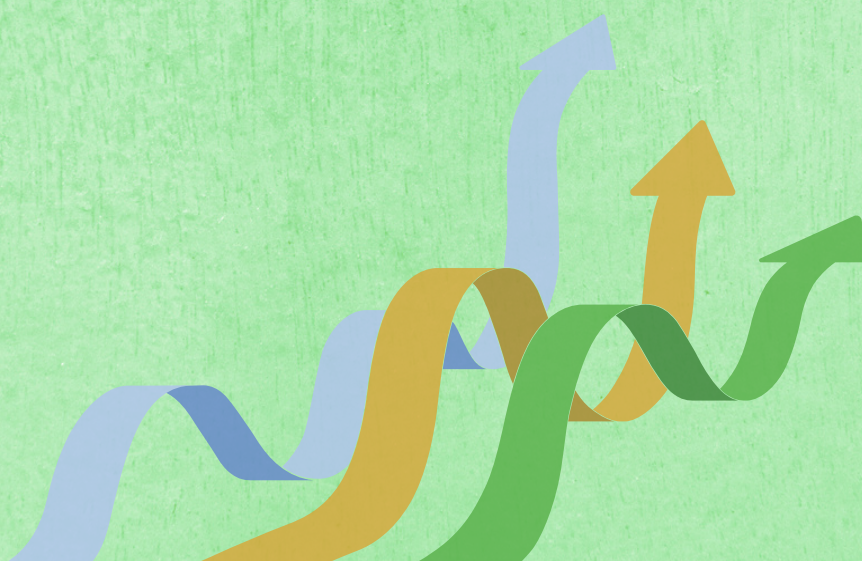


# FINAL REPORT

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## MAPPING BRAZIL'S SUSTAINABLE FOOD SYSTEMS LANDSCAPE: POLICIES, STAKEHOLDERS AND INDICATORS FOR NUTRITION AND CLIMATE INTEGRATION

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**Irish Aid**  
An Roinn Gnóthaí Eachtracha agus Trádála  
Department of Foreign Affairs and Trade



## Acknowledgements

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**Initiative on Climate Action and Nutrition (I-CAN):** The Initiative on Climate Action and Nutrition (I-CAN) is a multistakeholder initiative that aims to advance action to address the critical nexus of climate change and nutrition. Launched by the Government of Egypt, as COP27 President and hosted by WHO, core partners include FAO, GAIN, the SUN Movement, and UNEP.

**Global Alliance for Improved Nutrition (GAIN):** The Global Alliance for Improved Nutrition (GAIN) is a Swiss based foundation launched at the UN in 2002 to tackle the human suffering caused by malnutrition. Working with governments, businesses and civil society, we aim to transform food systems so that they deliver healthier diets for all people, especially the most vulnerable, from more sustainable food systems.

**Domingos & Figueroa Consultoria** is a Brazilian technical consulting company specializing in nutrition, public health, and food systems. The company provides technical consulting, analytical support and project development in support of food and nutrition security and public policy, working with governments, non-governmental organizations and institutional partners.

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## Glossary

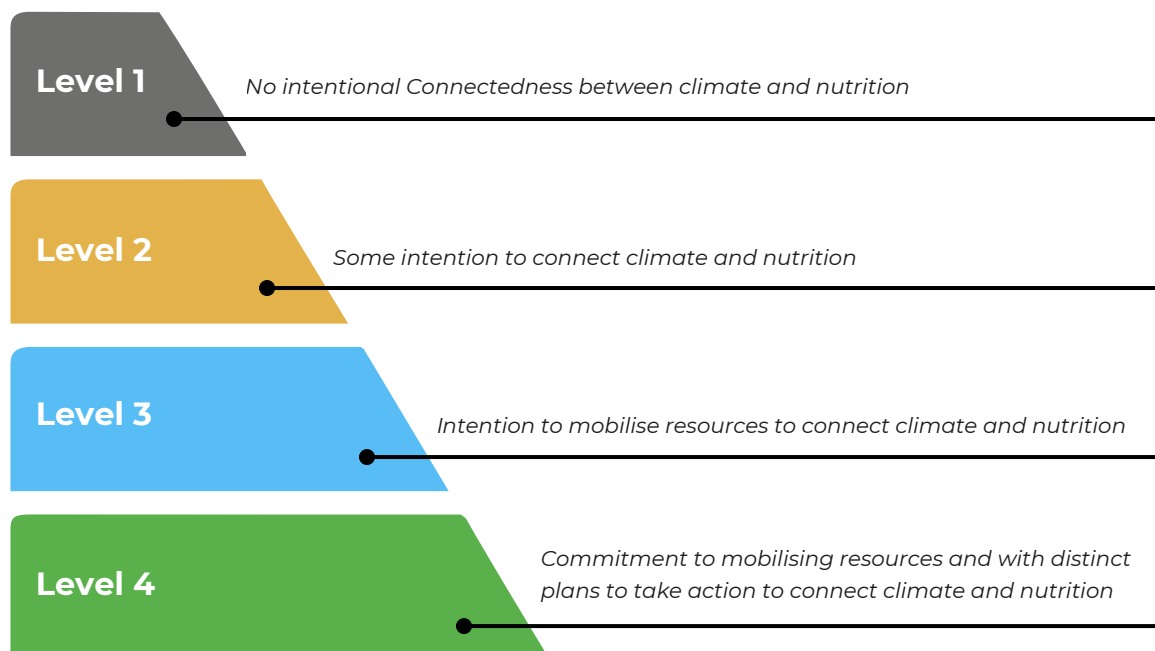
|                |                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CAISAN</b>  | Câmara Interministerial de Segurança Alimentar e Nutricional (Interministerial Chamber for Food and Nutrition Security)                                       |
| <b>COP</b>     | Conference of the Parties                                                                                                                                     |
| <b>EMBRAPA</b> | Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Corporation)                                                                     |
| <b>FAO</b>     | Food and Agriculture Organization of the United Nations                                                                                                       |
| <b>FSD</b>     | Food Systems Dashboard                                                                                                                                        |
| <b>GAIN</b>    | Global Alliance for Improved Nutrition                                                                                                                        |
| <b>IBGE</b>    | Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics)                                                             |
| <b>I-CAN</b>   | Initiative on Climate Action and Nutrition                                                                                                                    |
| <b>ICS</b>     | Instituto Clima e Sociedade (Climate and Society Institute)                                                                                                   |
| <b>IPEA</b>    | Instituto de Pesquisa Econômica Aplicada (Institute for Applied Economic Research)                                                                            |
| <b>LOSAN</b>   | Lei Orgânica de Segurança Alimentar e Nutricional (Organic Law on Food and Nutrition Security)                                                                |
| <b>MDS</b>     | Ministério do Desenvolvimento e Assistência Social, Família e Combate à Fome (Ministry of Social Development and Assistance, Family and Fight against Hunger) |
| <b>MMA</b>     | Ministério do Meio Ambiente e Mudança do Clima (Ministry of the Environment and Climate Change)                                                               |
| <b>NAP</b>     | National Adaptation Plans                                                                                                                                     |
| <b>NDC</b>     | Nationally Determined Contributions                                                                                                                           |
| <b>NGOs</b>    | Non-governmental Organizations                                                                                                                                |
| <b>NNP</b>     | National Nutrition Plans                                                                                                                                      |
| <b>OPSAN</b>   | Observatório de Políticas de Segurança Alimentar e Nutricional (Food and Nutrition Security Policy Observatory)                                               |
| <b>PAA</b>     | Programa de Aquisição de Alimentos (Food Acquisition Program)                                                                                                 |
| <b>PNAAB</b>   | Política Nacional de Abastecimento Alimentar (National Food Supply Policy)                                                                                    |
| <b>PNAE</b>    | Programa Nacional de Alimentação Escolar (National School Feeding Program)                                                                                    |
| <b>PNAPO</b>   | Política Nacional de Agroecologia e Produção Orgânica (National Policy on Agroecology and Organic Production)                                                 |
| <b>SISAN</b>   | Sistema Nacional de Segurança Alimentar e Nutricional (National Food and Nutrition Security System)                                                           |
| <b>SUN</b>     | Scaling Up Nutrition Movement                                                                                                                                 |
| <b>UNFCCC</b>  | United Nations Framework Convention on Climate Change                                                                                                         |
| <b>WHO</b>     | World Health Organization                                                                                                                                     |

## EXECUTIVE SUMMARY

The Initiative on Climate Action and Nutrition (I-CAN), launched at COP27 in 2022 by the Government of Egypt with UN agencies and partners, is a flagship multi-stakeholder effort to accelerate transformative action at the nexus of climate change and nutrition<sup>1</sup>. In 2023, the I-CAN baseline assessment showed limited integration of nutrition and climate in national plans worldwide, with progress mostly in Latin America, the Caribbean, and Africa but lagging investments, highlighting the urgent need to bridge policy and implementation gaps<sup>2</sup>. Brazil faces the simultaneous challenges of obesity, undernutrition, and climate change, making integrated food systems actions essential to ensure healthy sustainable diets, protect ecosystems, and promote fair livelihoods<sup>3-7</sup>.

Building on this global context, the present report aimed to explore the Brazilian landscape on initiatives approaching sustainable food systems by assessing nutrition and climate integration in Brazilian public policies, mapping roles of key stakeholders, and prioritizing indicators to monitor food system sustainability at the national and subnational level. To assess nutrition and climate integration, a comprehensive review of national and subnational (state-level) public policies, currently active and relevant to the integration of nutrition and climate agendas in Brazil, was conducted following the 2023 I-CAN Baseline methodology<sup>2</sup>. Each of the 80 included legislative texts (38 national and 42 state level) was assigned a level of integration ranging from low (Level 1) to high (Level 4), as outlined in **Figure 1**.

**Figure 1:** Levels of Integration between Climate and Nutrition



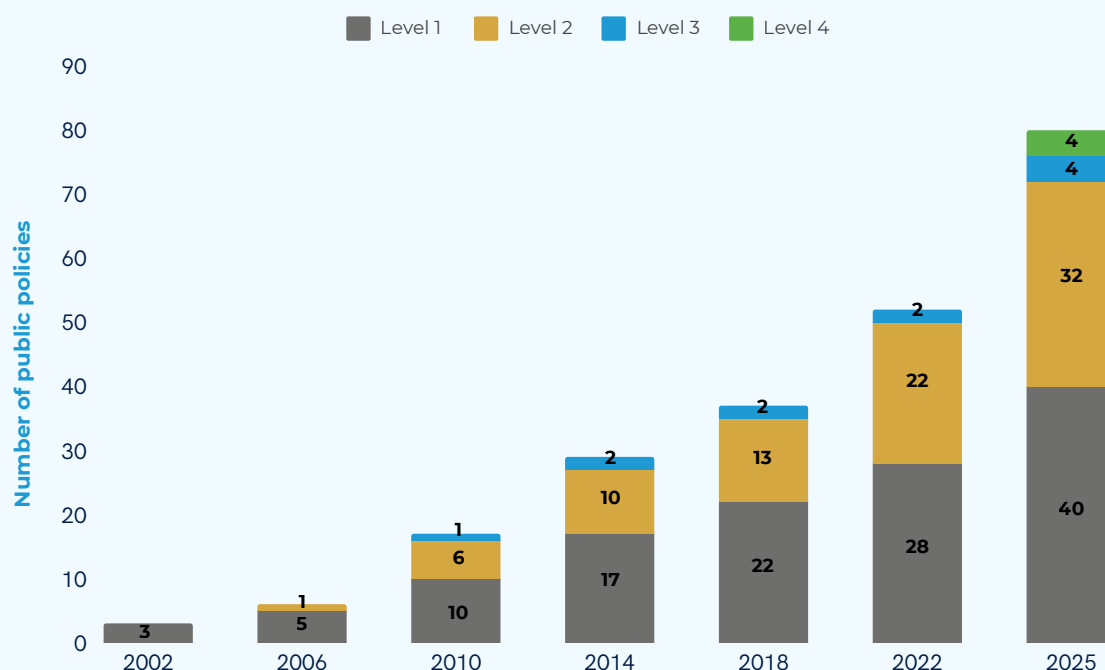
**Source:** Global Alliance for Improved Nutrition (GAIN). Accelerating Action and Opening Opportunities: A Closer Integration of Climate and Nutrition [Internet]. Geneva: GAIN; 2023 [cited 2025 May 30]. Available from: <https://www.gainhealth.org/sites/default/files/publications/documents/Accelerating-Action-and-Opening-Opportunities-A-Closer-Integration-of-Climate-and-Nutrition.pdf>

To identify and characterize actors with potential interest and influence in nutrition and climate agendas, key stakeholders were identified and invited to contribute through an electronic form. A snowball sampling approach was then used, whereby participants recommended additional relevant peers to expand the sample. Stakeholder feedback was then used to identify barriers to and

best practices for nutrition-climate integration in public policies and select ten out of pre-selected 29 priority indicators for monitoring food systems sustainability in Brazil at both national and subnational levels. This selection followed an expert review process that assessed data availability in official Brazilian datasets, along with additional inclusion and expert-informed prioritization criteria.

