R. McLaren, "Building a Global Food Systems Typology: A New Tool for Reducing Complexity in Food Systems Analysis," *Frontiers in Sustainable Food Systems* 5 (2021): 746512, https://doi.org/10.3389/fsufs.2021.746512.

60. W. C. Sambu, F. Picchioni, S. Stevano, E. A. Codjoe, P. K. Nkegbe, and C. Turner, "Food Systems Thinking Unpacked: A Scoping Review on Industrial Diets Among Adolescents in Ghana," *Food Security* 16, no. 1 (2024): 79–114, https://doi.org/10.1007/s12571-023-01408-x.

61. P. Machado, C. Russell, P. R. de Melo, P. Baker, and M. Lawrence, "Research Roadmap for Ultra-Processed Foods in the Context of the Australian Food System," *Nutrition & Dietetics* 82, no. 5 (2025): 587–601, https://doi.org/10.1111/1747-0080.70018.

62. J. Fanzo, L. Haddad, R. McLaren, et al., "The Food Systems Dashboard Is a New Tool to Inform Better Food Policy," *Nature Food* 1, no. 5 (2020): 243–246, https://doi.org/10.1038/s43016-020-0077-y.

63. J. V. Braun, K. Afsana, L. Fresco, M. Hassan, and M. Torero, "Food Systems – Definition, Concept and Application for the UN Food Systems Summit," accessed April 28, 2026, https://www.un.org/sites/un2.un.org/files/2020/12/food_systems_paper-draft_oct-25.pdf.

64. HLPE, *Food Security and Nutrition: Building a Global Narrative Towards 2030. A Report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security* (Food and Agriculture Organization of the United Nations (FAO), 2030).

65. L. M. Johnston, C. L. Matteson, and D. T. Finegood, "Systems Science and Obesity Policy: A Novel Framework for Analyzing and Rethinking Population-Level Planning," *American Journal of Public Health* 104, no. 7 (2014): 1270–1278, https://doi.org/10.2105/ajph.2014.301884.

1467789x, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/obr.70257, Wiley Online Library on [23/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

66. G. Carey and B. Crammond, "Systems Change for the Social Determinants of Health," *BMC Public Health* 15, no. 1 (2015): 662, https://doi.org/10.1186/s12889-015-1979-8.

67. P. Ribeiro de Melo, P. Baker, P. P. Machado, E. Howse, S. Slater, and M. Lawrence, "An Analysis of the Transformative Potential of Australia's National Food Policies and Policy Actions to Promote Healthy and Sustainable Food Systems," *Public Health Nutrition* 27, no. 1 (2024): e75, https://doi.org/10.1017/s1368980024000478.

68. P. Naudiyal, B. Reeve, A. Jones, and S. McDonald, *Food Policy in Australia: The Role of Different Federal Government Organisations The University of Sydney 2021* (University of Sydney, 2021).

69. M. Caraher, S. Furey, and R. Wells, *Food Policy in the United Kingdom: An Introduction*, 1st ed. (Routledge, 2023).

70. T. Lang, D. Barling, and M. Caraher, *Food Policy: Integrating Health, Environment and Society* (Oxford University Press, 2009).

71. B. Saunders, J. Sim, T. Kingstone, et al., "Saturation in Qualitative Research: Exploring Its Conceptualization and Operationalization," *Quality and Quantity* 52, no. 4 (2018): 1893–1907, https://doi.org/10.1007/s11135-017-0574-8.

72. J. A. Rivera, M. A. Colchero, C. Pérez-Ferrer, and S. Barquera, "Perspective: Mexico's Experience in Building a Toolkit for Obesity and Noncommunicable Diseases Prevention," *Advances in Nutrition* 15, no. 3 (2024): 100180, https://doi.org/10.1016/j.advnut.2024.100180.

73. "Decreto por el que se expide la Ley General de la Alimentación Adecuada y Sostenible [Decree Issuing the General Law on Adequate and Sustainable Food] (Mexico)," accessed April 28, 2026, https://faolex.fao.org/docs/pdf/mex225716.pdf.

