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Corporate capture in food policies to confront the global syndemic in Curitiba

Captura corporativa em políticas alimentares para enfrentamento da sindemia global em Curitiba

Abstract

Introduction: Synergistic interconnections have been suggested to determine obesity, under nutrition and climate change due to the hegemonic food system. Ultra-processed food is associated with the double burden of malnutrition, greenhouse gas emissions and with biosphere's regenerative capacity limitations. Red meat and dairy products intake is discouraged by the Planetary Health Diet. Urban centers composing the C40 Cities network decided to overhaul their food systems in order to meet the Paris Agreement targets. **Objective:** Assessing the food industry influence on food policies aimed at addressing the global syndemic in Curitiba-PR. **Methods:** Qualitative study based on an exploratory, descriptive and analytical approach. Data collection was conducted through both the application of a semi-structured electronic questionnaire and thematic workshops held via videoconference with representatives from Curitiba City Hall attending the C40 Cities network. Content and discourse analyses were also conducted. **Results:** Curitiba food policies are influenced by corporate activities such as coalition management, direct involvement, political influence, and discursive persuasion, despite innovation and success in actions effectively promoting the availability, accessibility and affordability of healthier and more sustainable food types. **Conclusion:** Continuous analyses about food and nutritional security, and sustainability programs, in Curitiba-PR are recommended, despite the critical alert to conflicts of interest, so that they become State public policies aimed at social, health and climate justice.

Keywords: Obesity. Malnutrition. Climate change. Food industry. Conflicts of interest.

Resumo

Introdução: Interconexões sinérgicas têm sido sugeridas na determinação da obesidade, desnutrição e mudanças climáticas, devido ao sistema alimentar hegemônico. Alimentos ultraprocessados estão associados à dupla carga de má nutrição, emissões de gases de efeito estufa e limitações na capacidade regenerativa da biosfera. O consumo de carne bovina e de laticínios é desestimulado pela Dieta de Saúde Planetária. Para alcance do propósito do Acordo de Paris, metrópoles integrantes da Rede *C40 Cities* se dispuseram

a revisar seus sistemas alimentares. **Objetivo:** Avaliar a influência da indústria de alimentos em políticas alimentares para enfrentamento da zoonose global em Curitiba-PR. **Métodos:** Estudo qualitativo, de abordagem exploratória, descritiva e analítica, com coleta de dados feita por questionário eletrônico semiestruturado e oficinas temáticas em videoconferência, com representantes da Prefeitura de Curitiba junto à Rede *C40 Cities*. Procedeu-se com análise de conteúdo e análise de discurso. **Resultados:** Políticas alimentares de Curitiba mostram-se atravessadas por atividades corporativas como gerenciamento de coalizão, envolvimento direto e influência política e convencimento discursivo, em que pesem inovação e êxito em ações efetivamente promotoras de disponibilidade, acessibilidade física e financeira a alimentos mais saudáveis e sustentáveis. **Conclusão:** Recomendam-se contínuas análises de programas de segurança alimentar e nutricional e de sustentabilidade em Curitiba-PR, com alerta crítico à presença de conflitos de interesses, de modo que se tornem políticas públicas de Estado direcionadas à justiça social, sanitária e climática.

Palavras-chave: Obesidade. Desnutrição. Mudança Climática. Complexos da Indústria de Alimentos. Conflito de Interesses.

INTRODUCTION

The hegemonic food system has been blamed for having synergistic interconnections at the time to determine obesity, undernutrition and climate change pandemics that, altogether, form the global syndemic.¹ The double burden of malnutrition coexists in low and middle-income countries, and it reflects on the simultaneous occurrence of overweight/obesity and undernutrition/micronutrient deficiencies. Actually, one of these conditions predisposes individuals to reach the other condition across different stages of life.²

Food systems encompass environments, actors, processes, infrastructure and institutions related to production, processing, supply, marketing, transportation, distribution, preparation, consumption and to the control of food waste and losses. These elements set nutritional and health status, as well as have socioeconomic and environmental impact on various populations.³ Food environments are the intersection between food supply chains and consumers, besides determining food availability, accessibility, affordability, convenience, promotion, quality and sustainability.⁴

A nutrition-sensitive food system leads to higher availability and diversity of fresh food coming from agroecological sources. On the other hand, the hegemonic system adopts a biomedical and artificial approach to nutrition and relies on genetically modified organisms and on global-powers pesticides for the production of agricultural commodities intended to exports in developing countries.⁵ Consequently, some environmental impacts result from land use, water consumption and deforestation, in addition to a food supply system increasingly defined by ultra-processed food (UPFs).

UPFs industry conglomerates seek to capture State apparatuses and international organizations in order to perpetuate their interests and privileges by reinforcing the extractivism of natural systems in developing countries and by undermining their public policies aimed at health, sustainability and social well-being.⁶ DGBP recommends the preferential consumption of fresh or minimally processed food, and advises against UPFs consumption.⁷

According to the Dietary Guidelines for the Brazilian Population (DGBP), UPFs are industrial formulations deriving from food constituents whose frequent consumption is associated with non-communicable chronic diseases due to their high energy density; high carbohydrate, salt and fat concentrations; poor nutritional composition and the incorporation of chemical additives such as colorings, preservatives, emulsifiers and flavor enhancers.⁷ Regardless of their packaging and given their very constitution, these additives have harmful impact on water, carbon and ecological footprints, and it compromises water availability, contributes to greenhouse gas (GHG) emissions and limits the biosphere's regenerative capacity.⁸ Furthermore, the correlation between animal proteins consumption ((mainly from red meat and dairy products) and climate change (due to the digestion process of ruminant livestock mainly fed on monoculture-based crops, which releases methane and nitrous oxide that have high global warming potential through carbon dioxide formation) has been identified. Accordingly, the Planetary Health Diet proposed by the EAT-Lancet Commission emphasizes whole grains, legumes, nuts and unsaturated vegetable oils, small to moderate seafood and poultry portions, and none or only small amounts of red meat, added sugars, refined grains and starchy vegetables.⁹

