

Article

Climate change and food on the agenda of Brazilian Ministries

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The impacts of climate change (CC) on agricultural production, access to food and prices and, consequently, on food security and nutrition (FSN) are increasingly frequent and evident. In this context, incorporating food-related issues into climate change policy agendas is crucial. Using Kingdon's multiple streams approach (1984), this study analyzes whether and how the interface of CC, agriculture, and FSN has entered the Brazilian governmental agenda. Based on document analysis of official websites and interviews with managers from selected ministries, three windows of opportunity were identified that facilitated the inclusion of this topic in agendas of Federal Government ministries. The first is external elements to the Brazilian Government, manifested in the economic limitations and opportunities arising from global climate agreements. The others emerged from governmental cycles and from the impacts of CC. Although shaped by the same governmental cycles and influenced by the same crisis, different interpretations, interests, and values produce distinct dynamics in problem and solution streams. The study highlights the importance of prioritizing the integration of CC, agriculture, and FSN interface into the Brazilian governmental agenda.

Keywords: climate change, agriculture, multiple streams, food security and nutrition, public policies.

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Mudanças climáticas e alimentação na agenda dos ministérios brasileiros

Os impactos das Mudanças Climáticas (MC) na produção agrícola, no acesso e no preço de alimentos e, consequentemente, na Segurança Alimentar e Nutricional (SAN) são cada vez mais frequentes e evidentes. Nesse cenário, a inclusão da temática da alimentação na agenda da política de mudança climática e vice-versa é um passo fundamental. Utilizando a abordagem dos múltiplos fluxos de John Wells Kingdon, este trabalho analisa se e como a interface de MC, agricultura e SAN entrou na agenda governamental brasileira. Partindo de pesquisa documental nos sites oficiais e entrevistas com gestores de ministérios selecionados, identificaram-se três janelas de oportunidades que ofereceram possibilidades para a entrada da temática na agenda dos ministérios do governo federal: a primeira foi aberta por elementos externos ao governo brasileiro, manifestos nas limitações e possibilidades econômicas que poderiam se abrir a partir dos acordos climáticos globais; as outras duas janelas decorreram de mudanças governamentais e da intensificação da crise climática. Conclui-se que cada ministério incluiu a temática em sua agenda, em diferentes graus e temporalidades, respondendo a distintos problemas, demandas, implicações e impactos decorrentes das MC. Embora regidos pelos mesmos ciclos governamentais e sob a manifestação da mesma crise, diferentes interpretações, interesses e valores produzem dinâmicas distintas nos fluxos dos problemas e das soluções. Destaca-se, também, a importância de priorizar a incorporação da interface MC, agricultura e SAN na agenda governamental brasileira.

Palavras-chave: mudanças climáticas, agricultura, múltiplos fluxos, segurança alimentar e nutricional, políticas públicas.

Cambio climático y alimentación en la agenda de los ministerios brasileños

Los impactos del cambio climático (CC) en la producción agrícola, el acceso y el precio de los alimentos y, en consecuencia, en la seguridad alimentaria y nutricional (SAN) son cada vez más frecuentes y evidentes. En este contexto, la inclusión del tema de la alimentación en la agenda de la política de cambio climático y viceversa es un paso fundamental. Utilizando el enfoque de los múltiples flujos de Kingdon (1984), este trabajo analiza si y cómo la interfaz entre CC, agricultura y SAN ha entrado en la agenda gubernamental brasileña. A partir de una investigación documental en sitios web oficiales y entrevistas con gestores de ministerios seleccionados, se identificaron tres ventanas de oportunidad que ofrecieron posibilidades para la inclusión del tema en la agenda de los ministerios del Gobierno federal: la primera fue abierta por elementos externos al Gobierno brasileño, manifestados en las limitaciones y posibilidades económicas que podrían surgir a partir de los acuerdos climáticos globales; las otras dos surgieron de cambios gubernamentales y de la intensificación de la crisis climática. Se concluye que cada ministerio incluyó el tema en su agenda, en diferentes grados y temporalidades, respondiendo a distintos problemas, demandas, implicaciones e impactos derivados del CC. Aunque regidos por los mismos ciclos gubernamentales y bajo la manifestación de la misma crisis, diferentes interpretaciones, intereses y valores producen dinámicas distintas en los flujos de problemas y soluciones. También se destaca la importancia de priorizar la incorporación de la interfaz CC, agricultura y SAN en la agenda gubernamental brasileña.