74. E. Pineda, M. Hernández-F, A. G. Ortega-Avila, A. Jones, and J. A. Rivera, "Mexico's Bold New Law on Adequate and Sustainable Nutrition," *Lancet* 405, no. 10481 (2025): 764–767, https://doi.org/10.1016/S0140-6736(24)01493-4.

75. "Ley General de Educación [General Education Law] (Mexico)," accessed April 28, 2026, https://www.dof.gob.mx/nota_detalle.php?codigo=5740005&fecha=30/09/2024#gsc.tab=0.

76. "Ley 20.606 - Sobre Composicion Nutricional de los Alimentos y su Publicidad [Law 20.606 - The Food Composition and Food Advertising Law] (Chile)," accessed April 28, 2026, https://gifna.who.int/countries/CHL/policies/22905.

77. P. Villalobos Dintrans, L. Rodriguez, J. Clingham-David, and T. Pizarro, "Implementing a Food Labeling and Marketing Law in Chile," *Health Systems & Reform* 6, no. 1 (2020): e1753159, https://doi.org/10.1080/23288604.2020.1753159.

78. "Resolução n° 6, de 08 de maio de 2020 (Brazil)," accessed April 28, 2026, https://www.gov.br/fnde/pt-br/acesso-a-informacao/legislacao/resolucoes/2020/resolucao-no-6-de-08-de-maio-de-2020/view.

79. Global Food Research Program, "National School Meals Program/Programa Nacional de Alimentação Escolar (PNAE) (Brazil)," accessed April 28, 2026, https://www.globalfoodresearchprogram.org/policy/restrictions-on-unhealthy-foods-and-drinks-in-schools/.

80. "Resolução CD/FNDE n° 3, de 4 de fevereiro de 2025 (Brazil)," accessed April 28, 2026, https://www.gov.br/fnde/pt-br/acesso-a-informacao/legislacao/resolucoes/2025/resolucao-cd_fnde-no-3-de-4-de-fevereiro-de-2025-resolucao-cd_fnde-no-3-de-4-de-fevereiro-de-2025-dou-imprensa-nacional.pdf/view.

81. "Bill No. 4501, 2020 (Brazil)," accessed April 28, 2026, https://www25.senado.leg.br/web/atividade/materias/-/materia/144610.

82. Secretariat of Social Communication - Presidency of the Republic, "President Lula Reinstates National Food Council and Makes Combating Hunger a Priority," accessed April 28, 2026, https://www.gov.br/secom/en/latest-news/2023/president-lula-reinstates-national-food-council-and-makes-combating-hunger-a-priority.

83. A. Fagundes, R. de Cássia Lisboa Ribeiro, E. R. B. de Brito, E. Recine, and C. Rocha, "Public Infrastructure for Food and Nutrition Security in Brazil: Fulfilling the Constitutional Commitment to the Human Right to Adequate Food," *Food Security* 14, no. 4 (2022): 897–905, https://doi.org/10.1007/s12571-022-01272-1.

84. "Guia alimentar para a população brasileira [Dietary Guidelines for the Brazilian Population 2014] (Brazil)," accessed April 28, 2026, https://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/Brazil/en.

85. "LAW N° 3.766, of January 5, 2023 (Niterói, Brazil)," accessed April 28, 2026, https://leismunicipais.com.br/a1/rj/n/niteroi/lei-ordinaria/2023/377/3766/lei-ordinaria-n-3766-2023-altera-a-lei-de-n-2659-de-19-de-novembro-de-2009-proibe-a-comercializacao-a-aquisicao-a-confeccao-a-distribuicao-e-a-publicidade-de-produtos-que-contribue.

86. Global Health Advocacy Incubator, "Breaking the Cycle of Unhealthy Eating: Rio de Janeiro Newest Brazilian City to Ban Ultra-Processed Products in Schools," accessed April 28, 2026, https://www.advocacyincubator.org/news/2023-08-09-breaking-the-cycle-of-unhealthy-eating-rio-de-janeiro-newest-brazilian-city-to-ban-ultra-processed-products-in-schools.

87. Câmara Municipal de Ribeirão Preto, "SUBSTITUTIVO N° 1 AO PL N° 65/2023," accessed April 28, 2026, http://idec.org.br/sites/default/files/substitutivo_no_1_ao_pl_no_65-2023.pdf.