In 2015, during the 21st session of the Conference of the Parties (COP-21) of the United Nations Framework Convention on Climate Change, 196 countries committed to the Paris Agreement, whose goal is to limit global warming to values lower than 2°C, mitigate the negative impact of climate change and reduce GHG emissions. This agreement stands out in the 2030 Agenda, which marked the transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs).¹⁰

It is essential to change the development model of major urban centers in order to achieve the goals of the Paris Agreement and establish a collective forum comprising 95 metropolitan cities across all continents, the so-called the C40 Cities network, whose initiatives include the revision of food systems. Brazilian municipalities joining this network are Rio de Janeiro, São Paulo and Curitiba.¹¹ It is worth highlighting the prior commitment made by these cities through the Milan Urban Food Policy Pact, which focuses the development of food systems to ensure the accessibility to and affordability of healthy food, while protecting biodiversity and controlling food waste.¹²

The aim of the present article is to assess the food industry influence on food policies focused on addressing the global syndemic in Curitiba municipality, capital of Paraná State.

METHODS

This article is an excerpt from a Doctoral research on Public Health defended at Escola Nacional de Saúde Pública Sérgio Arouca (ENSP), which focused the analysis of food policies in Brazilian municipalities joining the C40 Cities Network, with emphasis on the global syndemic. This period begins with the publication of the topic Global Syndemic and Planetary Health Diet in the journal *The Lancet*, in 2019, and concluded in mid-2022, due to the academic schedule.

The target audience consisted of four professionals representative of Curitiba City Hall attending the C40 Cities Network, allocated in the Municipal Secretariats of the Environment and Food and Nutritional Security, including career civil officers and appointed officials. These individuals have academic background in Nutrition, Agronomy and Environmental Engineering, and they have been in the Direct Administration for 16.5 years, on average, except for the only appointed official who has been in this bureau for 5 years.

Curitiba is a metropolis located in Southern Brazil that houses an estimated population of 1.773.718 inhabitants, according to the 2022 Demographic Census and to a high Municipal Human Development Index (0.823), back in 2010.¹³

The study followed a qualitative experimental design based on an exploratory, descriptive and analytical approach. Data collection was carried out at two complementary stages comprising the application of a semi-structured electronic questionnaire and the conduction of three thematic workshops on a videoconference platform. These workshops were facilitated by the current authors, who took on the roles of mediators, reporters and observers. These workshops were followed by systematic meetings aiming planning guidance and co-guidance.

The semi-structured questionnaire was applied between October and November 2021 (Table 1). The outline of the workshops, which were performed between June and July 2022, is shown in Table 2. Questions mainly focused Curitiba municipality.

Table 1. Semi-structured electronic questionnaire, component of the research study “Analysis of food policies in Brazilian municipalities members of the C40 Cities Climate Leadership Group to address the Global Syndemic”. Curitiba, Brazil, 2022.

1. IDENTIFICATION
1.1 Name of the municipality
1.2 Name of the Secretariat or Department representing the C40 Cities Network
1.3 Name of the Municipality's Delegate to the C40 Cities Network
1.4 Role of the Municipality's Delegate in the C40 Cities Network
1.5 Email contact of the Municipality's Delegate in the C40 Cities Network
1.6 Name of the Technical Consultant on food systems for the municipality in the C40 Cities Network
1.7 Role of the Technical Consultant on food systems for the municipality in the C40 Cities Network
1.8 Email contact of the Technical Consultant on food systems for the municipality in the C40 Cities Network

Table 1. Semi-structured electronic questionnaire, component of the research study “Analysis of food policies in Brazilian municipalities members of the C40 Cities Climate Leadership Group to address the Global Syndemic”. Curitiba, Brazil, 2022. (Continues)