Palabras clave: cambio climático, agricultura, flujos múltiples, seguridad alimentaria y nutricional, políticas públicas.

1. INTRODUCTION

Climate Change (CC) is currently a leading topic, with implications for various economic and social sectors and activities. Its impacts on food production are increasingly frequent, with crop losses and reduced soil productivity due to extreme events, as well as decreased crop yields due to changes in temperature and precipitation patterns, among other factors that directly impact agricultural production, food prices, and Food and Nutrition Security (FNS) (Food and Agriculture Organization of the United Nations [FAO] et al., 2018; Lee & Romero, 2023).

The World Meteorological Organization, in fact, warns that the intensification of extreme weather events in Latin America represents a growing threat to global FNS (Organización Meteorológica Mundial, 2022). In 2021, episodes of extreme heat, severe droughts, and floods devastated crops in several countries, resulting in a 2.6% drop in cereal production compared to the previous harvest and directly impacting international markets. The overlap between the climate crisis and the food crisis has even been characterized as a new syndemic (Brandão et al., 2023).

Furthermore, socially vulnerable groups are more impacted by CC and extreme events, exacerbating their food and nutrition insecurity (FAO et al., 2018, 2023b). In this regard, the United Nations Children's Fund (UNICEF) highlights that around 80% of the food consumed by the poorest population comes from family farming – precisely the segment most vulnerable to changes in rainfall patterns and the advance of droughts. In addition, there are risks of desertification in areas mostly occupied by family farming, especially in the Northeast, projected to occur by 2050 if the current scenario continues (Fundo das Nações Unidas para a Infância [UNICEF], 2022).

While agriculture and FNS are affected by CC, analyses also point towards contributions from food systems to CC. Indeed, food systems accounted for 31% of global Greenhouse Gas (GHG) emissions, with 44% coming from agricultural and livestock production; 35% from pre- and post-production processes, including fertilizer manufacturing, food processing, packaging, transportation, retail, domestic consumption and waste disposal; and 21% from land-use changes, mainly due to deforestation and ecosystem degradation (Alencar et al., 2023; Mbow et al., 2019).

For all these reasons, it is fundamental to include food as a topic on the agenda of climate policies, and vice versa (International Panel of Experts on Sustainable Food Systems, 2023). Considering this context, and in dialogue with issues presented in the introduction of this dossier, this work analyzes whether and how the interface between CC and FNS has entered the Brazilian governmental agenda. In other words, as defined by Zahariadis (2016), the article analyzes the process of transforming public issues – in this case, the relationship between CC and FNS – into priority government actions.

More specifically, this research investigates how the topic entered the agenda of different federal government ministries that are responsible for public policies related to CC, agricultural production, and FNS. As highlighted by Capella (2008), Capella and Brasil (2022), Kingdon (1984), and Thomas and Hubo (2024), crises and new governments are opportune moments for the opening of windows of opportunity and, therefore, the emergence of new public policies. These elements are interesting for analyzing the ministries' agendas because, although each has its own priority issues and audiences, they are all influenced by the same climate crisis and guided by the same governmental cycles.

Considering these elements, this question arises: how do climate issues enter the agenda of the government and ministries? How, when, and why did each of them incorporate the relation between CC, food, and FNS into their agendas? Did the analyzed ministries act in a more or less simultaneous and homogeneous manner in addressing CC? Which public problem related to the interface between CC-agriculture-FNS was recognized, and which solution enabled (or materialized) its inclusion on the agenda – and under what political context?

By analyzing the formation of the ministries' agendas, this article seeks to explain how each ministry interprets the interface between CC, food, and food and FNS, highlighting the different values, interests, and actions manifested in streams concerning problems, policies, and solutions. In doing so, this article joins a body of research that uses the multiple streams approach to analyze the entry of the CC topic into government agendas in various countries and contexts (Cramer et al., 2023; Dolan, 2019; Hernandez & Bolwig, 2021; Knaggård, 2015; Kyriazi & Miró, 2023; Silverwood-Cope, 2024; Storch & Winkel, 2013; Teixeira et al., 2023; Yusuf et al., 2015).