### From this analysis, the key findings of the report highlight that:

- Most nutrition and climate policies were classified in the lowest levels for integration (Level 1 and Level 2, comprising 50% and 40% of the evaluated 80 legislative texts, respectively). Except for the National School Feeding Program and the National Policy on Agroecology and Organic Production, those classified in the highest levels (3 and 4, comprising 5% each) were adopted in the most recent years (2023 and 2024), indicating a recent and promising shift toward a more integrated approach (Figure 2).



**Figure 2:** Cumulative number of currently active public policies and their climate-nutrition integration level over the years in Brazil. For the analysis, the year of the last published update for each currently active policy was used.

- Best practices (Levels 3 and 4) for nutrition and climate integration were found in the National Food Supply Policy (2023), the National Program for Urban and Peri-Urban Agriculture (2023), the National Strategy for Food and Nutrition Security in Cities – Feed Cities (2023), the Rio Grande do Sul State Strategy for the Promotion of Popular Centers for Food and Nutrition Sovereignty and Security (2024), the National Policy on Agroecology and Organic Production (2012), and the National School Feeding Program (2009).

- Integration can be fostered through synergies between policies, as illustrated by the interaction of the National School Feeding Program (PNAE) with the Food Acquisition Program (PAA), which prioritize public procurement for school meals from family farms.
- National policies at the highest levels of integration (Levels 3 and 4) were predominantly coordinated by multiple institutions, in contrast to those at the lowest level of integration, which were mainly characterized by centralized coordination. This finding emphasizes the importance of collaborative efforts between different sectors to foster integration and, consequently, the promotion of fair, sustainable, and health-oriented food systems.
- Key nutrition and climate stakeholders reported working across multiple areas, such as food security, food systems, healthy eating promotion, public health, climate change, sustainable agriculture, social justice, food sovereignty, and nutritional surveillance. There was a diverse representation of different sectors as well, categorized into research and academia (38% of respondents), civil society and non-governmental organizations (NGOs) (30%), government (21%), private sector (7%), international organizations (2%), and the press (2%).
- Among the 53 stakeholders, 43 (81%) were classified as having high interest and high influence in integrating climate and nutrition agendas. Nearly half (49%, n=26) reported some level of involvement with COP30 [data collected prior to the event], of whom 14 (54%) maintained direct dialogue with the event's presidency or organizing committee, and 2 (8%) were engaged with the official delegation.
- Among stakeholders with high interest but low influence were representatives of academia, civil society organizations, NGOs, and the press. This highlights the importance of fostering dialogue between these stakeholders and more influential ones, such as those working in the government, to incorporate perspectives from diverse sources into nutrition and climate actions.
- NGOs and civil society organizations play a vital role in communication — both through the production of technical-scientific content and public-facing campaigns — and in bridging collaborations between civil society, public officials, academic institutions, and international organizations. Their ability to operate across diverse spheres and environments positions them as a powerful driving force in advancing the integration of climate and nutrition initiatives.
- From over 300 food systems indicators, 29 were selected according to data availability, inclusion and expert-informed prioritization criteria. The final top-ten indicators were selected through stakeholder prioritization (Table 1).
- Most of the ten prioritized indicators were outcomes (60%), two were related to food environments (20%), one referred to a driver (10%), and one to food systems resilience (10%).
- Stakeholders suggested the inclusion of indicators that cannot be estimated with the data currently available for national and subnational levels in Brazil, with emphasis on those aimed at tracking regenerative agriculture and sustainable intensification practices, for which there is no standardized monitoring.
- Data recency was a frequent obstacle during indicator screening. This underscores the need not only to address primary data collection but also to update existing datasets more frequently.
- There is a lack of representative municipal-level data for many indicators, which, given Brazil's territorial diversity and decentralized policy implementation, hinders timely, targeted action.

In conclusion, Brazil has advanced the integration of nutrition and climate actions into public policies, achieving notable successes in implementation in recent years. This reflects a promising shift toward a systems thinking approach. The Reference Framework on Food Systems and Climate for Public Policies stands out as an important milestone in solidifying this direction. However, there is still a long way to go, with significant room for improvement in ensuring broader coherence, effective coordination across sectors, and sustained impact. Continued efforts are needed to deepen integration, enhance monitoring and evaluation mechanisms, and scale up successful initiatives across all levels of governance. To ensure that such policies generate meaningful and lasting positive

impacts on human and planetary health, it is crucial to rely on collaborative and intersectoral efforts to continuously collect data on food systems and to promote dialogue between a diverse set of stakeholders, including academia, civil society, NGOs, the private sector, and the press, with more influential ones, such as those working in the government. Moreover, it is equally important to advance to subsequent stages of systematic monitoring, evaluation, and adaptation of public policies at all levels of governance, implementing systems thinking approaches. These steps are fundamental to minimizing the risk of unintended consequences and to promote more resilient, equitable, and sustainable food systems.

**Table 1:** Top 10 food systems indicators in Brazil, selected by key stakeholders prioritization.

| Rank             | Indicator                                                                     | Sector               | Sub-sector                       |
|------------------|-------------------------------------------------------------------------------|----------------------|----------------------------------|
| 1 <sup>st</sup>  | Percent population experiencing moderate or severe food insecurity            | Outcomes             | Food security                    |
| 2 <sup>nd</sup>  | Agri-food systems greenhouse gas emissions per person                         | Outcomes             | Environmental impacts            |
| 3 <sup>rd</sup>  | Total greenhouse gas emissions including land-use change and forestry         | Drivers              | Environment and climate change   |
| 4 <sup>th</sup>  | Percent of the population who cannot afford a healthy diet                    | Outcomes             | Food Security                    |
| 5 <sup>th</sup>  | Pesticide use per area of cropland                                            | Outcomes             | Environmental impacts            |
| 6 <sup>th</sup>  | Cost of a healthy diet                                                        | Food Environments    | Food affordability               |
| 7 <sup>th</sup>  | Caloric contribution of ultra-processed foods                                 | Outcomes             | Dietary intake                   |
| 8 <sup>th</sup>  | Percent of workers earning less than the poverty threshold in food production | Outcomes             | Livelihoods, poverty, and equity |
| 9 <sup>th</sup>  | Food price volatility                                                         | Cross-Cutting Issues | Resilience                       |
| 10 <sup>th</sup> | Percent of the population using safely managed drinking water services        | Food Environments    | Food safety                      |

## INTRODUCTION

Obesity, undernutrition, and climate change have been recognized as major threats to human health and living conditions. In 2019, the Lancet Commission formalized the recognition of their simultaneous occurrence and common underlying drivers, coining the term global syndemic and calling for integrated actions to address these interconnected challenges collectively<sup>8</sup>.

Global progress toward achieving nutrition and climate targets, however, remains slow or stagnant, with climate change and malnutrition continuing to pose a major public health burden<sup>9,10,11</sup>. In 2024, human-induced climate change reached unprecedented levels, marking the first calendar year with global temperatures exceeding 1.5°C above pre-industrial averages<sup>11</sup>. Projections for 2025–2030 suggest an 80% likelihood that at least one of the next five years will surpass 2024 as the warmest year on record<sup>11</sup>. Meanwhile, in 2023, an estimated 713 to 757 million people were undernourished, and 2.33 billion lacked regular access to adequate food<sup>10</sup>. Economic barriers significantly exacerbate these issues, as approximately 2.8 billion individuals were unable to afford a healthy diet in 2022<sup>9</sup>. Moreover, adult obesity has been rising steadily across all regions of the world, affecting individuals of all age groups<sup>10</sup>.

Amid the interrelated challenges of the global syndemic, food systems serve as critical levers for transformative change<sup>8</sup>. Comprising the full range of actors and processes involved in the production, aggregation, processing, distribution, consumption, and disposal of food products, as well as their interactions with one another and with broader economic, social, and environmental drivers, food systems shape the accessibility and affordability of healthy, sustainable diets<sup>7</sup>. They also play a vital role in preserving ecosystems and natural resources, while supporting fair and equitable livelihoods throughout the food value chain<sup>5</sup>.

Launched at the 27th Conference of the Parties (COP27) to the United Nations Framework Convention on Climate Change (UNFCCC), held in Sharm El-Sheikh, the Initiative on Climate Action and Nutrition (I-CAN) is a global, multisectoral, and multistakeholder flagship initiative aimed at fostering collaboration and addressing the urgent need to align and integrate efforts that accelerate progress on both climate action, through mitigation and adaptation, and improved nutrition, by supporting Member States in promoting sustainable food systems<sup>1</sup>.

In 2023, the I-CAN report “Accelerating Action and Opening Opportunities: A Closer Integration of Climate and Nutrition” revealed a generally low level of nutrition and climate integration in Nationally Determined Contributions (NDC), National Adaptation Plans (NAP), and National Nutrition Plans (NNP) of over 160 countries. While some progress was noted, particularly in Latin America, the Caribbean, and parts of Africa, financial investments continue to fall short of policy commitments, revealing a widespread gap between intention and implementation<sup>2</sup>.

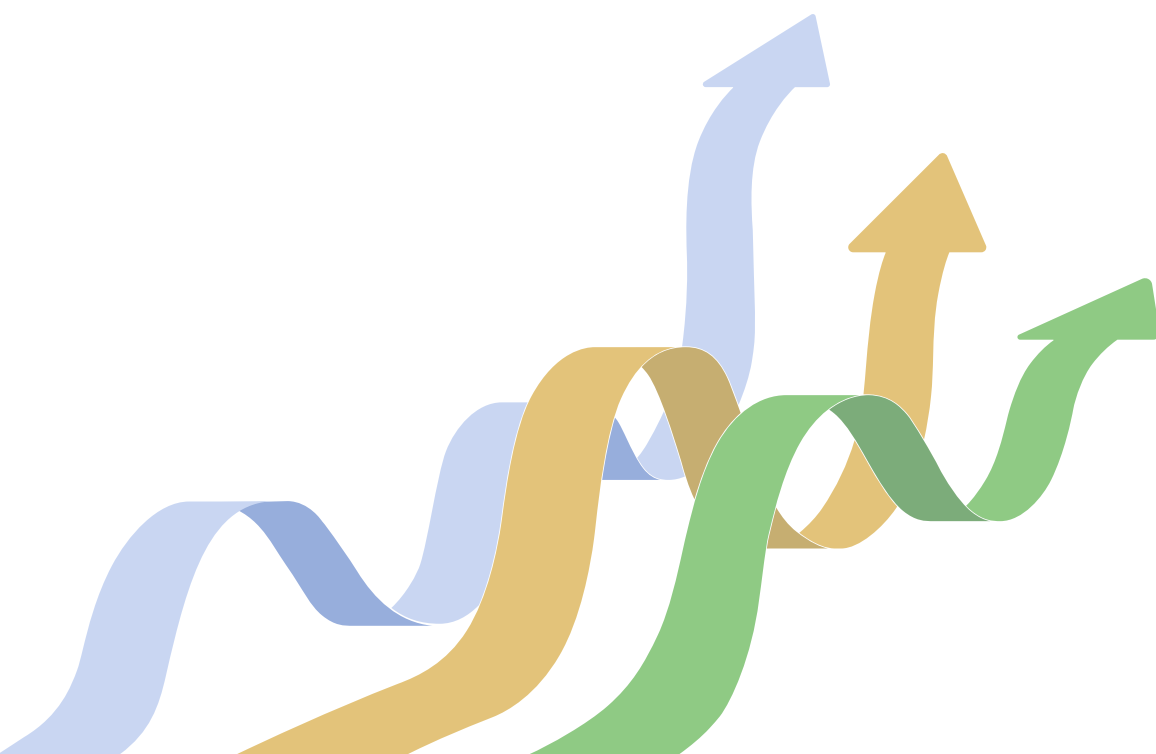
Home to extensive freshwater resources, rich biodiversity, significant renewable energy potential, and the majority of the Amazon Rainforest, the largest tropical forest and a vital carbon sink, Brazil is instrumental in regulating the Earth's climate and sustaining global biodiversity<sup>12</sup>. Brazil's environmental policies and land management decisions therefore carry profound global implications, making its active participation in international climate negotiations essential to shaping a sustainable and resilient future for the planet<sup>13</sup>.