2. IMPLEMENTATION OF THE MUNICIPAL FOOD SYSTEMS REVIEW PLAN
2.1 Has the municipality signed the <i>C40 Cities Good Food Declaration</i> ? () Yes () No. If not, what were the obstacles?
2.2 In the event of a new Mayor being elected in 2020, what developments occurred regarding the relationship with the C40 Cities Network following the change in administration?
2.3 What priorities and strategies were defined to achieve the goals set forth in the <i>C40 Cities Good Food Declaration</i> ?
2.4 What priorities and strategies have been effectively implemented to achieve the goals set forth in the <i>C40 Cities Good Food Declaration</i> ?
2.5 What were the main barriers encountered in achieving the goals established by the <i>C40 Cities Good Food Declaration</i> ?
2.6 Did the C40 Cities Network propose adjustments to the food systems review plan in response to the COVID-19 pandemic? () Yes () No. If yes, please provide examples.
3. MUNICIPAL PUBLIC POLICIES ON FOOD AND NUTRITION
3.1 Is there a Municipal Policy on Food and Nutrition already implemented or in the process of being implemented in the city? () Yes () No. If yes, please attach the document.
3.2 How is the topic of “Food and Nutrition” addressed in the city's Master Plan?
3.3 Is there a Municipal Policy on Food and Nutritional Security already implemented or in the process of being implemented in the city? () Yes () No. If yes, please attach the document.
3.4 Is there a Municipal Food and Nutritional Security Plan already developed for the city's four-year administrative term? () Yes () No. If yes, please attach the document.
3.5 Are there municipal representatives in the Intersectoral Chamber and the Food and Nutritional Security Council? () Yes () No. If yes, please highlight three recent resolutions from these bodies.
3.6 Is there a Municipal Food Supply Policy already implemented or in the process of being implemented in the city? () Yes () No. If yes, please attach the document.
4. MUNICIPAL FOOD AND NUTRITION SURVEILLANCE
4.1 What are the indicators from the Food and Nutrition Surveillance System in the municipality regarding the nutritional status of the adult population? Please attach them if necessary.
4.2 What are the indicators from the Food and Nutrition Surveillance System in the municipality regarding the dietary intake of the adult population? Please attach them if necessary.
4.3 What are the indicators related to the consumption of red meat, dairy products, and ultra-processed foods by the adult population? Please attach them if necessary.
4.4 What are the indicators regarding the distribution of establishments selling fresh or minimally processed foods, and those selling ultra-processed foods in the city? Please attach them if necessary.
4.5 What are the indicators related to food and nutritional insecurity in the city? Please attach them if necessary.
4.6 In what ways has the Covid-19 pandemic impacted food and nutritional security in the city?
4.7 What are the indicators related to food waste and food losses in the city? Please attach them if necessary.
5. PHYSICAL ACCESSIBILITY AND FOOD AVAILABILITY IN THE CITY
5.1 Are there food supply centers under the responsibility of the municipality? () Yes () No. If yes, please list them.
5.2 Which institutional programs have food provision managed by the City Hall?
5.3 How are urban garden programs distributed and managed?
5.4 How are urban open-air market programs distributed and managed?
5.5 How are family farming and agroecological production included in the food provision of the municipality's institutional programs?
5.6 Have any targets been planned and/or adopted to reduce the supply of red meat, dairy products, and ultra-processed foods in meals provided by the municipality's institutional programs? If so, what are these targets?
5.7 How is the geographic redistribution of establishments that primarily sell fresh or minimally processed foods and ultra-processed foods planned within urban zoning?
5.8 What interventions are planned for the control of food waste and losses in the city?

Table 1. Semi-structured electronic questionnaire, component of the research study “Analysis of food policies in Brazilian municipalities members of the C40 Cities Climate Leadership Group to address the Global Syndemic”. Curitiba, Brazil, 2022.(Continues)

6. AFFORDABILITY TO FOOD IN THE CITY
6.1 What social programs are in place to address food and nutrition insecurity in the municipality?
6.2 How do the social programs addressing food and nutrition insecurity incorporate social oversight and popular participation in the municipality?
6.3 What adjustments were necessary in the social programs addressing food and nutrition insecurity in the municipality in response to the Covid-19 pandemic?
6.4 Are fiscal incentives planned for establishments that primarily sell fresh or minimally processed foods in the city? () Yes () No. If yes, please describe them.
6.5 Are fiscal disincentives or taxes planned for establishments that primarily sell ultra-processed foods in the city? () Yes () No. If yes, please describe them.
7. PROMOTION OF ADEQUATE AND HEALTHY DIETS IN THE CITY
7.1 Are there municipal actions promoting and advertising fresh or minimally processed foods in public spaces of the city? () Yes () No. If yes, please describe them.
7.2 How does the municipality plan to mitigate conflicts of interest among the food industry, health, and sustainability in public-private partnerships established by the City Hall?
7.3 Are there regulatory frameworks regarding the promotion of adequate and healthy diets in the city? () Yes () No. If yes, please describe them.
7.4 Are there regulatory mechanisms that restrict the advertising of ultra-processed foods in the city? () Yes () No. If yes, please describe them.

Table 2. Workshop framework based on the study “Analysis of food policies in Brazilian municipalities members of the C40 Cities Climate Leadership Group to address the Global Syndemic”, with specific focus on Curitiba, Brazil, 2022.

A) Implementation of the Municipal Food Systems Review Plan
A1. Alignment was observed between the legitimate demands of Curitiba’s Municipal Food and Nutrition Security Plan (PLAMSAN) and the goals of the Good Food Cities Declaration. In what ways did the initiative influence the process of food systems revision?
B) Implementation of Municipal Food and Nutrition Policies
B1. How does the content of Curitiba’s PLAMSAN align with the <i>Brazilian Dietary Guidelines</i> and the <i>Planetary Health Diet</i> ?
B2. What is the current status of the implementation process of the Municipal Food and Nutrition Security Policy as outlined in the Municipal Plan in effect until 2023?
C) Food and Nutrition Surveillance in the Municipality
C1. How were the restricted reports from the Food and Nutrition Surveillance System utilized in the process of revising municipal food systems?
C2. Although respondents reported a lack of knowledge regarding the monitoring of the density of food retail establishments in certain sections of the questionnaire, an understanding of the concepts of food deserts and food swamps was evident. What references or sources were used for mapping food environments in the city?
D) Promotion of Adequate and Healthy Eating in the Municipality
D1. What themes were planned for the celebration of World Healthy Food Day and Curitiba’s Conscious Eating Week? Were these associated with the concept of the Planetary Health Diet and the recommendations of the Brazilian Dietary Guidelines?
D2. The presence of the NGO Greenpeace was noted in the organization of this year’s Coolitiba’s Festival, supporting sustainability-focused actions. Do these actions align with the promotion of adequate and healthy eating? Were any food corporations involved in the event?
D3. Is there any bill proposed by the Executive Branch or legislative activity within the City Council concerning the regulation of the commercialization and advertising of ultra-processed foods or the promotion of healthy food environments?