In methodological terms, between March 2023 and December 2024, documentary research was carried out on official websites, and semi-structured interviews were conducted with 17 managers from 7 ministries of the Brazilian government, selected based on criteria concerning their relation

with the theme, experience and direct involvement with programs and actions related to the federal climate agenda and FNS, following the snowball sampling technique.

The interviews lasted between 60 and 90 minutes and covered the following topics: diagnosis and perception of climate problems (problem stream); the process of formulating and coordinating solutions (solution stream); political, institutional, and contextual influences on the agenda (policy/context stream); inter-ministerial interactions and climate governance mechanisms, among others. The interviews were recorded with the participants' permission, transcribed in full, and coded – categorizing the speech according to the three analytical streams of the multi-stream model – using the Nvivo software. The information was analyzed in light of the debate on agenda definition and in triangulation with official documents and literature.

As presented in the dossier's introduction, the article shows how pressures beyond borders – especially climate agreements and commercial interests – different national political configurations, interpretations, and diverse demands surrounding CC have produced distinct temporalities, approaches, and institutional responses to the themes of CC, agriculture, food, and FNS within the ministries' government agenda. Although governed by the same governmental cycles and impacted by a common crisis, the ministries responded in a heterogeneous manner and not always in a linear/progressive way, influenced by internal and external dynamics.

The article is organized into four sections, in addition to this introduction. The second section resumes the debate on the formation of the government agenda and elements that favor the opening of windows of opportunity. Section three presents how the CC and FNS have been addressed by the different ministries. Section four puts the problem, political and solution streams into perspective. Finally, section five presents the article's concluding remarks.

2. AGENDA DEFINITION AND OPPORTUNITY WINDOWS

Studies on agenda definition emerged in the 1960s from a growing interest in understanding how governments define and prioritize issues. A landmark in this field is the work by Cobb and Elder (1971), who explored the concept of the public agenda as the set of issues legitimately recognized for debate in a social context. They distinguished between the systemic agenda, composed of themes widely debated in society, and the institutional agenda, restricted to issues that receive governmental attention and are more likely to translate into action.

Kingdon (1984) expanded the interpretation by proposing the Multiple Streams Model, stating that the entry of issues onto the government agenda depends on the convergence of three independent streams: i) the problem stream, which involves issues perceived as actionable or urgent problems – as not all demands can be met, certain problems are selected, while others are ignored –; ii) the policy stream, which encompasses solutions and alternatives debated by experts, refined over time, and eventually presented to the public or authorities as “trial balloons”; and iii) the political stream, which is determined by the procedural context, influenced by factors such as national sentiment, the actions of interest groups, changes in public opinion, electoral contexts, and internal changes in government.

The convergence of these three streams occurs in windows of opportunity, moments when a problem is recognized and favorable political conditions and a viable solution align, allowing specific issues to enter the government agenda (Kingdon, 1984). Windows of opportunity “interrupt the stream of normal politics and mark a fleeting moment in which new issues have a chance to be

aired” (Cairney & Zahariadis, 2016, p. 100). According to Kingdon (1984), there are two types of windows: policy windows and problem windows. The first type of window opens up with changes in the political landscape, such as the start of a new government, changes in important positions, etc.; while a problem window opens up with the interpretation of new problems and established crises.

Based on these elements, Howlett (1998) named four types of windows of opportunity: i) routine policy windows, in which institutionalized periodic events (e.g., elections) open predictable windows; ii) discretionary policy windows, which are influenced by certain individual behaviors or events, therefore less predictable (coup d'état, change of minister, etc.); iii) overflowed problem windows, in which certain problems are addressed in already open (more predictable) windows; and iv) random problem windows, in which random events or crises open unpredictable windows.

Among the elements that contribute to windows of opportunity, two are frequently highlighted in the literature and are of interest to this work: the change of government (Capella & Brasil, 2022; Hernandez & Bolwig, 2021; Thomas & Hubo, 2024) and the occurrence of crises (Dolan, 2019; Thomas & Hubo, 2024). According to Rutledge (2016), the first 100 days of a president's term constitute the best window for policy changes led by him. However, the magnitude of the election result, the president's legitimacy, the positive evaluation of his term, a favorable congressional composition, etc., could make this window of opportunity more lasting.