Consistent with global patterns, Brazil is experiencing a double burden of malnutrition, with obesity affecting approximately one in three adults and one in five adolescents, while undernutrition, particularly among children, remains a persistent public health concern<sup>3</sup>. Between 2006 and 2019, the prevalence of wasting among children under five increased from 1.8% to 2.9%, and stunting has plateaued at an unacceptably high level of 7%<sup>4</sup>. Additionally, as one of the world's largest food producers, Brazil's agricultural sector is a major contributor to environmental degradation, accounting for 74% of the country's total greenhouse gas emissions and 72% of water withdrawals<sup>5</sup>. The nation's dominant food systems are heavily reliant on extensive livestock farming and export-oriented monocultures, practices that drive deforestation, increase emissions, degrade soil, overexploit water resources, and threaten biodiversity<sup>5,6</sup>. These environmental impacts underscore the urgent need to transform Brazil's food systems toward more sustainable models that safeguard natural resources while ensuring food and nutrition sovereignty and security<sup>6</sup>.

Analyzing the integration of nutrition and climate agendas within public policies, stakeholders'

opinions and monitoring approaches can support the design of programs toward a fair, sustainable, and health-oriented transition in Brazil<sup>1,2</sup>. The understanding and dissemination of mechanisms for ensuring the successful integration of multidimensional goals into public policies generate holistic benefits that ensure societal welfare across national food systems and at the global level<sup>2</sup>.

The Brazilian landscape on initiatives approaching sustainable food systems remains largely underexplored. Therefore, the aim of the report is to present climate and nutrition integration within public policies in Brazil, based on a comprehensive review of 80 national- and state-level public policies using the 2023 I-CAN Baseline methodology<sup>2</sup>. Additionally, key stakeholders involved in Brazil's climate and nutrition agendas, at both national and subnational levels, were identified, mapped, and analyzed in terms of their roles, influence, and interest in supporting policy integration. Consultations with these stakeholders were carried out to highlight best practices, identify opportunities for policy reform, and prioritize indicators for assessing food systems sustainability in Brazil.



## KEY FINDINGS

### 1. Climate and Nutrition stakeholders in Brazil

All assessment activities were conducted between April and June 2025. After conducting a stakeholder mapping to identify and characterize actors with potential interest and influence in promoting the integration of nutrition and climate agendas (see Appendix 1 for detailed methodology), a total of 141 stakeholders from different institutional categories, including non-governmental organizations, civil society organizations, academic institutions, government bodies, the private sector, and social movements operating at national, state, municipal, and international levels were identified. Of those, 53 actively participated in the study by completing an electronic form with data on institutional characteristics, Brazilian public policies, and indicator prioritization.

Among these 53 stakeholders, most reported operating at the national level (28; 52.8%). Another seven (13.2%) indicated activities at both the national and international levels, while the remaining respondents reported operating at the municipal (n=8; 15.1%), regional (n=6; 11.3%), and state (n=4; 7.6%) levels.

#### 1.1. Stakeholders' thematic areas by category

##### 1.1.1. Government

The government plays key roles in developing, implementing, and monitoring public policies; communication; education and research; legislation; and indicator monitoring. Among the 11 government representatives (21% of the total sample), four operate at the municipal level, representing São Paulo City Hall, Águas de Lindóia City Hall, and two departments within São Paulo City Hall (Executive Secretariat for Climate Change and Coordination for Food and Nutrition Security); one at the state level (the State of São Paulo Secretariat of Agriculture); and six at the national level, most of them directly involved with the food system transformation agenda in Brazil (Brazilian Agricultural Research Corporation - EMBRAPA, Ministry of Health, Ministry of the Environment and Climate Change - MMA, and

Ministry of Social Development and Assistance, Family and the Fight against Hunger - MDS). Government representatives also reported working across multiple areas, specifically: six reported working in food security, five in food systems, five in healthy eating promotion, five in public health, four in climate change, four in sustainable agriculture, three in food sovereignty, and two in nutritional surveillance.

##### 1.1.2. Research and Academia

Academic institutions play strategic roles in areas such as research, teaching, and university outreach, standing out for their contribution to the production and dissemination of scientific knowledge, communication, and social mobilization. In addition, they play an important role in formulating and supporting public policy development and monitoring indicators related to nutrition and climate. Among the 20 academic and research institutions that participated in the study (38% of the total sample), all reported involvement in research and education activities, with frequent engagement in multiple, complementary roles.

The data collected revealed that stakeholders in this category operate simultaneously in various thematic areas related to the nutrition and climate agendas. There is a notable presence in food and nutrition security, cited by 16 stakeholders (80% of respondents), followed by food systems and healthy eating promotion, mentioned by 15 (75% of respondents). Strong engagement with the climate agenda was also reported by 13 universities (65%), while food sovereignty and sustainable agriculture were mentioned by 10 stakeholders each (50%). Academic engagement in social justice and public health issues was also evident, with nine (45%) and eight (40%) mentions respectively. Nutritional surveillance was indicated as an activity area by three academics (15%).

These results underscore the interdisciplinary nature of university activities and the significant potential of these stakeholders in promoting the integration of nutrition and climate actions in the country.

### 1.1.3. Civil society organizations and NGOs

Stakeholders in the civil society organizations and NGOs category were analyzed jointly, as both groups self-identified as part of social movements and philanthropic organizations, with similarities in their institutional roles. This category comprised 16 respondents (30% of the total sample).

Civil society organizations and NGOs reported advocacy (n=13), social mobilization (n=10), and communication (n=7) as their main activities, as well as support in research and education activities, and in the implementation and monitoring of public policies. Regarding areas of activity, 15 stakeholders in this category reported working simultaneously on climate change, food systems, and food and nutrition security, highlighting the strong potential of this group in promoting the integration of actions across climate and nutrition.

Sustainable agriculture was also prominent (n=14), and ten organizations mentioned food sovereignty and the promotion of healthy diets, reflecting a commitment to food models rooted in culture, biodiversity, and the human right to adequate food.

### 1.1.4. Private sector

The private sector had limited representation in this study, with only seven companies identified, of which four participated (7% of the total sample). Despite the low participation rate, the institutional roles of those who agreed to make contributions were diverse and widely representative, emphasizing activities related to research and education, communication, social mobilization, advocacy, public policy formulation and support, food production and distribution, and the monitoring of nutritional and climate indicators. Thematically, areas related to food systems, food security, climate change, sustainable agriculture, and promoting healthy diets stood out.

The low participation of private sector representatives in this study limits the current analysis of this category's role. This observation could inform future strategies to increase engagement with this group.

### 1.1.5. International organizations and the press

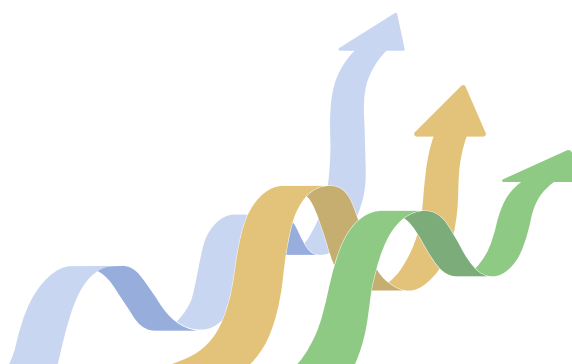
Among the international organizations invited to respond to the electronic form, only one participated, represented by the Brazil National Youth Chapter (World Food Forum, FAO), which reported engaging in research and education, communication, advocacy, and social mobilization activities. This stakeholder operates in thematic areas such as climate, food systems, food sovereignty, sustainable agriculture, and food and nutrition security, highlighting the importance of younger generations in promoting integrated actions.

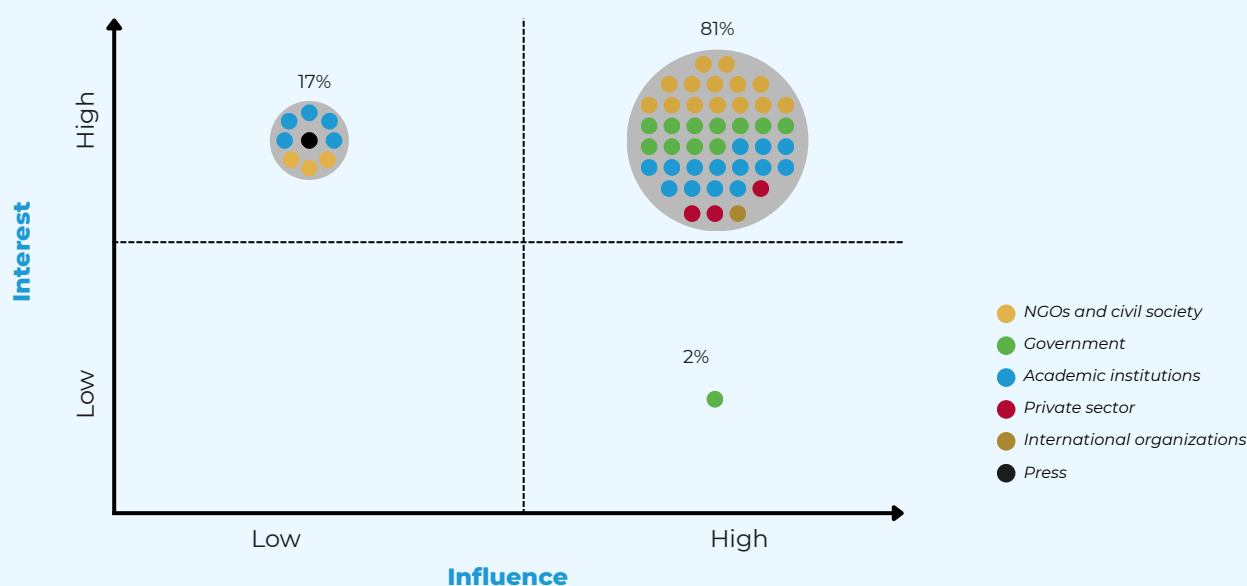
The study included one media representative whose work is exclusively focused on communication about food systems in all their complexity, with an emphasis on defending the right to adequate and nutritious food.

## 1.2. Stakeholders interest and influence

### 1.2.1. Interest and influence matrix

Based on the data collected, an analytical matrix was developed to classify each stakeholder according to two main axes: interest in integrating the climate and nutrition agendas, and influence over public policies and decision-making processes related to these themes (see Appendix 1 for detailed methodology). This classification organizes stakeholders into four quadrants resulting from the combination of interest and influence levels, as shown in [Figure 3](#).





**Figure 3:** Stakeholder matrix on interest and influence in promoting climate-nutrition integrated public policies (n = 53). Four quadrants for high interest and high influence; low interest and high influence; high interest and low influence; and low interest and low influence.

Among the 53 stakeholders who participated in the study, 43 (81%) were classified in quadrant 1 of the matrix, characterized by high interest and high influence. This classification is based on the self-assessment provided by the respondents in the electronic form, in which their institutions declared a strong interest in integrating the nutrition and climate agendas (mitigation and adaptation) and reported active participation or occasional contributions to policy processes related to these themes. It is important to note that this categorization reflects the stakeholders' own perceptions, which may imply some degree of self-reporting bias, particularly regarding the level of influence reported.

Nine stakeholders were positioned in quadrant 3, corresponding to the group with high interest but low influence, as they reported being consulted only to a limited extent or not being involved in decision-making processes. This group was composed of stakeholders from research and academia (n=5), civil society and NGOs (n=3), and the press. This result highlights the importance of fostering dialogue between these stakeholders and more influential ones, such as those working in government, to incorporate perspectives from diverse sources into nutrition and climate actions.

Notably, NGOs and civil society organizations play a vital role in communication, both through the production of technical-scientific content and public-facing campaigns, and in bridging collaborations between civil society, public officials, academic institutions, and international organizations. Their ability to operate across diverse spheres and environments positions them as a powerful driving force in advancing the integration of climate and nutrition initiatives.

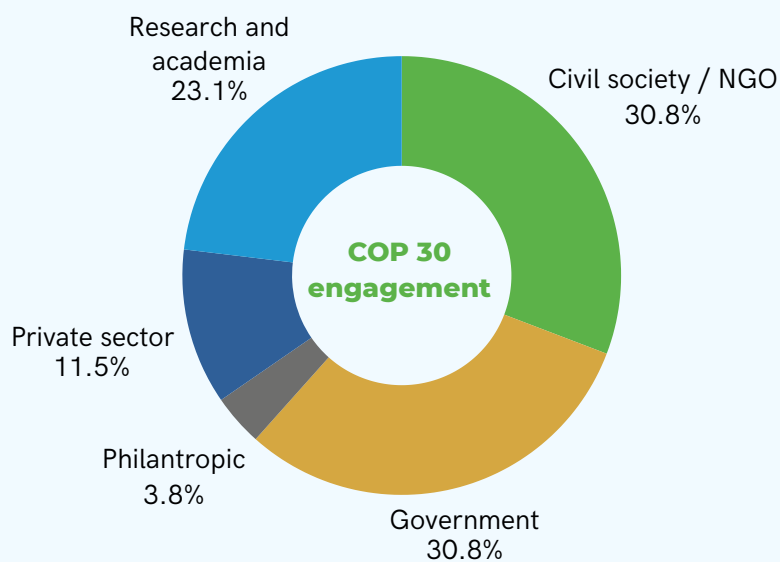
Academic institutions, in turn, play a crucial role in developing research and disseminating technical information and education related to food security and climate change. They have the capacity to generate and coordinate data, advance scientific knowledge, and inform practices and policy development, contributing significantly to the integration of both agendas at the national level.