88. S. Slater, M. Lawrence, B. Wood, P. Serodio, and P. Baker, "Corporate Interest Groups and Their Implications for Global Food Governance: Mapping and Analysing the Global Corporate Influence Network of the Transnational Ultra-Processed Food Industry," *Globalization and Health* 20, no. 1 (2024): 16, https://doi.org/10.1186/s12992-024-01020-4.

89. WHO, *Executive Summary - Food Systems Delivering Better Health: A new Narrative to Guide Policy and Practice for Better Human, Ecosystem and Animal Health and Well-Being* (World Health Organization, 2021).

90. M. Lawrence, C. Parker, H. Johnson, et al., "An Ecological Reorientation of the Codex Alimentarius Commission Could Help Transform Food Systems," *Nature Food* 5, no. 7 (2024): 557–562, https://doi.org/10.1038/s43016-024-01009-7.

91. A. Fardet and E. Rock, "Ultra-Processed Foods: A New Holistic Paradigm?," *Trends in Food Science & Technology* 93 (2019): 174–184, https://doi.org/10.1016/j.tifs.2019.09.016.

92. B. Wood, O. Williams, P. Baker, and G. Sacks, "Behind the 'creative Destruction' of Human Diets: An Analysis of the Structure and Market Dynamics of the Ultra-Processed Food Manufacturing Industry and Implications for Public Health," *Journal of Agrarian Change* 23, no. 4 (2023): 811–843, https://doi.org/10.1111/joac.12545.

93. C. Levis, C. Mejía Toro, S. R. G. Patiño, V. E. Villalobos-Daniel, C. Spinillo, and F. S. Gomes, "Building Capacity and Advancing Regulatory Measures to Improve Food Environments in the Region of the Americas," *Nutrients* 16, no. 8 (2024): 1202, https://doi.org/10.3390/nu16081202.

94. R. Hertwig, "The Citizen Choice Architect in an Ultra-Processed World," *Behavioural Public Policy* 7, no. 4 (2023): 906–913, https://doi.org/10.1017/bpp.2023.9.

95. S. Phulkerd, A. Schram, J. Collin, et al., "Towards Reconciling Population Nutrition Goals and Investment Policy in Thailand: Understanding How Investment Policy Actors Defined, Framed and Prioritized Nutrition," *Globalization and Health* 18, no. 1 (2022): 1–11, https://doi.org/10.1186/s12992-022-00888-4.

96. J. G. Coutinho, A. P. B. Martins, P. V. Preiss, L. Longhi, and E. Recine, "UN Food System Summit Fails to Address Real Healthy and Sustainable Diets Challenges," *Development (Society for International Development)* 64, no. 3–4 (2021): 220–226, https://doi.org/10.1057/s41301-021-00315-y.

1467789x, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/obr.70257, Wiley Online Library on [23/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

97. WHO, *The Growth of Ultra-Processed Foods in India: An Analysis of Trends, Issues and Policy Recommendations* (WHO, 2023).

98. FAO, *Achieving SDG 2 Without Breaching the 1.5°C Threshold: A Global Roadmap, Part 1 – How Agrifood Systems Transformation Through Accelerated Climate Actions Will Help Achieving Food Security and Nutrition, Today and Tomorrow, in Brief* (FAO, 2023).

99. J. Adams, K. Hofman, J.-C. Moubarac, and A. M. Thow, "Public Health Response to Ultra-Processed Food and Drinks," *BMJ (Clinical Research Ed)* 369 (2020): m2391, https://doi.org/10.1136/bmj.m2391.

100. UNICEF, *UNICEF Technical Note on Effective Regulatory Approaches to Protect, Support and Promote Better Diets and Create Healthy Food Environments for Children* (UNICEF, 2021).

101. F. Haines and C. Parker, *Moving Towards Ecological Regulation: The Role of Criminalisation. Criminology and the Anthropocene Criminology and the Anthropocene* (Routledge, 2017).

102. D. Guarnizo-Peralta, "Marketing Ultra-Processed Food and Beverages to Children in Latin America: Business Responsibilities and State Duties," *Business & Human Rights Journal* 7, no. 3 (2022): 418–438, https://doi.org/10.1017/bhj.2022.10.