Crises are windows of opportunity that can favor the position of specific actors and the creation of a public policy that they advocate (Thomas & Hubo, 2024). The influence of a crisis on political dynamics depends on i) its direct impact on the population and dynamics of the country, guiding state action towards a “crisis mode” (Thomas & Hubo, 2024); ii) the expression of the crisis over time (abrupt or slow manifestation) and the objectivity of the indicators (Dolan, 2019); and iii) the definition of the crisis by political actors – consequently, an event only becomes a relevant crisis if political actors define it as a crisis and associate it with urgent issues (Dolan, 2019; Storch & Winkel, 2013; Thomas & Hubo, 2024).

Thus, crises do not automatically generate political change and the creation of new public policies; this depends on the ability of relevant actors to include them in their interests and use them as political discourse, and on their impacts on everyday political life.

As Cairney and Zahariadis (2016, p. 87) point out, “many windows of opportunity for major policy changes open, but many close before anyone has a chance to exploit them.” The emergence of public policy requires a certain degree of speed and the confluence of events and actions in a short period of time (Cairney & Zahariadis, 2016). Based on these elements, we analyze how the topic of CC and of FNS entered the agenda of ministries in the Brazilian federal government.

3. CLIMATE CHANGE AND FOOD AND NUTRITION SECURITY ON THE BRAZILIAN GOVERNMENT AGENDA

The inclusion of CC on the Brazilian government agenda has been marked by a gradual and complex process, advances in public awareness, international pressure, and the engagement of various actors. Since the 1990s, Brazil has alternated between a stance of resistance and a stance of proactive climate policy proposals, becoming a relevant player in international climate negotiations (Chechi, 2019).

The relationship between CC, agriculture, and FNS emerges as a cross-cutting theme, requiring action from various bodies to guarantee the sustainability of the agricultural sector, the preservation

of natural resources, and access to food. To understand the federal government's role in this field, the research gathered information from ministries with responsibilities related to CC, food production, and FNS.

The Ministry of Science, Technology and Innovation (MCTI) was one of the first to incorporate the topic of CC into its agenda. Once the United Nations Framework Convention on Climate Change was ratified in 1994, the MCTI became responsible for coordinating the resulting commitments, creating, for this purpose, the General Coordination of Global Climate Change (Teixeira et al., 2016).

Given this responsibility, the aforementioned ministry assumed a leading role in the negotiations of the Kyoto Protocol, established in 1997 (Duarte, 2019; Viola, 2002). In 1999, the ministry began to chair the Interministerial Commission on Global Climate Change, one of its purposes being "to provide input to the Government's positions in negotiations under the aegis of the United Nations Framework Convention on Climate Change and subsidiary instruments in which Brazil is a party" (Decreto de 7 de julho de 1999).

Although they did not have repercussions in Brazilian daily life, CC emerged as a global crisis, making the role of scientific research fundamental in producing data and indicators in order to measure the problem, its causes and its impacts in the Brazilian context. This information would become fundamental for negotiations in global agreements and to support decision-making by the Fernando Henrique Cardoso (FHC) government (Chechi, 2019).

The agreements could impose limitations on agriculture, land use, forests, and national development, or they could also offer economic opportunities (Chechi et al., 2024; Viola, 2002). Since then, the MCTI has played a central role in generating and disseminating scientific knowledge about CC, being responsible for preparing the National Greenhouse Gas Emissions Inventories (National Communications).

The first communication was made in 2004, at the beginning of Lula's first term – which, based on a new political orientation, sought to strengthen the country's influence in international negotiations. Regarding the article's topic, the First Communication highlighted emissions from the agricultural sector and changes in land use and forestry, but pointed to solutions related to promoting a clean energy matrix, research, education, training, and public awareness, without mentioning agriculture and FNS (Ministério da Ciência e Tecnologia, 2004). The topic of FNS was included in the Fourth National Communication, published in 2020, transforming it from a mere memorandum on GHG emissions into a report also focused on mitigation and adaptation proposals (Ministério da Ciência, Tecnologia e Inovação [MCTI], 2020).

With the need to support Brazilian diplomacy in international negotiations and to generate and disseminate scientific knowledge to address CC, in 2007 the MCTI established the Climate Network, which has a sub-network focused on agricultural issues (Instituto Nacional de Pesquisas Espaciais, n.d.). The MCTI also coordinates the Brazilian Panel on Climate Change (PBMC), created in 2009 with the aim of providing and validating a scientific basis for the formulation of public policies and promoting research and development of low-carbon technologies and innovation projects, standing out as a key player in promoting a climate policy based on scientific evidence (Duarte, 2019).