Only one stakeholder, from the government, was placed in quadrant 2 of the matrix, indicating low interest, despite some level of institutional influence, and was occasionally consulted on actions related to nutrition and climate.

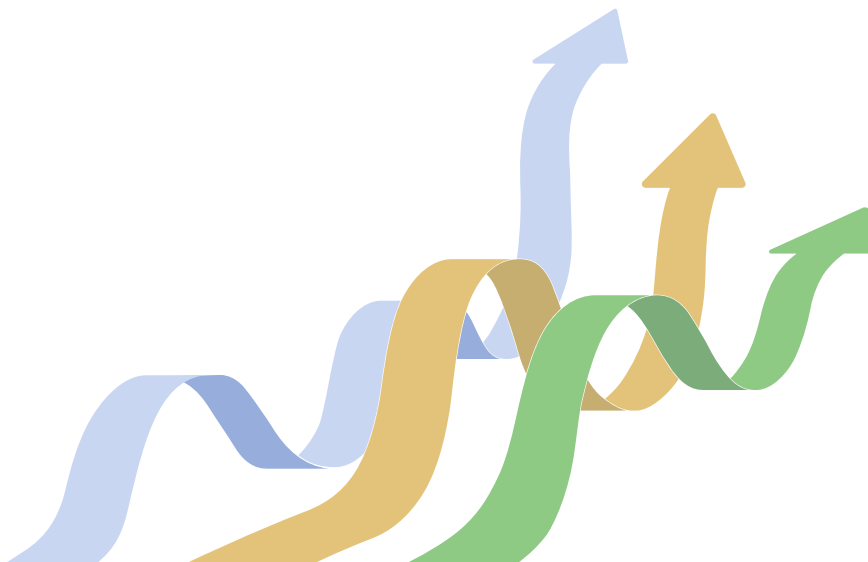
### 1.2.2. Engagement with COP30

Stakeholders were asked about their current or anticipated involvement with COP30 [data collected prior to the event]. Among the 53 respondents, 26 (49%) reported having some level of involvement with the event, while 20 (38%) stated that they were not yet involved but expressed interest in participating. Only five (9%) indicated that the topic had not yet been discussed internally, and two (4%) reported having no relationship with, nor intention to engage in, the event.

Among the 26 stakeholders already involved with COP30, 14 (54%) reported maintaining dialogue with the event's presidency or organizing committee, 10 (38%) were directly involved in organizing or supporting side events, and two (8%) were engaged with the official delegation. **Figure 4** shows the distribution of these 26 stakeholders across different categories.



**Figure 4:** Distribution of 26 stakeholders with some level of involvement with COP30 across different categories.



## 2. Climate-nutrition integration of Brazilian public policies

A comprehensive search for currently active national and subnational (state-level) public policies was conducted seeking legislative texts relevant to the integration of nutrition and climate agendas in Brazil. At the national level, the primary source of information was the Public Policy Catalog of the Institute for Applied Economic Research (Instituto de Pesquisa Econômica Aplicada – IPEA), a virtual repository that compiles information on public policies implemented by the Federal Executive Branch in Brazil over the past eight decades. All the policies from the catalog, implemented between 1940 and May 2025, were screened and those that were active and thematically related to nutrition, climate, environment, health, or specific population groups were included.

For state-level policies, a search was conducted in the official websites of Brazil's 27 federative units (26 states and the Federal District), focusing on the secretariats responsible for health, food and nutrition security, environment and climate, and agriculture, covering all currently active public policies in May 2025. Due to variability in transparency and digital infrastructure across states, we acknowledge that some subnational policies may not have been identified.

This process resulted in an initial database of approximately 1,000 national public policies. Following a thorough review of the legislative texts, **80 national and subnational public policies** were

considered potentially relevant to the intersection of food, nutrition, and climate agendas. For each policy, data on various characteristics were collected and organized, including:

- Policy type (strategic, normative, programmatic, fiscal, regulatory, redistributive, or distributive);
- Level of governance (national or state);
- Legal/policy instrument (e.g., law, decree, program, strategy, action plan, policy, or plan);
- Policy title (in both English and Portuguese);
- Main objectives;
- Target audience;
- Year of implementation;
- Responsible ministry, state secretariats, or institutions;
- Link to the legislative or official act (in Portuguese);
- Associated Sustainable Development Goals (SDGs 2, 3, 5, 13, 14, and 15);
- Keywords related to nutrition and climate (the search was conducted in Portuguese, but the spreadsheet was completed in English).

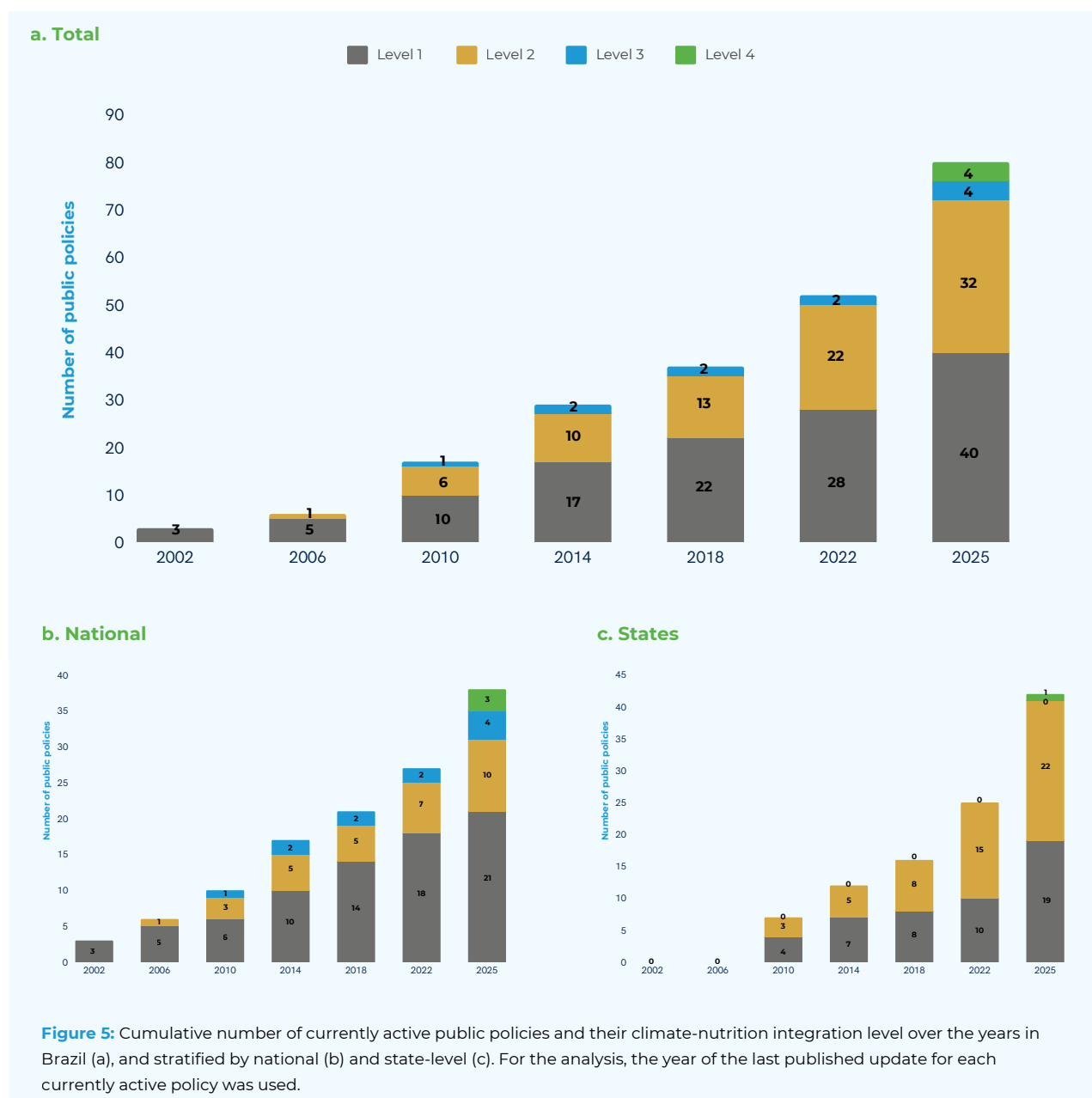
The identification of nutrition-related keywords in climate policy texts, as well as the reverse, considering their translation into Portuguese, was conducted using a simple search tool and the identified terms were recorded. Following the 2023 I-CAN Baseline methodology<sup>1</sup>, we reviewed the legislative texts and agreed upon the level of integration (Levels 1 to 4) assigned to each public policy, as outlined in **Table 2**.

**Table 2:** Levels of integration between climate and nutrition actions in public policies in Brazil.

| Levels of Integration between Climate and Nutrition                                                                   | Criteria                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Level 1 - No intentional connectedness between climate and nutrition.                                                 | No mention of relevant keywords related to nutrition or climate.                                                                                                                           |
| Level 2 - Some intention to connect climate and nutrition.                                                            | Relevant keywords are mentioned in public policies <b>AND</b> some analysis is conducted on the linkages between nutrition and climate.                                                    |
| Level 3 - Intention to mobilise resources to connect climate and nutrition.                                           | Level 2 is met, with deeper analysis of the linkages between nutrition and climate, and vice versa, <b>AND</b> an intention to mobilise resources.                                         |
| Level 4 - Commitment to mobilising resources and with distinct plans to take action to connect climate and nutrition. | Level 3 is met, with an in-depth analysis of the linkages between nutrition and climate, <b>AND</b> public policies or programs outlining clear actions and distinct implementation plans. |

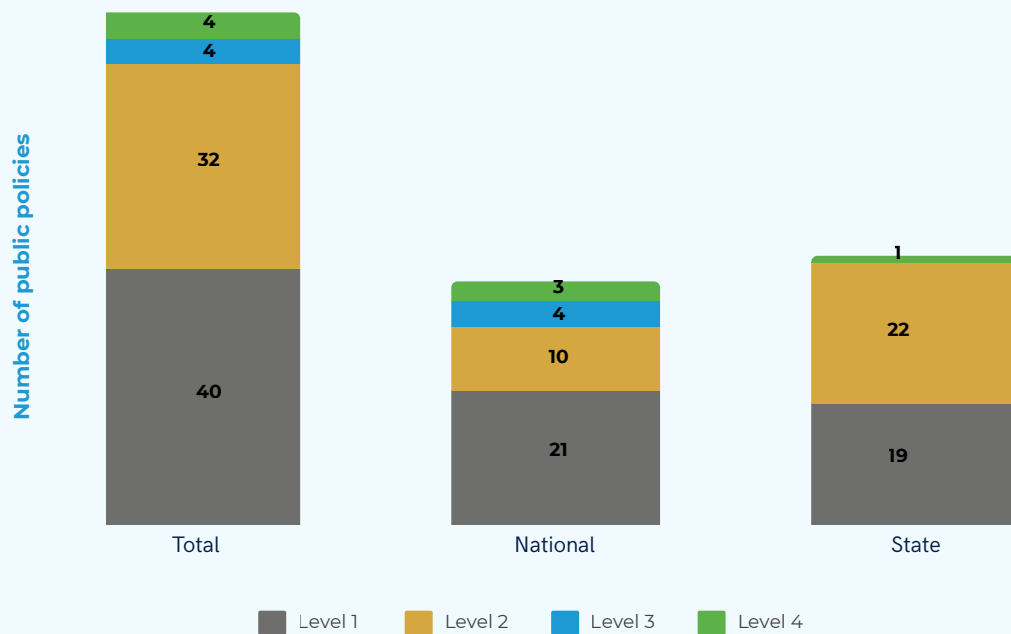
Among the 80 identified policies, four, representing 5%, achieved the highest integration score of Level 4, while an additional four policies (5%) were rated at Level 3. A significant proportion, comprising 32 policies (40%), was assessed at Level 2, whereas 40 policies (50%) received a Level 1 score, indicating no intention to integrate nutrition and climate

considerations. Notably, when considering the year of publication, there was an increase in Level 4 public policies in Brazil in the most recent years, as shown in [Figure 5](#), signaling a recent and promising shift toward a more integrated approach.