103. T. Mofokeng, "Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health," (2023).

104. UNICEF, *Engaging with the Food and Beverage Industry* (UNICEF Programme Guidance, 2023).

105. UNICEF, *Feeding Profit: How Food Environments Are Failing Children* (UNICEF, 2025).

106. FAO, *A Snapshot of the Status and Way Forward for Transforming Agrifood Systems in the Pacific – Identifying Entry Points and Analysing Trade-Offs for Policymakers* (FAO, 2023).

107. IPES-Food, *Fuel to Fork: What Will It Take to Get Fossil Fuels out of Our Food Systems?* (IPES-Food, 2025).

108. V. Calcaterra, H. Cena, V. Rossi, S. Santero, A. Bianchi, and G. Zuccotti, "Ultra-Processed Food, Reward System and Childhood Obesity," *Children* 10, no. 5 (2023): 804, https://doi.org/10.3390/children10050804.

109. J. C. Caro, L. Smith-Taillie, S. W. Ng, and B. Popkin, "Designing a Food Tax to Impact Food-Related Non-Communicable Diseases: The Case of Chile," *Food Policy* 71 (2017): 86–100, https://doi.org/10.1016/j.foodpol.2017.08.001.

110. S. Phulkerd, N. Thongcharoenchupong, S. Dickie, et al., "Profiling Ultra-Processed Foods in Thailand: Sales Trend, Consumer Expenditure and Nutritional Quality," *Globalization and Health* 19, no. 1 (2023): 64, https://doi.org/10.1186/s12992-023-00966-1.

111. FAO and Consumer International, *Health on the Table – A Consumer Advocacy Perspective on Reducing Overweight and Obesity in Latin America* (FAO, 2021).

112. N. Woods, J. Gilliland, and J. A. Seabrook, "Applicability of the Socioecological Model for Understanding and Reducing Consumption of Ultra-Processed Foods in Canada," *Canadian Journal of Dietetic Practice and Research: A Publication of Dietitians of Canada* 84, no. 1 (2023): 38–42, https://doi.org/10.3148/cjdpr-2022-027.

113. UNICEF. *A Systems Approach to Improving Children's Diets: Learning From Lived Experience* (UNICEF, 2022).

114. M. F. Kroker-Lobos, M. Mazariegos, M. Guamuch, and M. Ramirez-Zea, "Ultraprocessed Products as Food Fortification Alternatives: A Critical Appraisal From Latin America," *Nutrients* 14, no. 7 (2022): 1413, https://doi.org/10.3390/nu14071413.

115. F. Ferretti and G. Malorgio, "Food Policies: Balancing Health and Market in the Era of Ubiquitous Ultra-Processed Foods," *Agricultural and Food Economics* 12, no. 1 (2024): 35, https://doi.org/10.1186/s40100-024-00329-3.

116. WHO, *A Practice Guide to Effective Population-Based Food Policy Actions to Promote Healthy Diets* (WHO, 2017).

117. I. Campos-Nonato, J. Vargas Meza, C. Nieto, A. C. Ariza, and S. Barquera, "Reducing Sodium Consumption in Mexico: A Strategy to Decrease the Morbidity and Mortality of Cardiovascular Diseases," *Frontiers in Public Health* 10 (2022): 857818, https://doi.org/10.3389/fpubh.2022.857818.

118. S. Slater, M. Lawrence, B. Wood, P. Serodio, A. Van Den Akker, and P. Baker, "The Rise of Multi-Stakeholderism, the Power of Ultra-Processed Food Corporations, and the Implications for Global Food Governance: A Network Analysis," *Agriculture and Human Values* 42, no. 1 (2025): 177–192, https://doi.org/10.1007/s10460-024-10593-0.

119. C. Parker, "From 'Corporate Governance' to Ecological Regulation: Flipping the Regulatory Story on Climate Change," *UCL Research Paper Series* 10 (2022): 1–7, https://doi.org/10.2139/ssrn.4184911.

120. G. Ares, L. Antúnez, F. Alcaire, V. Natero, and T. Otterbring, "Is This Advertisement Designed to Appeal to You? Adolescents' Views About Instagram Advertisements Promoting Ultra-Processed Products," *Public Health Nutrition* 27, no. 1 (2024): e96, https://doi.org/10.1017/S1368980024000533.