Table 2. Workshop framework based on the study “Analysis of food policies in Brazilian municipalities members of the C40 Cities Climate Leadership Group to address the Global Syndemic”, with specific focus on Curitiba, Brazil, 2022.(Continues)

E) Accessibility and Availability of Food in the Municipality
E1. How are open-air markets, including organic ones, distributed throughout the city? What criteria were considered for their establishment and distribution?
E2. Are traditional municipal markets with public food provision preserved in the city?
E3. How are community, school and institutional gardens distributed in the city? What criteria were considered for their establishment and distribution?
E4. What is the current percentage of food products sourced from family farming and agroecological production reached by the Municipal School Feeding Program?
E5. In the municipality, a notable strength is the existence of a Municipal Secretariat for Food and Nutrition Security, which oversees robust programs. We would like you to elaborate on the management and distribution of the <i>Armazém da Família</i> (Family Warehouse), <i>Restaurantes Populares</i> (Popular Restaurants), <i>Mesa Solidária</i> (Solidarity Table), Food Bank, and Community Kitchens.
E6. In addition to the facilities managed by the Municipal Secretariat for Food and Nutrition Security, which other agencies within the Direct Administration are included in institutional food provision?
F) Affordability to Food in the Municipality
F1. How are the Popular Restaurants distributed across the city? What criteria were considered for their implementation and distribution?
F2. What are the current values of Curitiba’s Food Credit? For how long were (or are) additional credits maintained in response to the recent economic, political, and health crises?
F3. What is the current status of the process for granting subsidies for less industrially processed foods sold in the <i>Armazéns da Família</i> (Family Warehouses), as outlined in the Municipal Food and Nutrition Security Plan through 2023?
F4. What were the main resolutions of the Municipal Food and Nutrition Security Council (COMSEA) that were directly initiated by the population? How has the population been invited or considered in the policymaking process to address food and nutrition insecurity?

The operational analytical categories adopted for the two data collection stages included implementing the plan to review municipal food systems, implementing municipal public policies on food and nutrition; food and nutritional surveillance, food accessibility and availability, food affordability; and promoting adequate and healthy eating. These categories were the very structure guiding the axes for empirical categories that were converted into both questionnaire questions and workshops’ outline to encourage key ideas and significant topics based on analysis.

Data emerging from the first stage were used for content analysis based on Bardin,¹⁴ whereas discourse analysis, inspired by the French school of Pêcheux and adapted by Orlandi was conducted, composed the second stage.¹⁵ The aim of the thematic workshops was to tease tensions that could fill in silences or minimize doubts inherent to the first instrument. In addition, issues were updated in response to the agenda’s dynamic nature.

Ethical considerations related to research legal principles linked to human subjects were respected and followed Resolutions 466/2012 and 510/2016 of the National Health Council, with due approval by the Research Ethics Committee (REC) of ENSP/Fiocruz - substantiated opinion 4.882.363, issued on March 08, 2021. It is important highlighting the consent from the participating municipal secretariats that do not have their own RECs.

Risks inherent to internet access were minimized in compliance with the 2019 General Data Protection Law, by using tools based on established privacy policies and institutional access provided by ENSP. Decision was made to omit attendee’s names and positions given the risk of indirect attendees’ identification, the limited number of individuals and their specific roles in public management bodies.

RESULTS AND DISCUSSION

Epidemiological, social and political background of Curitiba-PR

According to data from *Sistema de Vigilância Alimentar e Nutricional* (Food and Nutrition Surveillance System – SISVAN), 33% of adults were classified as overweight and 36% as obese within a sample comprising 88.899 individuals monitored by Primary Health Care services in that year.¹⁶ Similarly, among the 6.800 adults surveyed in 2021 through *Sistema de Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico* (Telephone-based Surveillance System for Risk and Protective Factors for Chronic Diseases– VIGITEL), 55.3% of them reported excess weight and 22.6% reported obesity.¹⁷

The 2017-2018 *Pesquisa de Orçamentos Familiares* (Household Budget Survey) reports consumption *per capita* of 57.9g beef and 61.3g dairy products, on average, among individuals in the age group 10 years and older, in Southern Brazil, where Curitiba is located in.¹⁸ The Planetary Health Diet recommends maximum daily intake of 28g red meat and 250g dairy products. These numbers represent the recommendation for reducing by half the consumption of the former animal-based food by the population in this region.

If DGBP is taken into account, according to the 2021 VIGITEL survey, 31.2% of respondents reported to eat fresh or minimally processed food, whereas 25.2% of them reported to have eaten UPFs on the day prior to the phone interview – the total sample comprised 6.800 adults.¹⁷

It is important taking into account the time lag of the aforementioned surveys given the rising prices of food types included in the Brazilian basic food basket, mainly animal-based proteins and fresh foods, which have outpaced general inflation. On the other hand, UPFs only experienced modest price increases during Jair Bolsonaro's administration.¹⁹

While global factors, such as the Covid-19 pandemic, geopolitical conflicts between Russia and Ukraine, and crop failures caused by climate-related events, including droughts, frosts and increased rainfall, were key drivers of this scenario, but they were also worsened by domestic issues, among them, weakened diplomatic relations, an economic policy that has contributed to devalue the Brazilian currency (real), rollbacks in social policies due to labor and pension reforms, and delay in national vaccination campaigns at initial stages of the Covid-19 pandemic. Due to the high dollar price and the weakened real, both production costs and consumer prices rose, and the minimum wage lagged behind inflation. Export-oriented agricultural commodities started to compete with the production of fresh or minimally processed food intended for domestic consumption in order to remain profitable. These export crops were granted with public subsidies and it reinforced the prevalence of the agribusiness sector.²⁰

It is worth emphasizing that the agribusiness was a key economic pillar and legislative support for the rise and consolidation of Brazil's far-right, proto-fascist government²¹ up to late 2022. This alignment was associated with rollbacks in popular participation mechanisms, with biomes' degradation, intensified food and nutrition insecurity (FNI), provision of subsidies to the UPF industry and with persistent efforts to undermine DGBP's credibility.