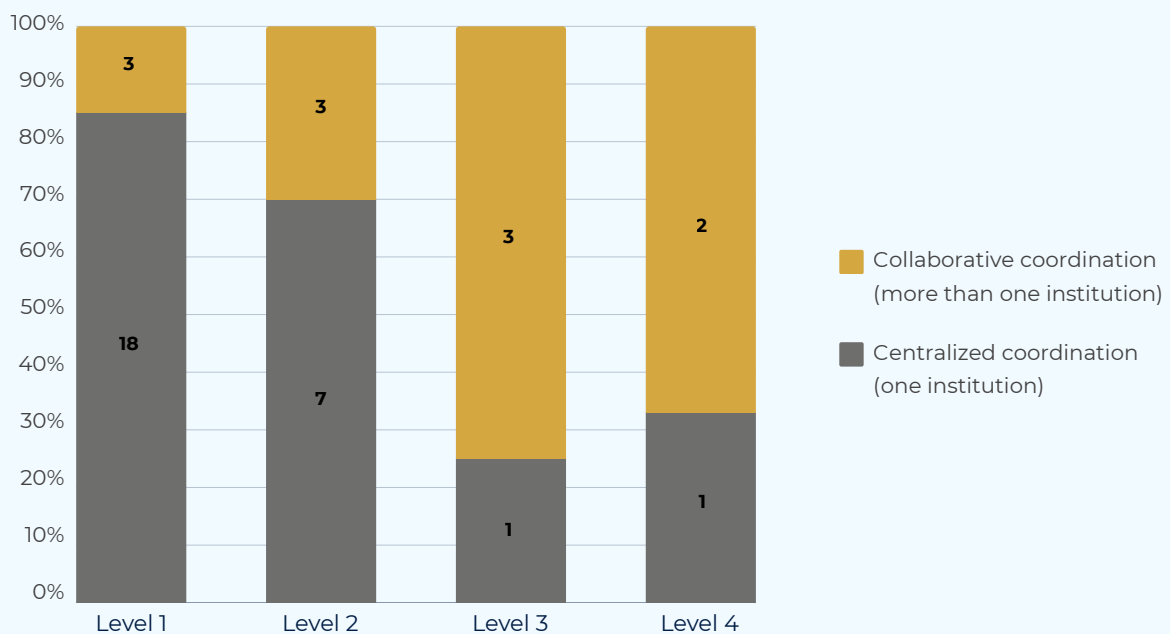


Among the 38 national-level policies, three (8%) achieved the highest integration score of Level 4 and four (11%) were rated at Level 3, 10 (26%) at Level 2, and 21 (55%) at Level 1 ([Figure 6](#)). Interestingly, policies at the highest levels of integration (Levels 3

and 4) were predominantly coordinated by multiple institutions through collaborative efforts, in contrast to those at the lowest level of integration, which were mainly characterized by centralized coordination ([Figure 7](#)).



**Figure 6:** Distribution of public policies according to their level of climate-nutrition integration in Brazil (n=80), and stratified by national (n=38) and state-level (n=42).



**Figure 7:** Centralized or collaborative coordination of national public policies according to their climate-nutrition integration level.

Considering the 42 state-level (subnational) policies, only one (2%) was classified at the highest level of integration (Level 4), implemented in 2024 in the state of Rio Grande do Sul, representing a notable example of best practice at the subnational

level. A total of 22 policies (52%) were rated at Level 2, demonstrating some consideration of climate and nutrition linkages, while 19 policies (45%) received a Level 1 score, reflecting limited or no integration of these agendas at the state level.

## 2.1. Best practices (Levels 3 and 4)

The following case studies provide a detailed overview of public policies classified at Levels 3 and 4, based on a review of their original legislative texts.

### 2.1.1. National Strategy for Food and Nutrition Security in Cities - Feed Cities, 2023 (Level 4)

*(Estratégia Nacional de Segurança Alimentar e Nutricional nas Cidades - Alimenta Cidades, 2023)<sup>14</sup>*

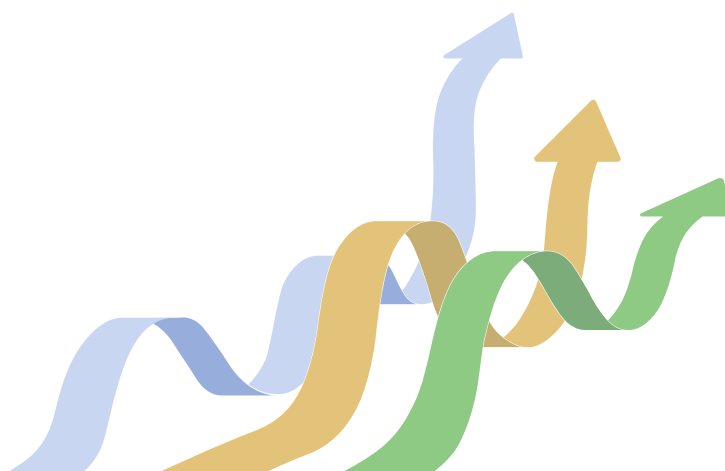
The National Strategy for Food and Nutrition Security in Cities aims to expand the production, access, availability, and consumption of adequate and healthy food, with a focus on urban peripheral territories and populations experiencing vulnerability and social risk. It also aims to reduce inequalities among vulnerable populations by taking into account the intersectionality of factors that deepen social inequities.

A central goal is to contribute to the reduction of food and nutrition insecurity and all forms of malnutrition. Toward this goal, the strategy emphasizes strengthening healthy, sustainable, and circular food systems, including traditional agricultural systems, and the governance of actions related to urban and peri-urban food systems.

The promotion of healthy and sustainable urban food environments is a priority, along with the development of local and regional food circuits from production to consumption, and the implementation of integrated and sustainable food supply systems. The strategy encourages circular processes throughout the various stages of food systems, including production, distribution, consumption, and solid waste management, while considering the rural-urban integration necessary for sustainable development.

Moreover, the strategy fosters the coordination and innovation of local actions, programs, and strategies that promote food sovereignty. It supports initiatives led by organized civil society in urban peripheral areas, the development of healthy and sustainable cities, and efforts for climate change adaptation and mitigation. Lastly, it promotes the active and informed participation of communities and organizations in the design, implementation, and monitoring of these actions, and encourages horizontal cooperation among cities that have adopted the strategy.

Recent updates have significantly expanded the strategy's reach. Initially implemented in priority municipalities defined by Portaria MDS nº 987 of May 22, 2024, the strategy is coordinated by MDS in collaboration with the Ministry of Agrarian Development and Family Agriculture (MDA) and the Ministry of Cities, within the framework of the Interministerial Chamber for Food and Nutrition Security (CAISAN). In July 2025, MDS extended the strategy to 102 new municipalities through Portarias nº 1.098 and nº 1.101, the latter specifically covering municipalities in Rio Grande do Sul. This expansion strengthens the strategy's territorial coverage by enabling more municipalities to plan actions targeting food insecurity in urban peripheral areas and food deserts and swamps. In Rio Grande do Sul, implementation is closely tied to the climate agenda, given the recurrence of extreme weather events and the need for public policies focused on adaptation and resilience of urban food systems. Subsequently, in December 2025, Portaria nº 1.136 launched the Alimenta Cidades +1000 expansion, establishing rules and procedures for municipalities to express interest in joining the strategy through the Alimenta Cidades platform. This expansion marks a significant step in scaling up the strategy nationally, reinforcing integrated federal action toward food security and sustainable urban food systems.



### 2.1.2. National Food Supply Policy, 2023 (Level 4)

*(Política Nacional de Abastecimento Alimentar, 2023)<sup>15</sup>*

The National Food Supply Policy (PNAAB) aims to guarantee the right to adequate food in Brazil through a comprehensive and integrated set of objectives. At its core, the policy seeks to promote regular and permanent access to sufficient, diverse, and high-quality food for the Brazilian population, prioritizing fresh and minimally processed foods while respecting cultural, social, and environmental dimensions.

To this end, PNAAB encourages decentralized and community-based supply systems that value small-scale retail, with particular attention to food deserts and swamps. It promotes sustainable and healthy food systems based on agroecology and socio-biodiversity, including traditional agricultural systems, and prioritizes the establishment of strategic public food reserves, with emphasis on biodiversity and basic foods produced by family farming.

The policy also supports the strengthening of local, territorial, and regional food circuits, from production to consumption, including processing units for family farmers, indigenous peoples, traditional communities, and artisanal producers. It incentivizes regional dietary practices rooted in the diversity of Brazil's biomes and promotes direct marketing between producers and consumers.

Additional priorities include improving public procurement mechanisms, monitoring food stocks and prices, and mitigating price volatility through structural and regulatory initiatives. PNAAB also supports measures to reduce food loss and waste, expand supply center infrastructure, and strengthen solidarity networks for food production, distribution, and consumption.

Finally, the policy regulates food advertising and promotes consumer access to accurate food

information, based on the Brazilian Ministry of Health's Food Guide. It also encourages the integration of food supply planning into municipal, district, and state master plans, ensuring a more strategic and territorially inclusive approach to food policy in Brazil.

### 2.1.3. National Program for Urban and Peri-Urban Agriculture, 2023 (Level 4)

*(Programa Nacional de Agricultura Urbana e Periurbana, 2023)<sup>16</sup>*

The National Program for Urban and Peri-Urban Agriculture aims to promote sustainable agriculture within urban areas and surrounding peri-urban regions, safeguarding food and nutrition security and fostering socioeconomic inclusion and income generation for individuals and communities involved in urban and peri-urban agriculture.

Environmental conservation and sustainable land management are also central objectives, supporting the agroecological transition and the protection of water and soil resources. The program emphasizes reducing the use of highly toxic chemical pesticides and inputs in urban and peri-urban areas. Another key priority is promoting food circularity through actions involving production, distribution, consumption, and the recycling of organic waste, aiming to minimize food loss and waste. The program contributes to the development of healthier, more sustainable, and climate-resilient cities, actively addressing environmental racism and encouraging practices of climate change adaptation and mitigation.

It also promotes youth engagement in various urban and peri-urban agricultural activities and supports the sale and availability of healthy foods, especially through short supply chains. Moreover, the program highlights and strengthens the role of women in urban and peri-urban agriculture and combats food insecurity arising from social inequalities related to race, ethnicity, and gender.

#### **2.1.4. Rio Grande do Sul State Strategy for the Promotion of Popular Centers for Food and Nutrition Sovereignty and Security, 2024 (Level 4)**

*(Estratégia Estadual de Fomento dos Pontos Populares de Soberania e Segurança Alimentar e Nutricional - Rio Grande do Sul, 2024)<sup>17</sup>*

The Rio Grande do Sul State Strategy aims to strengthen territorial initiatives that ensure the human right to adequate food and promote food sovereignty and food and nutrition security. Central to the strategy is the recognition of Popular Food Sovereignty and Food and Nutrition Security Hubs as key actors in executing the State Policy on Food and Nutrition Security, within the framework of the State Food and Nutrition Security System (SISAN-RS).

The strategy prioritizes populations in situations of vulnerability, including Indigenous peoples, traditional communities, Afro-Brazilian religious groups, and grassroots collectives such as solidarity economy enterprises and social movements. It seeks to improve the quantity, quality, diversity, and regularity of food supply in both urban and rural territories, while fostering collective capacities for the governance of agrifood systems.

A strong emphasis is placed on climate resilience, with objectives aimed at increasing the ability of high-risk territories to respond to adverse events, supporting the protection and restoration of native ecosystems, and promoting agroecological practices in urban and peri-urban areas. The strategy also encourages connections between community hubs and institutions of higher and technical education through extension activities.

Finally, the strategy explicitly recognizes the essential role of women in ensuring food sovereignty and security, including through monetary transfers to support their voluntary work within community hubs, and supports the agroecological transition of food production systems led by Indigenous peoples, traditional communities, and family farmers.

#### **2.1.5. National Policy on Agroecology and Organic Production, 2012 (Level 3)**

*(Política Nacional de Agroecologia e Produção Orgânica, 2012)<sup>18</sup>*

The National Policy on Agroecology and Organic Production (PNAPO) aims to integrate, coordinate, and adapt policies, programs, and initiatives that support the agroecological transition and the development of organic and agroecology-based production systems. Its goal is to contribute to sustainable development and to improve the quality of life for the population through the sustainable use of natural resources and the supply and consumption of healthy food.

PNAPO is guided by several key principles. First, it promotes food sovereignty, food and nutrition security, and the human right to adequate and healthy food by encouraging the production and availability of organic and agroecological products free from health-threatening contaminants. It supports the sustainable use of natural resources, ensuring compliance with labor regulations that protect the rights and well-being of both landowners and workers. The policy also emphasizes the conservation of natural ecosystems and the restoration of degraded environments through production systems and forest extractivism based on renewable resources, using cultural, biological, and mechanical practices that reduce pollution and dependence on external inputs.