In 2018, the MCTI published the Action Plan for Science, Technology and Innovation for Climate, as foreseen in the National Strategy for Science, Technology and Innovation 2016-2022 (Encti 2016-2022). This is a "strategic guidance document aimed at implementing actions that seek to advance

knowledge about the climate system and the development of instruments and tools related to providing information that can support decision-making” (Ministério da Ciência, Tecnologia, Inovações e Comunicações, 2018, p. 11).

This document assesses that food is responsible for:

[...] the world’s largest consumption of fresh and groundwater, and the greatest force pushing beyond planetary boundaries associated with nutrient cycles (nitrogen/phosphorus/carbon), land use, and biodiversity. The transformation of the food system therefore has the potential to improve personal, social and planetary health and well-being (MCTI, 2018, p. 13).

The plan was structured around seven thematic lines, several of which dealt with the interface between CC, agriculture, and nutrition.

In 2020, the MCTI launched the “Adapta Brasil” [Adapt Brazil] platform, with the objective of consolidating and disseminating information that will enable progress in the analysis of the impacts of forecast CC in the national territory, providing support for the actions of the competent authorities (MCTI, n.d.). One of the strategic sectors, which has risk indexes and indicators, is precisely that of FNS.

Thus, given the imminence of CC, the MCTI’s role in this topic aims to solve the problem regarding the lack of data and information that are reliable and adjustable to the national context, in order to support the development of national policies and the country’s participation in international negotiations. From a perspective initially focused on measuring emissions from agriculture and changes in land use and forestry, the MCTI has shifted to addressing the interface between CC, agriculture, and FNS in an integrated manner, encompassing emissions, impacts, mitigation actions, and adaptation.

According to the testimony of a manager in the Ministry:

[...] we’ve been having much higher demand, been more sought after than in the past, you know? So I think that already signals [...] that this agenda has gained a lot of relevance [...] we’re in the media all the time, yesterday I was, you know, I gave the example: yesterday we were on *Jornal Nacional* [news program with the highest national audience], a research that we requested and so on; today I was in the editorial of [inaudible] and so on. So, we’ve been more sought after, we’ve been having greater demand by several players, not only government colleagues, but the press and so on (Interview #3, MCTI manager, personal communication, November 16, 2023).

Since Lula’s first term, with the appointment of Marina Silva as Minister of the Environment, the Ministry of the Environment (MMA) has taken on a more prominent role in the issue of CC (Chechi, 2019; Silverwood-Cope, 2024). In a political context of international pressure to reduce deforestation, greater recognition of the importance of CC by the Brazilian government, and expectations of greater influence in international debate and action, several initiatives and institutional frameworks have been established (Silverwood-Cope, 2024).

In 2008, the Amazon Fund was created, coordinated by the Ministry of the Environment (MMA) and managed by the National Bank for Economic and Social Development (BNDES), with the purpose of raising donations for investments in actions to prevent, monitor and combat deforestation, supporting, among other things, projects to promote sustainable agriculture, biodiversity and FNS.

Created in 2007, the Interministerial Committee on Climate Change (CIM) published the National Plan on Climate Change in 2008, the construction of which was coordinated by the MMA, seeking to produce responses to CC, international legitimacy, and “coordinated, concatenated, continuous, and synergistic” efforts (Comitê Interministerial sobre Mudança do Clima [CIM], 2008, p. 8). The Plan recognized the importance of mitigating emissions from agriculture and signaled actions for the “sustainable production of agribusiness” (CIM, 2008, p. 68). The discussions for the construction of the Plan also culminated, in 2009, in the National Policy on Climate Change (PNMC), which established the construction of Sectoral Plans for Mitigation and Adaptation to CC, to be coordinated by the MMA.