121. M. K. Boachie, S. Goldstein, P. Kruger, S. W. Ng, K. J. Hofman, and E. Thsehla, "Beverage Industry's Advertising Expenditures and Airtimes in South Africa From 2013 to 2019 Target Children and Families," *Journal of Public Health Research* 12, no. 2 (2023): 22799036231168207, https://doi.org/10.1177/22799036231168207.

122. S. Ulucanlar, K. Lauber, A. Fabbri, et al., "Corporate Political Activity: Taxonomies and Model of Corporate Influence on Public Policy," *International Journal of Health Policy and Management* 12 (2023): 7292, https://doi.org/10.34172/ijhpm.2023.7292.

123. P. Kruger, R. Wynberg, M. Mafuyeka, et al., "The Ultra-Processed Food Industry in Africa," *Nature Food* 4, no. 7 (2023): 534–536, https://doi.org/10.1038/s43016-023-00802-0.

124. R. Moodie, D. Stuckler, C. Monteiro, et al., "Profits and Pandemics: Prevention of Harmful Effects of Tobacco, Alcohol, and Ultra-Processed Food and Drink Industries," *Lancet* 381, no. 9867 (2013): 670–679, https://doi.org/10.1016/S0140-6736(12)62089-3.

125. PAHO, *Ultra-Processed Food and Drink Products in Latin America: Trends, Impact on Obesity, Public Policy Implications* (PAHO, 2015).

126. A. C. C. Jesus, L. V. Botelho, D. S. Canella, et al., "Food Environment of Bus Terminals in the Rio de Janeiro Metropolitan Region," *Revista de Saúde Pública* 58 (2024): 04, https://doi.org/10.11606/s1518-8787.2024058004769.

127. A. Chew, S. Mus, P. Rohloff, and J. Barnoya, "The Relationship Between Corner Stores and the Ultra-Processed Food and Beverage Industry in Guatemala: Stocking, Advertising, and Trust," *Journal of Hunger & Environmental Nutrition* 19, no. 3 (2024): 464–479, https://doi.org/10.1080/19320248.2021.2002748.

128. M. R. Brear, A. Erzse, G. Clacherty, et al., "Unhealthy Food Outlets and Outdoor Advertisements in Urban South African Primary School Students' Food Environments," *Health Promotion International* 39, no. 6 (2024): daae138, https://doi.org/10.1093/heapro/daae138.

129. WHO, *Report of the Commission on Ending Childhood Obesity. Implementation Plan: Executive Summary* (WHO, 2017).

130. WHO, *Global Action Plan for the Prevention and Control of Non-Communicable Diseases, 2013–2020* (WHO, 2013).

131. B. A. Swinburn, V. I. Kraak, S. Allender, et al., "The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission Report," *Lancet* 393, no. 10173 (2019): 791–846, https://doi.org/10.1016/S0140-6736(18)32822-8.

1467789x, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/obr.70257, Wiley Online Library on [23/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

132. S. M. Downs, S. Ahmed, T. Warne, J. Fanzo, and K. Loucks, "The Global Food Environment Transition Based on the Socio-Demographic Index," *Global Food Security* 33 (2022): 100632, https://doi.org/10.1016/j.gfs.2022.100632.

133. WHO, *Guidance on Mainstreaming Biodiversity for Nutrition and Health* (WHO, 2020).

134. M. Mialon and A. Naik, "A Discussion of Stronger Public Policies to Protect and Promote Healthy Diets: What Can the U.S. Learn From Other Countries?," *World Nutrition* 14, no. 1 (2023): 86–99.

135. T. Reardon, C. P. Timmer, C. B. Barrett, and J. Berdegué, "The Rise of Supermarkets in Africa, Asia, and Latin America," *American Journal of Agricultural Economics* 85, no. 5 (2003): 1140–1146.

136. IPES-Food, *A Long Food Movement: Transforming Food Systems by 2045* (IPES-Food, 2021).

Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Table S1:** Ecological regulation guiding principles. **Table S2:** Coding frame for food systems framework. **Table S3:** Coding frame for the ILF. **Table S4:** Integrated initial framework used to guide the review.

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