Furthermore, PNAPO advocates for fair and sustainable systems of food production, distribution, and consumption that enhance the economic, social, and environmental functions of agriculture and forest extractivism. It prioritizes institutional support for the beneficiaries of Law No. 11.326/2006, which defines guidelines for sustainable family farming and rural development. The policy values agrobiodiversity and socio-biodiversity products and stimulates local initiatives that use and conserve plant and animal genetic resources, particularly those involving traditional, local, or heirloom varieties and breeds. It also encourages greater participation of rural youth in organic and

agroecological production and contributes to reducing gender inequalities by supporting actions and programs that promote the economic autonomy of women.

Nevertheless, the policy still lacks further involvement of stakeholders and mobilization of resources to ensure its dissemination at the state and municipal level. Although the initiative gathered international support at its launch in 2012 due to its innovativeness, the absence of continuous support and implementation at the national level undermined its commitment to the integration of nutrition and climate actions. The gradual abandonment of actions linked to the policy in recent years required its official reinstatement in 2023. Therefore, although the policy design sought to ensure support through the participation of multiple stakeholders and diverse plans to connect climate and nutrition, its effective results are still to be identified throughout the country.

### **2.1.6. National School Feeding Program (PNAE) (Level 3)**

*(Programa Nacional de Alimentação Escolar, 2009)<sup>19</sup>*

The National School Feeding Program (PNAE) consists of the transfer of federal financial resources to support students enrolled at all stages and in all modalities of basic education across municipal, district, state, and federal school systems. It also supports students in institutions recognized as philanthropic or maintained by such entities, in nonprofit religious schools, and in community schools partnered with state, district, or municipal governments. The program aims to contribute to students' biopsychosocial growth and development, academic learning, school performance, and the formation of healthy eating habits, through actions in food and nutrition education and the provision of meals that meet their nutritional needs throughout the school year.

The PNAE is a key pillar in ensuring food and nutrition security in Brazil. It is grounded in the provision of healthy and adequate meals, which includes the use of diverse and safe foods that

respect local culture, traditions, and healthy eating habits; the development of food and nutrition education activities; and the recognition of the right to school meals as a means to ensure students' food and nutrition security. The program serves approximately 40 million students, with an annual transfer of R\$ 5.7 billion to the 27 states and 5,570 municipalities, supplemented by state and municipal budgets.

The program guarantees equitable access, taking into account the biological differences related to age and health conditions that require special attention, as well as the needs of students in situations of social vulnerability. Toward this goal, the program requires the appointment of a Responsible Technical Nutritionist, the development of meal plans that respect nutritional requirements, local eating habits, and food culture, and compliance with the Ministry of Health's guidelines on promoting health through food.

Several recent legislative updates have significantly strengthened the program's integration with family farming, nutrition, and climate objectives. The legislation establishes that at least 30% of federal funds must be invested in the direct purchase of products from family farming, a threshold that will increase to 45% from 2026 onwards under Law n° 15.226/2025, further supporting local economies and sustainability. Special attention is given to populations in situations of vulnerability, including agrarian reform settlements, indigenous and quilombola communities, and women's groups. A 2023 law update mandates that at least 50% of purchases from individual rural households benefit women, reinforcing their role and recognition within family farming.

Resolution CD/FNDE n° 3/2025 further strengthened the program's nutritional profile, reducing the permitted share of processed and ultra-processed foods from 20% to 15% of the budget in 2025, dropping to 10% from 2026 onwards. The resolution also recommends against the purchase of ultra-processed foods with front-of-pack warning labels and sets a minimum of 50 different types of fresh or minimally processed foods to be procured annually.

Although food purchases from family farming and other climate-sensitive actions have been gradually integrated into the program over recent decades, results still depend on state- and local-level efforts to fully connect nutrition and climate actions. Further incentives for stakeholder involvement through social mobilization and participation in municipal-level school feeding committees could support the integration of environmental goals into policy implementation. Given the program's extensive coverage and long history of transformation, the effective integration of climate actions into PNAE presents substantial potential for food systems transformation in Brazil.

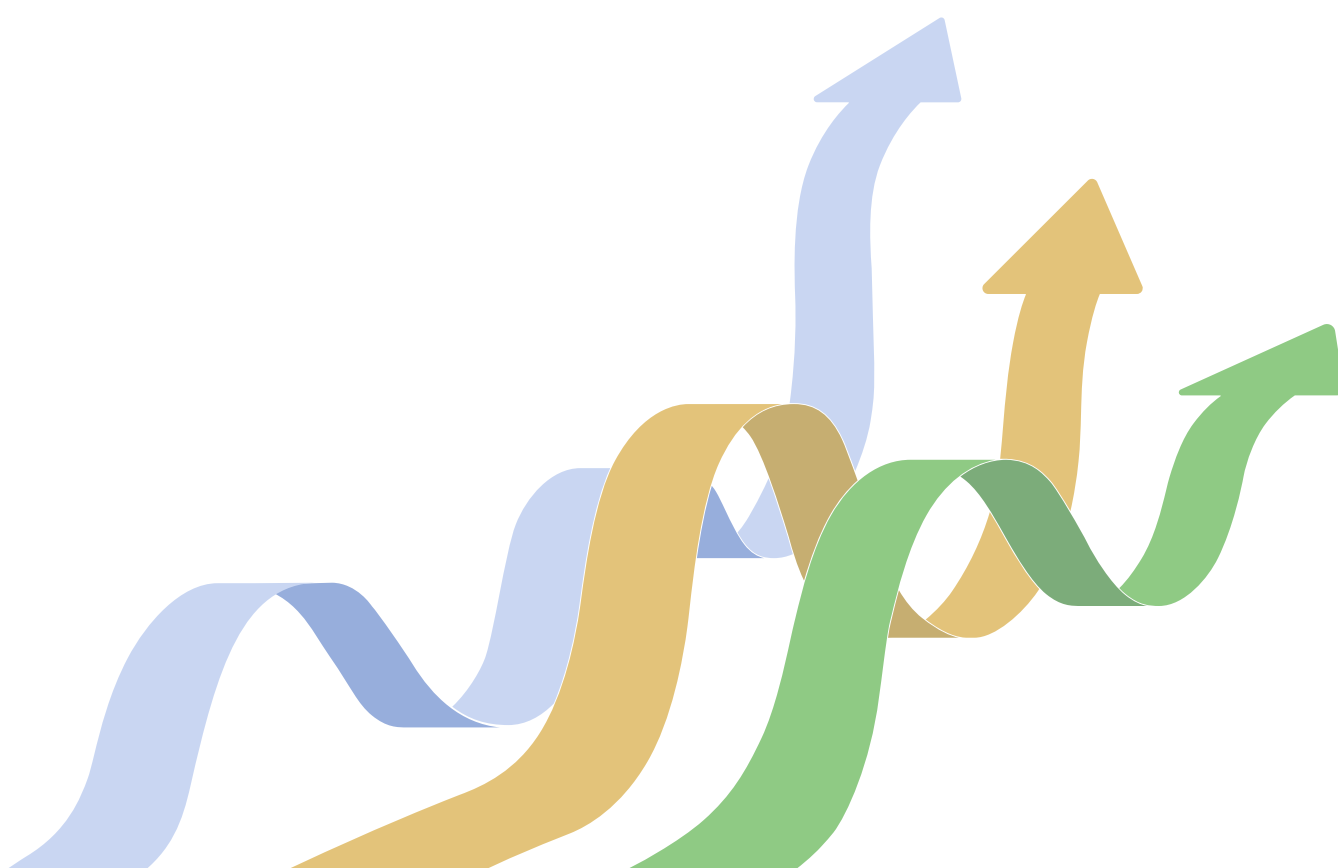
### 2.1.7. Food Acquisition Program (PAA) (Level 3)

(Programa de Aquisição de Alimentos, 2003)<sup>20</sup>

The Food Acquisition Program (PAA), originally created in 2003 (Law No. 10.696/2003) and reinstated by Law No. 14.628/2023 and regulated by Decree No. 11.802/2023, is a strategic program for combating hunger and promoting food and nutrition security in Brazil.

The program operates through two complementary objectives: promoting access to adequate food for vulnerable populations, and strengthening family farming. To this end, the federal government purchases food produced by family farmers and donates it to social assistance organizations, public and philanthropic health, education, and justice institutions, and food security facilities such as Restaurantes Populares, Cozinhas Comunitárias, and Bancos de Alimentos.

A distinctive feature of the PAA is its cross-cutting nature: it operates in close synergy with several other policies discussed in this report, including the Alimenta Cidades strategy, the Cozinhas Solidárias Program, and actions for promoting adequate and healthy food in school settings. Notably, since 2023, states and municipalities seeking to participate in the PAA are also required to adhere to SISAN, further reinforcing the system's role as the institutional backbone of Brazil's food and nutrition security governance. The program also supports broad civil society participation through Food and Nutrition Security Councils at the national, state, and municipal levels.



## 2.2. Foundational social infrastructure for inclusive policy implementation

Brazil has developed a robust set of policies and instruments that, while not exclusively focused on climate or nutrition, form the institutional and social foundation upon which more specialized interventions are built.

The Organic Law on Food and Nutrition Security (LOSAN, Law No. 11.346/2006) is central to this ecosystem. It enshrines the right to adequate food in Brazilian law and established the National Food and Nutrition Security System (SISAN), a landmark institutional framework that coordinates food and nutrition security policies across federal, state, and municipal levels. SISAN represents a milestone in Brazil's governance architecture: by integrating actions across levels of government and sectors, it creates the conditions for coherent, sustained, and rights-based food and nutrition security policies. Expanding municipal adherence to SISAN represents a concrete step toward decentralizing food and nutrition security governance, ensuring that national commitments translate into local action and that vulnerable populations are reached by integrated interventions.

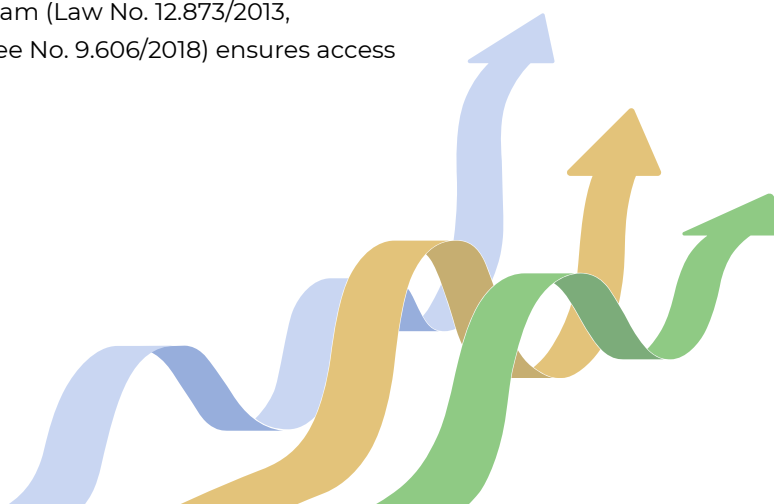
Building on this foundation, key social programs like Bolsa Família (Law No. 14.601/2023) and Cadastro Único (CadÚnico) support low-income families by ensuring access to essential services and benefits. Bolsa Família is internationally recognized for lifting millions of families out of hunger and has been recently relaunched with an improved structure offering enhanced benefits based on household size and composition. CadÚnico serves as the primary gateway to Brazil's broader social protection system, facilitating access to more than 30 social programs.

The Cisterns Program (Law No. 12.873/2013, amended by Decree No. 9.606/2018) ensures access

to safe water for drinking and food production in rural and semi-arid regions through simple, low-cost social technologies. Since its inception in 2003, it has reached over 1.2 million families, with a focus on traditional and Indigenous communities. Participation requires prior registration in CadÚnico, reinforcing the interconnected nature of Brazil's social protection architecture.

Finally, the Cozinhas Solidárias Program (Law No. 14.628/2023, regulated by Decree No. 11.937/2024), coordinated by SESAN/MDS, is a social technology for combating hunger that strengthens community-based food preparation and distribution networks across Brazil. The program supports over 2,000 solidarity kitchens in operation nationwide, offering free, high-quality meals primarily to populations in situations of vulnerability and social risk, including people experiencing homelessness and food insecurity. Operating through civil society organizations credentialed by MDS, these kitchens combine food production with complementary activities such as nutrition education and community training, functioning as grassroots hubs of solidarity and food security. Their strategic location in vulnerable territories makes them a key instrument for reaching populations that are difficult to access through conventional food security programs.