Consequently, speculations show that recommendations to reduce red meat consumption may have been partially outspread in Brazilian urban centers, but, not necessarily, as the very result of intentional shifts toward health and sustainability, but rather due to reduced accessibility to and affordability of such products. On the other hand, food consumption markers associated with health and sustainability, namely: fresh or minimally processed foods, appear to have experienced significant decline.

According to *Escala Brasileira de Insegurança Alimentar* (Brazilian Household Food Insecurity Measurement Scale – EBIA), which is stratified by the country's macro-regions, 51.8% of households in

Southern Brazil were classified as food secure during the Covid-19 pandemic, whereas 26.5% experienced mild food insecurity, 11.8% faced moderate food insecurity and 9.9% lived with severe food insecurity.²²

Just as political and partisan contextualization, it is worth observing that Mayor Rafael Greca de Macedo, re-elected for the 2021–2024 term, was affiliated with Partido Social Democrático (Social Democratic Party – PSD) at the time the current study was in course. According to its stated principles and values, the party (PSD) allows “shifting across different ideological paths depending on the convenience of the political context, advocating for private enterprise and economic freedom alongside a strong, regulated, yet democratic State with social priorities”.²³

In his governmental plan, also known as *Viva Curitiba*, he lists sustainability, solidarity and citizenship as its key pillars, with special emphasis on Food and Nutrition Security (FNS).²⁴ These priorities reinforced the municipality’s commitment to mitigate climate change by revising the local food system. The city has been nationally recognized for its progressive and innovative initiatives, mainly those shaped through public-private partnerships.²⁵

Although being an heir to political oligarchies that have emerged since the colonial period, that are criticized in essays on clientelism and nepotism,^{26,27} there seems to be no direct genealogical link between the mayor and specific economic interests related to the municipal food system. As a matter of fact, his family’s influence prevails in the judiciary, and in road development and urban planning, in Curitiba Metropolitan Region. Nonetheless, there are critiques towards his urbanization and housing policies, which have historically contributed to socio-spatial segregation, and it may have been having disproportionate impact on physical access to and availability of food across administrative regions that present uneven access to constitutionally guaranteed rights.²⁵

Actions implemented in Curitiba-PR

Unregulated urban expansion without coordinated inter-sectoral planning tends to exacerbate social inequities and hinder meaningful public participation in the formulation of public policies. This dynamic gives rise to disparate conditions within the same metropolitan area. This process often results in limited access to fundamental human and social rights, mainly when it comes to adequate health, nutritious and sufficient food.²⁸

Large municipalities have increasingly invested in reconfiguring their food systems to achieve social justice, health and sustainability, in response to the global syndemic. This goal has been pursued through public policies focused on food and nutrition, as well as through urban planning strategies that address improvements in physical access to food, in income redistribution and in reducing food costs for end consumers, as well as in other interventions aimed at enhancing affordability, and in developing food supply systems grounded in regionalized approaches that foster communication and coordination with local producers.²⁹

Other interventions concern establishing regulatory measures aimed at protecting healthy dietary practices among the population. These measures include adopting fiscal policies, such as taxation of unhealthy food and subsidizing healthy options, as well as regulating UPFs advertisements to prevent misleading or abusive marketing practices. Furthermore, there are limitations on the availability of unhealthy food in schools and public institutions. Yet, government sectors involved in FNS governance must foster the development of cross-cutting commitments by promoting coordination and alignment among sectoral programs and engaging in partnerships with civil society organizations dedicated to public interests.³¹

It is essential investing in short, integrated and inclusive food supply chains that respect local or regional productive vocations through public procurement. Accordingly, promoting urban and peri-urban agriculture helps redefining community, social and consumption relationships within metropolitan areas; incorporating productive landscaping and enhancing fresh food accessibility and affordability. The Municipal Master Developmental Plan may include provisions for the use of urban voids for land use, occupation and intra-urban food production.³⁰

Climate Change Mitigation and Adaptation Plan (PLANCLIMA) precedence in Curitiba have already highlighted the magnitude of the food and nutrition agenda, and its interconnections to health and sustainability. Therefore, it influenced the formulation of legitimate demands within the Municipal Food and Nutrition Security Plan (PLAMSAN), which was in force from 2020 to 2023. These demands encompass interventions in productive chains, food supply, food distribution and food waste control.

The city's longstanding and robust trajectory of programs aimed at ensuring the availability and, both the physical and financial accessibility to healthy food, is remarkable. These efforts were initially led by *Secretaria Municipal de Abastecimento Alimentar* (Municipal Secretariat for Food Supply– SMAB), which was restructured to *Secretaria Municipal de Segurança Alimentar e Nutricional* (Municipal Secretariat for Food and Nutrition Security – SMSAN) in July 2019. The municipality reaffirmed its commitment to food-related actions as priority in the governmental agenda of Mayor Rafael Greca, who was re-elected for the 2021–2024 term, in response to the FNI worsening caused by recent health, political and economic crises.