In response to the PNMC, in 2016, under the Dilma Rousseff administration, the MMA coordinated the development of the National Adaptation Plan to Climate Change (PNA) and its sectoral plans. The MMA started by using indicators on the possible impacts of CC in the country and proposed “initiatives for the management and reduction of climate risk in the long term” (Ministério do Meio Ambiente [MMA], 2016a, p. 7). The MMA understood that preserving ecosystems and reducing deforestation were crucial to guaranteeing the environmental services that support agriculture, such as maintaining the hydrological cycle and protecting biodiversity. It also recognized that CC accentuates the vulnerability of rural communities and indigenous populations (MMA, 2016a).

Furthermore, the Plan included 11 adaptation strategies for the sectors and themes listed as potentially vulnerable to CC, one of which was dedicated to traditional peoples and communities (MMA, 2016b). Prepared by the MMA, the National Indian Foundation (FUNAI), and the Ministry of Social Development and Fight against Hunger (MDS), the document stemmed from an assessment of the vulnerability of traditional peoples and communities, biomes, and the particularities of indigenous peoples, pointing to threats to biodiversity, sources of livelihood, and FNS. However, due to the absence of indicators to measure the problem, the solutions were focused on improving knowledge management (MMA, 2016b).

In 2023 – after a period of dismantling environmental policies and climate change denial (Chechi et al., 2024; Silverwood-Cope, 2024), in the context of Lula’s third term and the worsening impacts of CC on Brazilian territory – the MMA was renamed the Ministry of the Environment and Climate Change and began updating the Climate Plan and its respective sectoral plans, incorporating the development of resilience in other sectors. It is worth noting that agriculture has a mitigation plan and that adaptation plans are being developed, among others, for agriculture and livestock farming, family farming, FNS, and traditional peoples and communities.

Having resumed this trajectory, we can affirm that CC has gained space on the MMA’s agenda with the dual purpose of showing the world Brazil’s leading role on the subject and also of promoting coherence and synergy between national mitigation and adaptation actions. Initially focused on GHG emissions from agriculture and the need to build more sustainable practices, the MMA’s actions related to the topic of this article have become increasingly complex, even though the development of sectoral plans is the responsibility of other ministries. The testimony below illustrates how the topic of FNS gained prominence on the Ministry’s government agenda:

[...] on the one hand, we have drought; on the other hand, we have cities impacted by floods, flash floods, extreme weather events that can result in great losses, both in terms of lives and material damage, economic losses. And this is always directly related to quality of life, food security, and the basic rights we need to provide for the population. So, we are now actually addressing this

issue of food security, and I think we are gaining depth in this topic, given that it has been a very relevant issue in this recent period (Interview #7, MMA manager, personal communication, August 24, 2023).

In the midst of the effervescence of creating national institutional frameworks, responding to demands from the CIM and seeking to address the health problems caused by CC, the Ministry of Health (MS) created the Climate and Health Technical Group in 2007 to develop the National Climate Change Plan within the scope of the Unified Health System (SUS). In 2009, the Pan American Health Organization (PAHO) and the MS published the document “Climate Change and Health: a profile of Brazil,” highlighting, among other things, the impacts of CC on food production, subsistence production, and the quantity and quality of water (Organização Pan-Americana da Saúde [OPAS] & Ministério da Saúde [MS], 2009).

Following the demands of the PNMC and the commitments made by Brazil at the Conference of the Parties (COP) 15, in 2011 the MS began preparing the Sectoral Health Plan for Mitigation and Adaptation to Climate Change (PSMC-Saúde) (MS, 2013). The plan presents the occurrence of “diarrheal and other infectious diseases transmitted through water and food, as a consequence of changes in the quantity and quality of water” and “non-communicable diseases, such as malnutrition and undernutrition with implications for child growth and development, due to changes in food availability resulting from droughts and climatological variability, in addition to psychosocial disorders, cardiorespiratory diseases and dermatoses” (MS, 2013, p. 21). Two adaptation actions stand out: i) “establishment of recommendations on Food Security related to the topic of sanitation, mainly directed towards the rural and forest population”; and ii) “agroecology as a means of guaranteeing food and nutrition security” (MS, 2013, p. 85).

In 2016, the MS published the National Health Strategy of the PNA. In this document, the MS assesses that disasters caused by CC can lead to malnutrition, food insecurity, and compromise the availability and quality of water resources, contributing to waterborne and foodborne illnesses (MMA, 2016b). In this context, the MS proposed the “fostering and promotion of sustainable, resilient and safe health establishments within the scope of the SUS,” with the “purchase and offering of healthy and sustainably grown foods in the health network.” And the “strengthening of the implementation of national sanitation and health policies, aiming at the universalization of access to drinking water and sanitation” (MMA, 2016b, p. 209).