Together, these policies ensure income security, access to water, and institutional visibility for populations in situations of vulnerability. By addressing the structural conditions that drive food insecurity and climate vulnerability, they enhance the capacity of the most vulnerable communities to benefit from specialized climate and nutrition interventions, and form an indispensable foundation for the effectiveness of Brazil's broader food systems transformation agenda.



### 3. Data landscape to monitor food system sustainability in Brazil

In addition to the policy analysis, this study assessed the key indicators that would be required to monitor progress on food systems transformation in Brazil. These indicators can be used to inform planning, ensure accountability, and measure impact. As such, they are a key element of operationalisation of the goals expressed in policies and strategies.

#### 3.1. Selection of 10 priority indicators

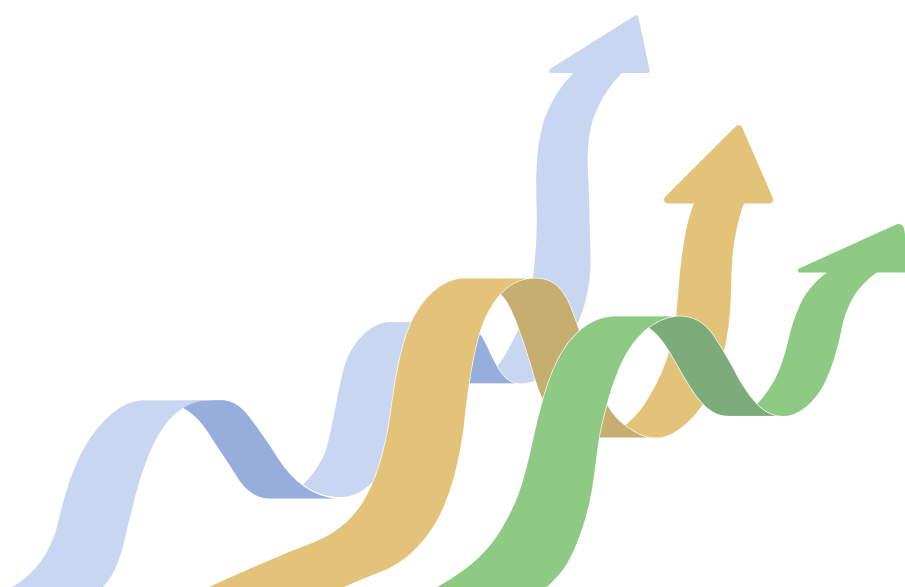
Two internationally recognized and scientifically robust datasets were selected as the starting universe of indicators to ensure a structured and manageable pool for stakeholder prioritization. The Food Systems Dashboard compiles indicators in approximately 200 countries across multiple dimensions of the food systems, including different stages of the food supply chain, food environments, diets, nutrition outcomes, environmental impacts and drivers, socioeconomic drivers, resilience and governance, sourced in globally recognized datasets with established methodologies<sup>21</sup>. In addition, the Multidimensional Index for Sustainable Food Systems (MISFS) was developed to assess food systems sustainability performance in all Brazilian states and, thus, include indicators that are adapted to Brazil's context and data availability for monitoring at a sub-national level<sup>22, 23</sup>.

After screening over 300 indicators, retrieved from the Food Systems Dashboard<sup>21</sup> metadata and from the Multidimensional Index for Sustainable Food Systems in Brazil<sup>22,23</sup> a list of 29 indicators was submitted to stakeholders evaluation (see Appendix

1 for detailed methodology). During the screening for candidate indicators, a lack of representative municipal-level data was observed for many indicators, thus leading to the decision of mainly working with the state sub-national level. Stakeholders were asked to rank the indicators they believed should be prioritized for monitoring food systems in Brazil, particularly in terms of their capacity to ensure food security for the population and mitigate climate change, and to identify any additional indicators they considered important but were not included in the initial list.

From the 52 stakeholders, 34 (65.4%) agreed that all 29 indicators were important for prioritization and 30 (57.7%) suggested additional indicators. **Table 3** presents the top 10 indicators, along with their corresponding sectors and sub-sectors, according to the Food System Dashboard framework<sup>24</sup>, and final vote count.

Among the top ten indicators, six referred to outcomes (comprising food systems sub-sectors "food security", "environmental impacts", "dietary intake", and "livelihoods, poverty, and equity"); two referred to food environments (comprising food systems sub-sectors "food affordability", and "food safety"); one referred to drivers (sub-sector "environment and climate change"); and one referred to cross-cutting issues (sub-sector "resilience"). The top 10 indicators were, then, estimated over time, using public available and official data sources in Brazil, according to their recency and data availability, in national and subnational (state) level, to be incorporated into the Food Systems Dashboard platform, hosted in the "country data" section.



**Table 3:** Top 10 priority food system indicators after stakeholders ranking and their corresponding sector and sub-sector, and final vote counts.

|                  |                                                                                    |                      |                                  | Votes              |                        |             |
|------------------|------------------------------------------------------------------------------------|----------------------|----------------------------------|--------------------|------------------------|-------------|
| Rank             | Indicator                                                                          | Sector               | Sub-sector                       | For prioritization | Against prioritization | Final count |
| 1 <sup>st</sup>  | Percent population experiencing moderate or severe food insecurity (SDG 2.1.2)     | Outcomes             | Food security                    | 27                 | 0                      | 27          |
| 2 <sup>nd</sup>  | Agri-food systems greenhouse gas emissions per person                              | Outcomes             | Environmental impacts            | 25                 | 0                      | 25          |
| 3 <sup>rd</sup>  | Total greenhouse gas emissions including land-use change and forestry              | Drivers              | Environment and climate change   | 21                 | -1                     | 20          |
| 4 <sup>th</sup>  | Percent of the population who cannot afford a healthy diet                         | Outcomes             | Food Security                    | 19                 | 0                      | 19          |
| 5 <sup>th</sup>  | Pesticide use per area of cropland                                                 | Outcomes             | Environmental impacts            | 17                 | 0                      | 17          |
| 6 <sup>th</sup>  | Cost of a healthy diet                                                             | Food Environments    | Food affordability               | 17                 | -1                     | 16          |
| 7 <sup>th</sup>  | Caloric contribution of ultra-processed foods                                      | Outcomes             | Dietary intake                   | 12                 | 0                      | 12          |
| 8 <sup>th</sup>  | Percent of workers earning less than the poverty threshold in food production      | Outcomes             | Livelihoods, poverty, and equity | 11                 | 0                      | 11          |
| 9 <sup>th</sup>  | Food price volatility                                                              | Cross-Cutting Issues | Resilience                       | 10                 | 0                      | 10          |
| 10 <sup>th</sup> | Percent of the population using safely managed drinking water services (SDG 6.1.1) | Food Environments    | Food safety                      | 10                 | 0                      | 10          |

### 3.2. Stakeholder perspectives on additional indicators

The prioritization of top-ten indicators for monitoring food systems in Brazil at the subnational level had a three-fold objective: 1) to assess overall data availability; 2) to select 10 relevant indicators for a pilot page of Brazil in the Food Systems Dashboard platform, including subnational level data; and 3) to capture stakeholders' perspectives on a set of pre-selected indicators by identifying whether stakeholders considered any excluded or currently unavailable indicators to be important.

Regarding the inclusion of additional indicators not featured in the catalogue provided, stakeholders suggested indicators that, in most cases, cannot be estimated with the data currently available for national and subnational levels in Brazil. Nevertheless, these were considered valuable and should be taken into account in future studies and monitoring efforts.

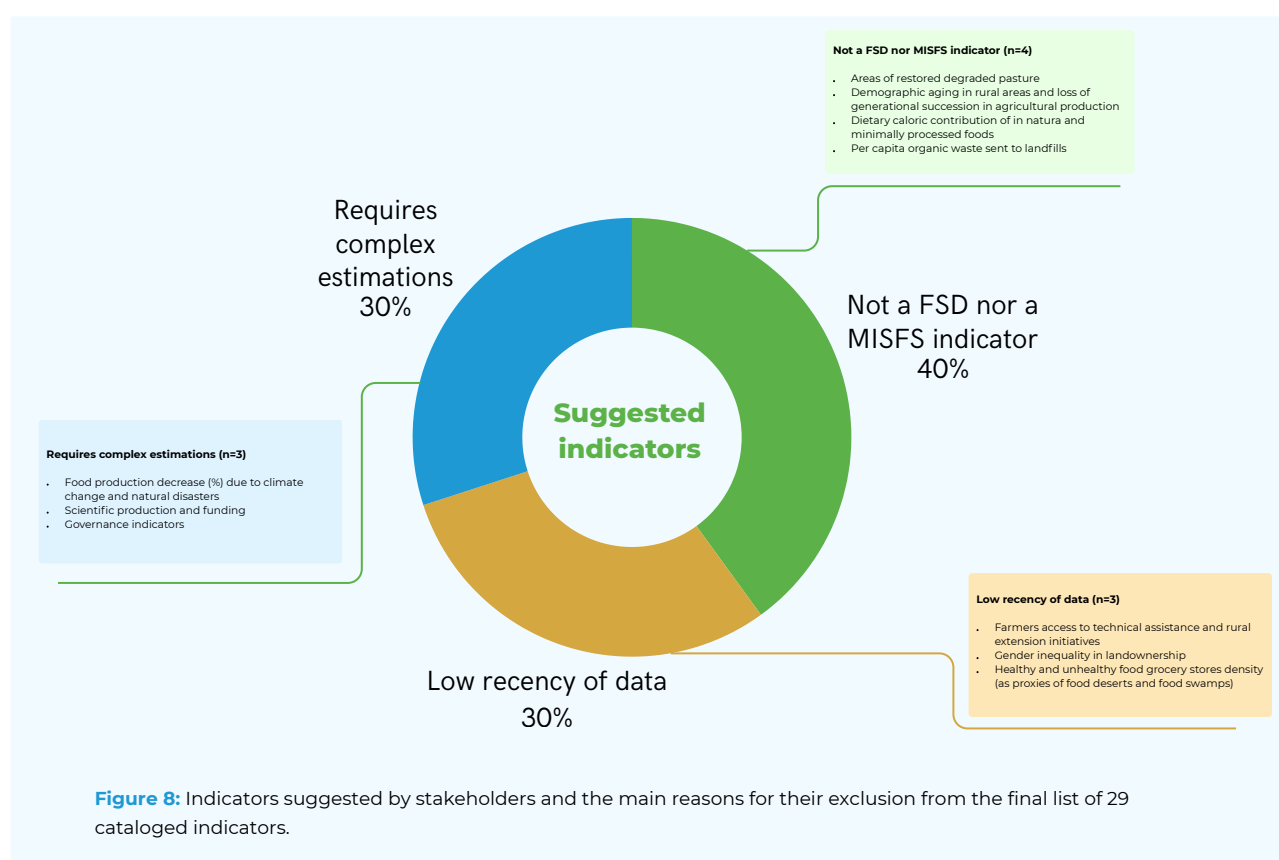
Among them, there were indicators to track regenerative productions and sustainable intensification practices, areas occupied by

agroecological community gardens, access to financial credit conditioned to food production environmental impact, food acquisition from short-distance supply chains, domestic food purchase from small producers and family farming, biodiversity in food production, soil biodiversity, and food loss and waste across the food supply chain.

Some suggested indicators, on the other hand, are feasible to estimate and could be subject to further investigations, such as: areas of restored degraded pasture; farmers access to technical assistance and rural extension initiatives; gender inequality in land ownership; food production decrease (%) due to climate change and natural disasters; demographic aging in rural areas and the loss of generational succession in agricultural production; dietary caloric contribution of in natura and minimally processed foods; healthy and unhealthy food grocery stores density (as proxies of food deserts and food swamps); per capita organic waste sent to landfills; scientific production and funding; and governance indicators. **Figure 8** depicts these feasible indicators along with the main reasons they were not included in the final list of 29 catalogued indicators.

In summary, there were three main reasons: 1) the indicator was not a Food Systems Dashboard<sup>21</sup> nor a Multidimensional Index for Sustainable Food Systems<sup>22,23</sup> indicator, and, therefore, was not included in the screening process from the start; 2) The indicator had low recency, relying on outdated data due to limited reporting frequency, and, for this reason, was excluded during the screening process; or 3) the indicator requires complex estimation, such as composite indicators or mathematical projections, subject to important variations depending on the methodology used.

Notably, data recency was a frequent obstacle during indicator screening, especially for indicators using data from the Brazilian National Dietary Survey; the Brazilian Agricultural Census; and the Map of Food Deserts and Food Swamps. Thus, it is crucial not only to address the need for primary data collection to estimate indicators in Brazil - especially those aiming to track regenerative productions and sustainable intensification practices, for which there is no data available - but also to update data collection on priority indicators more frequently.