With respect to food production, the city stands out for its initiatives to support family farming and peri-urban agroecology through the Integrated Productive Development Program of Curitiba Metropolitan Region (Pró-Metrópole) and the Agro-Food Development Program of Curitiba Metropolitan Region (PRODAM).

As for the food supply chain, Municipal and Regional Markets work as central reference hubs, including a sector dedicated to agroecological products, although they depend on public-private partnerships.

Public education and healthcare facilities regarding institutional food provision by the Executive Branch are noteworthy and they have met the target set by the National School Feeding Program (PNAE) to source at least 30% of food products coming from family farming. The municipality has also succeeded in extending the procurement of such products to other SMSAN-managed programs.

Key initiatives for food environments subsidized by Curitiba City Government, which target food availability, accessibility and affordability, include Popular Restaurants, *Armazém da Família* (Family Storehouse), *Mesa Solidária* (Solidarity Meal), Food Bank and Food Assistance Program. *Armazém da Família* enhances food affordability by offering food to socially vulnerable families at mean prices lower than those in the retail sector. *Mesa Solidária* (Solidarity Meal) distributes meals prepared with ingredients provided by the Food Bank Program through the full use of donated food from the Regional Market, *Armazém da Família*, Urban Farm, *Sacolões da Família* (Small-scale produce makers) and from free markets to families experiencing social vulnerability and FNI.

The night time free markets in Curitiba represent a noteworthy strategy to promote physical access to fresh and minimally processed foods. This initiative enables purchasing from free markets through digital platforms and it was designed to enhance convenience and accessibility to healthy food during the pandemic context.

Community, school and institutional garden expansions outlined in PLAMSAN are primarily linked to social vulnerability. On the other hand, from a business-oriented perspective, implementing popular

restaurants and launching free markets prioritizes areas known for higher foot traffic and profitability is essential.

The municipality also addresses demands related to food waste control and to post-harvest loss reduction. Residents can exchange recyclable materials for fresh food sourced from small-scale producers by applying to *Câmbio Verde* (Green Exchange) Program. In addition, the FNS mobile unit accounts for itinerant food and nutrition education initiatives by providing cooking workshops focused on the full use of food items.

The Planetary Health Diet guidelines emphasize the priority of plant-based protein sources over red meat and dairy products to reduce water, carbon and ecological footprints; therefore, Curitiba identified lack of its applicability given the current food and nutrition landscape witnessed by its population. Certain population strata face limitations to meet requirements for high-biological-value protein intake. Nevertheless, the city acknowledged the need for addressing UPFs' progressive consumption. Accordingly, municipal events promoting adequate and healthy eating, which are organized or supported by municipal secretariats involved in the current study, are grounded in DGBP principles.

An innovative strategy demands printing warnings on purchase receipts issued by *Armazém da Família*, since it points towards the industrial processing degree of the purchased food items (Health Tax Receipt).

Paraná State law n. 14.855/2005 provides for protective measures aimed at adequate and healthy eating within school environments by regulating food marketing and advertisement. However, this act remains outdated if one bears in mind the current national dietary guidelines, although the food processing paradigm incorporation reflects on proposals outlined in the PLAMSAN.

Overall, Curitiba promptly responded to prevent and mitigate FNI in the context during the Covid-19 pandemic. The city expanded meal production, service capacity and distribution hours at popular restaurants, besides providing food credits linked to *Armazém da Família* to socially vulnerable families, as well as distributed food baskets to students in the municipal school system while in-person classes were still suspended.

Social accountability has been incorporated into PLAMSAN formulation and monitoring. However, popular participation tends to decline as FNI complexity and severity increase. The combined public health, political and economic crises have undermined the representativeness and diversity of stakeholders engaged in this process.

The agenda aimed at revising food systems in Curitiba highlights an institutional status that requires the maturation of intersectoral coordination for integrated decision-making. Although several demands have progressed from generating solutions and alternatives to the implementation phase of programs that intertwine multiple processes within the food system and its interface with local residents (Table 3). These initiatives have yet to be fully established as minimally formulated public policies. Consequently, discontinuity risks remains, despite the strong institutional SMSAN framework and the continuity of actions emerging from the former SMAB.

Table 3. Actions implemented in Curitiba, categorized by process³ and food environment construct⁴. Curitiba, Paraná, 2022.

Food environment process	Curitiba
<i>Production</i>	<i>PRODAM / Pró-Metrópole UrbanFarm</i>
<i>Supply</i>	<i>Food Bank Municipal and Regional Markets</i>
<i>Commercialization</i>	<i>Armazém da Família (Family Storehouse) Open-air Markets, including Organic ones Sacolões da Família (Small-scale produce makers)</i>
<i>Distribution</i>	<i>School Feeding Hospital Feeding Câmbio Verde (Green Exchange) Community Kitchens Urban Gardens Mesa Solidária (Solidary Meals) Popular Restaurants</i>
<i>Consumption</i>	<i>School Feeding Hospital Feeding Community Kitchens Urban Gardens Mesa Solidária (Solidary Meals) Popular Restaurants</i>
<i>Waste and loss control</i>	<i>Food Bank Câmbio Verde (Green Exchange) Urban Farm Organic Open-air Markets Mesa Solidária (Solidary Meals) Mobile Unit for Food and Nutrition Security</i>
Food environment construct	Curitiba
<i>Availability</i>	<i>School Feeding Hospital Feeding Armazém da Família (Family Storehouse) Food Bank Câmbio Verde (Green Exchange) Community Kitchens Open-air Markets, including Organic ones Urban Gardens Municipal and Regional Markets Mesa Solidária (Solidary Meals) Popular Restaurants Sacolões da Família (Small-scale produce makers)</i>
<i>Accessibility</i>	<i>School Feeding Hospital Feeding Armazém da Família (Family Storehouse) Câmbio Verde (Green Exchange) Open-air Markets, including Organic ones Urban Gardens Sacolões da Família (Small-scale produce makers)</i>
<i>Affordability</i>	<i>Armazém da Família (Family Storehouse) Food Assistance Food Bank Community Kitchens Mesa Solidária (Solidary Meals) Popular Restaurants</i>