Since 2023, the MS has been engaged in updating the PNA and, in 2024, created the General Coordination of Climate Change and Equity in Health (CGClima), established a National Situation Room for Climate Emergencies in Health with the mission of coordinating the prevention and response to climate emergencies; it also published the document “Climate Change for Health Professionals: Pocket Guide” (MS, 2024). Since the topic was added to its agenda in 2007, the MS has sought to address the problem of the impact of CC on food and water security and its repercussions on public health.

The topic of CC entered the agenda of the Ministry of Agriculture and Livestock (Mapa) as a result of changes in the political stream that sought to position Brazil as a protagonist in global agreements, and of problem stream signals that could compromise the international competitiveness of Brazilian agribusiness (Chechi, 2019).

Associated with deforestation and interpreted as a major emitter of GHG in the country, agriculture has become the embodiment of the problem of CC, and was required to present a proposal for emissions

reduction at the 2009 COP. Scientific evidence pointed to Brazilian agribusiness as a significant contributor to global warming, while agribusiness interpreted the issue of CC as a constraint or obstacle to the development of its international economic activities (Chechi, 2019).

In this context, the MAPA decided to “turn the tables” and announced voluntary contributions from the sector to reduce GHG emissions at COP15 (2009). The implementation of these measures came with the Low Carbon Agriculture Plan and Program (ABC) in 2010, seeking to build a “positive agenda” for the sector, now treated as a promoter of sustainable agriculture (Chechi, 2019). Based on technologies such as no-till farming, the recovery of degraded pastures, and the integration of agriculture, livestock, and forestry, the Plan focused on actions to mitigate and adapt to CC; increase the income of rural producers; and enhance the environmental, economic, and social sustainability of the sector. In 2009, CC was not yet significantly included on the agendas of government ministries, so the proposal of the ABC Plan led the MAPA to take a leading role in this debate, developing the first sectoral plan by the Brazilian government for mitigation and adaptation to CC.

The following excerpts from an interview with the manager of the Brazilian Agricultural Research Corporation (Embrapa), who participated in Brazil’s initial proposal at COP, which became the ABC Plan, illustrate the need that existed at the time to incorporate a “positive agenda” for agriculture.

[...] agriculture needs to be incorporated [...] into the policy that Brazil will implement, otherwise agriculture risks being seen internationally only as a driver of deforestation, not as a contributor to strategic policies that contribute to food security, resilience, and a range of other issues. [...] we were careful to quantify and present to the Ministry and the Presidency of the Republic the impact of adopting these technologies in terms of emissions reduction; which is what they wanted to know because, after all, that’s what the international community – let’s say, right? – the United Nations collectively demanded as a metric for countries. [...] the international repercussion was very positive, right? From Brazil’s perspective, there is a very strong stance on actions to reduce emissions, change land use, and protect forests. This helped, it helped us a lot at that political moment, because it helped break down some of the stigma that existed internally in the economic sectors that couldn’t see, reconcile the quantification of emissions, the high emissions from the agricultural sector, as an opportunity (Interview #1, Embrapa manager, personal communication, November 23, 2023).

In 2016, in partnership with other ministries (such as the Ministry of Agrarian Development – MDA), the MAPA published the Agriculture Strategy within the scope of the PNA. The document analyzed the vulnerabilities of agriculture in the face of CC and indicated actions to promote the resilience of agroecosystems, technology transfer, and subsidies for the revision of the ABC Plan, particularly its adaptation program. As a solution, the document pointed out that:

[...] the strategy is to invest more effectively in agriculture, promoting diversified systems and the sustainable use of biodiversity, soil and water resources, supporting the transition process, organizing production, guaranteeing income generation, research (genetic resources and improvement, water resources, adaptation of production systems, identification of vulnerabilities and modeling), among other initiatives (MMA, 2016b, p. 20).

In 2020, in a context of increasing extreme weather events, the ABC+ Plan (2020-2030) was launched, expanding the actions of the original ABC Plan to include practices aimed at increasing the resilience of agricultural production systems, promoting adaptation to climatic conditions. Practices such as using more drought-resistant cultivars, managing water in regions susceptible to scarcity, and diversifying crops to minimize climate risks were incorporated into the strategy.