In addition, some stakeholders suggested indicators aimed at assessing policy effectiveness and adoption, without specifying them. Among these, there was a general recommendation to incorporate indicators that monitor the implementation of the Food Acquisition Program (PAA) and the National School Feeding Program (PNAE) by Brazilian states and municipalities, as well as indicators to track which municipalities develop and commit to food security plans and strategies.

Given that monitoring food systems sustainability is crucial to strengthen governance and accountability mechanisms, data availability and tools such as the Food Systems Dashboard<sup>21</sup>, designed to visualize and compare national food systems using a comprehensive set of indicators and typologies, are crucial to support the development of evidence-based policies and interventions.

## OPPORTUNITIES FOR CLIMATE-NUTRITION ADVANCEMENT IN BRAZIL

As climate events in Brazil become more severe, it is essential to implement public policies that support climate change mitigation and food security simultaneously. The public policies reported here as best practices for climate-nutrition integration could serve as good examples, paving the way for future initiatives. Moreover, public policies classified in Level 3 of integration could benefit from targeted improvements and synergies with other existing policies. For instance, while Brazil's National School Feeding Program (PNAE) promotes public food procurement from family farming, more progress is needed to prioritize food acquisition from agroecological production, which is aligned with biodiversity preservation, land and water management, among other critical criteria for sustainability<sup>25</sup>. Another example refers to the National Policy on Agroecology and Organic Production (PNAPO), which gathered international support at its launch in 2012; however, the policy was deprioritized due to the lack of financial resources and absence of stakeholder engagement at the local level. Additional steps for integration of climate-sensitive actions should be emphasized in PNAPO and PNAE, considering their substantial potential to contribute to food systems transformations in the country due to their innovative approach and population coverage, respectively.

The adaptation of regional integration strategies implemented by the public sector within the Brazilian health system may represent an important opportunity to promote the connection of climate and nutrition actions within local food systems. Considering the lack of infrastructure and the cost for maintenance of high-complexity healthcare facilities at the local level, health policies in Brazil were designed and implemented through collaborative municipal consortiums since the 1980s, selecting main municipalities to serve as hubs connecting municipalities in their vicinity into regional healthcare networks. Data from the Brazilian Institute of Geography and Statistics

(IBGE) in 2023 showed that municipalities with initiatives toward intersectoral participation in food security policies are disseminated throughout the national territory, showing potential for support and dissemination of their practices to other surrounding municipalities. However, it is important to ensure allocation of resources and incentives to mobilize stakeholders at the local level, favoring the formation of food policy hubs and supporting their role in the integration of climate- and nutrition-sensitive strategies.

Furthermore, an important milestone is the formulation of the Reference Framework on Food Systems and Climate for Public Policies<sup>26</sup>. This framework aims to align and integrate public policies and interventions across various sectors. It encourages these sectors, considering their specific mandates, institutional capacities, and contextual realities, to collaborate in supporting the transition toward healthy, sustainable, and equitable food systems. Central to this transition are the principles of the Human Right to Adequate Food and Climate Justice<sup>25</sup>. The framework seeks to enhance discussions on the interconnections between food systems and climate change. It proposes principles and guidelines that will foster efforts to shift towards food systems that are not only healthy and sustainable but also promote equity. Additionally, it advocates for cross-sectoral adaptation and mitigation actions in response to the climate crisis, ensuring these initiatives align with the transformation of food systems. The document was developed by MDS in collaboration with the Food and Nutrition Security Policy Observatory (OPSAN), at the University of Brasília (UnB), and the Climate and Society Institute (ICS).

The Reference Framework is also a notable example of public participation, given that its writing process involved a thorough consultation and dialogue approach. The MDS hosted a workshop aimed at incorporating diverse perspectives to inform the framework's formulation.

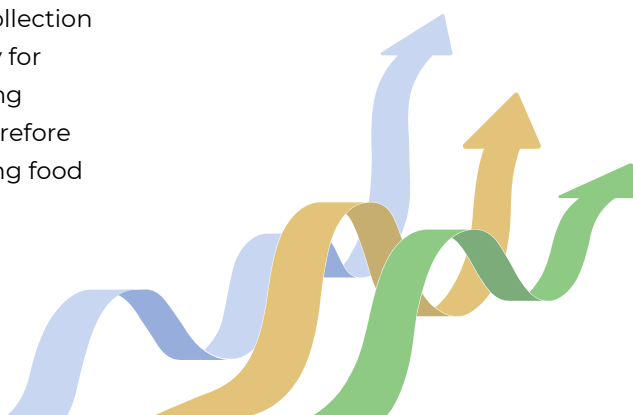
Aligning food systems with climate goals, however, will present significant challenges. The consultation conducted with stakeholders for the present report provided an understanding of the main obstacles faced in integrating the nutrition and climate agendas in Brazil. Fragmentation between government sectors and technical areas was one of the most frequently mentioned barriers in the responses analyzed. While public policies related to nutrition remain under the responsibility of the health and social assistance sectors, climate actions are conducted by agencies linked to the environment and agriculture. This division reduces the capacity to build coordinated responses to problems that naturally require a systemic approach, essential in light of the complexity of food systems. It was also mentioned that the absence of permanent articulation structures between these institutions, such as intersectoral forums, shared strategies, or integrated action plans, constitutes a barrier to the implementation of effective policies at the federal, state, and municipal levels. This scenario is further aggravated by the widespread perception that the integration between the nutrition and climate agendas is still poorly understood and valued in public debate and decision-making.

Moreover, given Brazil's territorial diversity and decentralized policy implementation, the lack of representative municipal-level data, observed during indicator screening for many indicators, hinders timely, targeted action, particularly in vulnerable areas like favelas and traditional communities. Many of the monitoring tools currently in use cannot capture, in a cohesive manner, the impacts of public policies on food security, nutritional health, and climate effects. Furthermore, these tools are often designed based on a logic drawn from large urban centers, which does not reflect the reality of small cities and rural regions, where the most significant nutritional, socioeconomic, and climate vulnerabilities are concentrated. This limitation affects data collection and analysis and compromises the capacity for evidence-based decision-making, weakening governance. An additional effort should therefore be made to increase resolution in monitoring food systems sustainability in Brazil.

In addition, several stakeholders highlighted structural barriers, such as the influence of the ultra-processed food industry and export-oriented agribusiness as strategic economic sectors. These industries exert direct pressure on policy formulation and contribute to maintaining incentives for environmentally unsustainable and health-damaging production models. Simultaneously, most public calls and funding lines remain organized sectorally, limiting the feasibility of integrated proposals. This limitation particularly affects local actors, such as municipalities, civil society organizations, and research institutions, which often have technical capacity but face budgetary constraints for implementing actions.

Although mentioned less frequently, some stakeholders identified cultural and educational barriers that negatively affect the integration of nutrition and climate agendas. In specific segments of the population and the food supply chain, there is resistance to transitioning toward sustainable food systems, particularly when it involves changes in established dietary patterns, such as reducing beef consumption. These resistances hinder the consumption of foods with lower environmental impacts and limit social support for policies related to regulation, taxation, or incentives for healthy and sustainable diets.

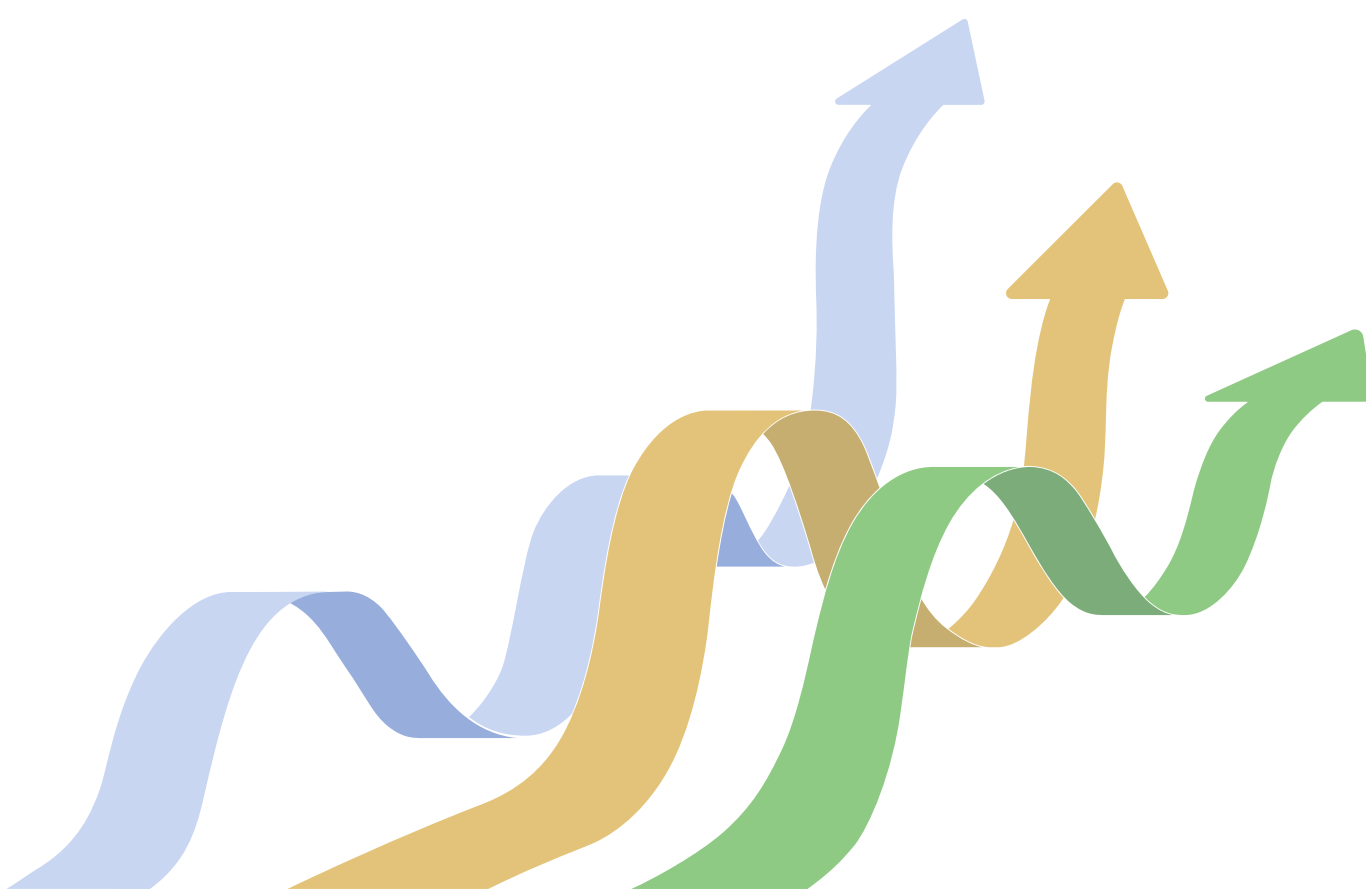
Stakeholders highlighted that, despite recent efforts, professional training in health, agriculture, and the environment remains largely compartmentalized, limiting the development of intersectoral competencies. Tackling this knowledge fragmentation during academic training could be an important opportunity to nurture political leadership capable of elaborating integrated public policies to address the complex challenges of the global syndemic.



## CONCLUSIONS

Brazil has advanced the integration of nutrition and climate actions into public policies, achieving notable successes in implementation in recent years. This reflects a promising shift toward a systems thinking approach. The Reference Framework on Food Systems and Climate for Public Policies stands out as an important milestone in solidifying this direction. However, there is still a long way to go, with significant room for improvement in ensuring broader coherence, effective coordination across sectors, and sustained impact. Continued efforts are needed to deepen integration, enhance monitoring and evaluation mechanisms, and scale up successful initiatives across all levels of governance.

To ensure that such policies generate meaningful and lasting positive impacts on human and planetary health, collaborative and intersectoral efforts are needed to continuously collect data on food systems and to promote dialogue between a diverse set of stakeholders, including academia, civil society, NGOs, the private sector, and the press, with more influential ones, such as those working in the government. Moreover, it is equally important to advance to subsequent stages of systematic monitoring, evaluation, and adaptation of the public policies at all levels of governance, implementing systems thinking approaches. These steps are fundamental to minimizing the risk of unintended consequences and to promote more resilient, equitable, and sustainable food systems.



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## APPENDIX 1 - METHODOLOGY

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## APPENDIX 2 - FS INDICATORS DATA RETRIEVAL AND CALCULATION

[APPENDIX 2 - FS INDICATORS DATA RETRIEVAL AND CALCULATION](#)

## APPENDIX 3 - ELECTRONIC FORM SENT TO STAKEHOLDERS

[APPENDIX 3 - ELECTRONIC FORM SENT TO STAKEHOLDERS - ENGLISH VERSION](#)