Table 3. Actions implemented in Curitiba, categorized by process³ and food environment construct⁴. Curitiba, Paraná, 2022. (Continues)

<i>Convenience</i>	<i>Open-air Markets, including Organic ones</i>
<i>Promotion and Quality</i>	<i>School Feeding</i> <i>Hospital Feeding</i> <i>Câmbio Verde (Green Exchange)</i> Food and Nutrition Education concerning to DGBP <i>Urban Gardens</i> <i>State LawNo. 14.855/2005</i> <i>Health Tax Receipt</i> <i>Popular Restaurants</i> <i>Mobile Unit for Food and Nutrition Security</i>
<i>Sustainability</i>	<i>School Feeding</i> <i>Food Bank</i> <i>Câmbio Verde (Green Exchange)</i> <i>Urban Farm</i> <i>Organic Open-air Markets</i> <i>PRODAM / Pró-Metrópole</i> <i>Mobile Unit for Food and Nutrition Security</i>

Corporate political activities expressed in Curitiba-PR

Participants in the current study showed varying neoliberal rationality degrees, although they are committed to reviewing food systems from the social-justice perspective. Their discourse opened room for the sense of an overburdened state as social welfare provider in combination to a moral regulatory bias and meritocratic framing. This scenario suggests the private capital penetration in public institutions and the emphasis on individual responsibility to avoid dependency on targeted and welfare-oriented actions.

Consequently, public policies become susceptible to corporate capture by the food industry due to lobbying and ideological co-optation, which reflects on the discourse substantiated by references and jargons drawn from the corporate world.

We support the elaboration of any action or policy on Peter Drucker's concept of quadruple helix, which emphasizes collaborative efforts from various society sectors to foster shared responsibility for complex problems. It is within this framework that we operate [by] consistently involving the private sector by promoting social responsibility, engaging the third sector and guiding the community to do its part. We understand that the municipal government is not currently capable of addressing everything alone and nor will be in the coming years. We do not believe in a welfare-oriented policy where the municipality, alone, is responsible for issues and corresponding actions.

In addition to referring to the quadruple helix, the term *design thinking*, which emerges from an individualistic and meritocratic theory of social transformation linked to creative capital resources was employed, but it was not necessarily emancipatory. This theory has been increasingly adopted in global economic forums that include prominent private sector leaders, including major food corporations.

In Curitiba, we employ a collaborative and participatory methodology to understand the legitimate demands of community. We held open meetings in the city's ten regional districts, [and they were] guided by key questions and used design thinking methodologies to identify priorities.

The UPF industry's identification as potential FNS and food waste control partner was highlighted based on understanding that products nearing their expiration date could represent an immediate alternative. Examples of it included processed meat products, sausages and items presenting high industrial processing degree, and it contrasts recommendations by both the Planetary Health Diet and the DGBP.

We have real interest in developing a relationship with the large industrial sector. Currently, it is a sector that faces return losses. Thus, I believe the public sector could mediate this relationship with industries by proposing, for example, "Industry, products with 30 days left before expiration, I buy them for 10% of their value." Because these companies would otherwise lose these products and have to pay for their disposal – whether by incineration, burial or other means. I'm talking about meat, animal protein, hundreds of tons per month going to waste for lack of proper destination. And then, we talk about hunger, about food deserts. So, why not create a policy against food waste?

In fact, I know large slaughterhouses and major industries that have reported this situation to me. They contacted a well-known national industry that offers, for instance, sausages of excellent quality. I won't mention the name here, but it is a high-quality sausage that those who can afford them buy them on weekends, among other occasions. They were offering them at 3 Brazilian reais per kilogram. Normally, this kilogram costs 30 reais. So, they were offering it at 3 reais to a major local partner, owner of a large slaughterhouse. Why? Because the product had 30 days before expiration and the company would have to pay to dispose of it. For them, it is better to lose and gain 3 reais than to lose 3 reais and still pay for disposal.

Economic actors interact to each other and to international organizations, to the State and to civil society activists within an uneven power dynamic that enables them to align or override public decision-making with their own interests under extreme capitalism conditions. It happens within a broader context that is marked by privatization and the control of democratic processes³² by corporate actors like the financial sector and agribusiness, mainly in the food and nutrition realm.

Understanding corporate strategies is essential to adopt mechanisms that can curb their undue influence on public policies. Political capture can be defined as corporations' asymmetric influence on executive decision-making. Furthermore, it is often facilitated by prior or immediate access to governmental plans or programs.³²

Corporate political activities may be classified into instrumental and discursive strategies. Instrumental strategies include coalition management, information management, direct engagement and political influence, and legal action. Discursive strategies involve economic arguments, conceptual framings of the roles played by the State and the civil society, as well as claiming benefits for health and sustainable development.³³

Curitiba's experience in revising food systems to address global syndemic points out the presence of several corporate political activities, such as coalition management, direct engagement and political influence, and discursive persuasion, at the scope of the current study (Table 4).

Table 4. Corporate political activities expressed in Curitiba-PR in the research “Analysis of food policies in Brazilian municipalities members of the C40 Cities Climate Leadership Group to address the Global Syndemic”. Curitiba-PR, 2022.

INSTRUMENTAL STRATEGIES			
Strategy	Practices	Mechanisms	Discourses
Coalition management	Recruitment of and interaction with governmental organizations	Establishment of informal relationships with government representatives	“In fact, I know large slaughterhouses and major industries that have reported this situation to me. They contacted a well-known national industry that offers, for instance, sausages of excellent quality.”
	Recruitment of and interaction with the community	Support for local-level initiatives	“It is within this framework that we operate, consistently involving the private sector by promoting social responsibility, engaging the third sector, and guiding the community to do its part.”
Direct involvement and political influence	Indirect access	Lobbying to influence decisions in favor of the industry	“We have a strong interest in developing a relationship with the large industrial sector. Currently, it is a sector that faces return losses. Thus, I believe the public sector could mediate this relationship with industries...”
		Co-optation of government representatives to advocate for industry positions	
	Involvement in governmental decision-making processes	Participation in technical and advisory groups	“In fact, I know large slaughterhouses and major industries that have reported this situation to me. They contacted a well-known national industry that offers, for instance, sausages of excellent quality.”
	Advising policymakers		
	Proposing public-private partnerships		
DISCURSIVE STRATEGIES			
Arguments			Discourses
Economic benefits			“Thus, I believe the public sector could mediate this relationship with industries by proposing, for example: “Industry, products with 30 days left before expiration, I buy them for 10% of their value.” Because these companies would otherwise lose these products and have to pay for their disposal – whether by incineration, burial, or other means.”
			“I won't mention the name here, but it is a high-quality sausage that those who can afford it buy on weekends, among other occasions. They were offering it at 3 Brazilian reais per kilogram. Normally, this kilogram costs 30 reais. So, they were offering it at 3 reais to a major local partner, owner of a large slaughterhouse. Why? Because the product had 30 days before expiration and the company would have to pay to dispose of it. For them, it is better to lose and gain 3 reais than to lose 3 reais and still pay for disposal.”
Demonization of the “Nanny State”			“We understand that the municipal government neither is currently nor will be in the coming years capable of addressing everything alone. We do not believe in a welfare-oriented policy where the municipality alone is responsible for the issues and corresponding actions.”
Strict focus on the potential of the food industry for Food and Nutrition Security			“I'm talking about meat, animal protein, hundreds of tons per month going to waste for lack of proper destination. And then we talk about hunger, about food deserts. So why not create a policy against food waste?”
Individual accountability for adequate and healthy eating			“It is within this framework that we operate... by promoting social responsibility.”
			“...guiding the community to do its part.”
			“We do not believe in a welfare-oriented policy”

Adapted from Mialon, Cediél, Jaime and Scagliusi³³

Coalition management aims at establishing formal and informal relationships with governmental organizations or at supporting the placement of industry-friendly individuals in these institutions to make it easier to form public-private partnerships. Recruitment and interaction can take place through locally-based initiatives mediated by municipal government representatives who have been co-opted by industry at community level.

Direct engagement to exercise political influence can happen through indirect access, such as through co-optation of government representatives to advocate for industry positions, or through the appointment of individuals with backgrounds in food corporations to strategic advisory or commissioned positions. Industry penetration in decision-making can be configured by its involvement in technical and advisory committees, policy advising, and in propositions towards self-regulatory public-private partnerships with government entities.

Strategies include economic arguments, demonizing the so-called “Nanny State” and promoting debates narrowly focused on the supposed potential of the food industry to enhance FNS. These elements are often combined to narratives that place individual responsibility on consumers for their own dietary choices and emphasize education and access to information on structural determinants.

CONCLUSIONS

Despite the entanglements emerging from fluid interactions with the private sector, actions and programs implemented by Curitiba have shown innovation and success across several processes within food systems, from shortening peri-urban supply chains to consumer-level engagement through institutional and community-based food environments. These efforts have effectively promoted the availability of, accessibility to and affordability of healthier and more sustainable food.

DGBPs are emphatic in reporting the intentional concentration of capital and power by the food and agribusiness industries in Brazil. This target is reached by classifying food based on their industrial processing level and by highlighting threats posed by an UPF-dominated system to social justice, biodiversity, cultural identity preservation and food sovereignty, nutritional status and population health. DGBPs are continually countered by corporate discredit and contestation strategies.

Although it is unfeasible to reconcile health, sustainability and the neoliberal logic that has been assimilated and embedded by public policy paradigms and human subjectivity, current food and nutrition principles and guidelines should not be sidelined in municipal food system interventions. A critical stance on conflicts of interest with major food corporations is required. Food supply and provision based on UPFs should not be misconstrued as legitimate pathway to achieve FNS, mainly if one bears in mind that international organizations often fail to highlight this paradigm due to their own entanglement with capital interests.

Ongoing assessments on the implementation and effectiveness of food and nutrition security and sustainability programs in Curitiba are recommended, and they must have critical lens toward potential conflicts of interest. This approach will help ensuring that such initiatives become enduring state policies rather than temporary or opportunistic measures in compliance with social, health and climate justice goals.

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Contributors

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