ABC+ recognizes that CC threatens agricultural production and reinforces the need to adopt practices that protect food production. The proposed measures seek not only to mitigate the impact of CC, but also to guarantee FNS (considered as agricultural production), protecting the sector's production capacity (Ministério da Agricultura e Pecuária [MAPA], n.d.). In 2021, the MAPA also published a document with a set of methods and approaches used to assess the resilience and adaptive capacity of Brazilian agricultural systems (MAPA, 2021).

Through these actions, since 2009 the MAPA has actively participated in international conferences, reaffirming Brazil's commitment to climate action and presenting the "Brazilian vision" for sustainable agri-food systems. CC entered the government agenda of the MAPA not because of the negative impacts they could have on agriculture, but because of the negative association between Brazilian agribusiness and CC, which could compromise the former's participation in the international market. Political entrepreneurs have been successful at translating the climate crisis into sustainable business opportunities (Chechi, 2019).

The topic of CC, agriculture and nutrition effectively entered the agenda of the Ministry of Planning, Budget and Management (MPOG) in the Pluriannual Plan (PPA) 2012-2015, with a specific section within the discussions on "Productive and Environmental Development Policies" (Ministério do Planejamento, Orçamento e Gestão [MPOG], 2011). Developed during Dilma Rousseff's administration and reflecting the institutional frameworks created by the previous government, the plan highlighted several mitigation actions within thematic programs, such as sustainable agriculture programs and deforestation prevention and control; in addition to adaptation actions, including coexisting with the semi-arid climate, combating desertification, and developing sustainable production systems. While the 2016-2019 PPA followed the trajectory of its predecessor, dedicating a specific section to the topic, the 2020-2023 PPA gave less attention to the topic of CC, mainly highlighting the ABC Plan (Lei nº 13.971, 2019).

In the 2024-2027 PPA, developed within a new political context, the interface between CC, agriculture, food, and FNS encompasses several dimensions and priorities. The document highlights programs that promote sustainable agriculture, the strengthening of agroecology, and the sustainable management of natural resources. Initiatives such as strengthening family farming and encouraging the transition to agroecological practices are central to connecting the mitigation of climate impacts to guaranteeing food sovereignty.

Furthermore, themes such as "Food Supply and Sovereignty" and "Sustainable Agriculture" address the need to build climate resilience in vulnerable communities, reinforcing the importance of policies that integrate sustainable production, FNS, and adaptation to climate change. The plan, therefore, incorporates the cross-cutting nature of public policies, promoting solutions that directly address Brazil's climate and food challenges (Ministry of Planning and Budget [MPO], 2023).

Thus, the dialogue between FNS and CC gradually gained relevance within the MPO, reflecting political changes and the maturing of the climate and sustainability agenda in Brazil. Seeking to

organize the medium-term actions of the different ministries, the MPO's actions aimed to reduce the problems of GHG emissions in sectors and practices in Brazil and promote adaptation actions.

In 2012, the topic of CC began to appear on the MDS agenda, albeit in a rather timid way. The I National Food and Nutrition Security Plan (I PlanSAN, 2012-2015), published in 2012, highlighted the impact of CC on food availability and the vulnerability of impoverished groups to this phenomenon, and called for several actions, such as expanding the Harvest-Guarantee Program (Câmara Interministerial de Segurança Alimentar e Nutricional [Caisan], 2011). The II PlanSAN (2016-2019) also addressed the topic (albeit timidly), demanding the promotion of national adaptation to CC and the guarantee of sustainable food production systems (Caisan, 2018).

In response to the demands of the PNA, CAISAN created a Technical Committee on FNS and CC and published the Food and Nutrition Security Strategy in 2016. The document discusses the impacts of CC on food production and food supply, and presents family farmers and the semi-arid region as priority social and territorial areas (MMA, 2016b). Given this problem stream, the solutions involved guidelines such as strengthening water access programs and promoting agroecological, organic, and socio-biodiverse production systems (MMA, 2016b).

In 2023, within a new political context under Lula's third term, given the gravity of the issue and the renewed focus on FNS and sustainability, the MDS gave greater attention to the topic on its agenda. Among the actions under construction and implementation, the following stand out: i) the construction of the new sectoral plan "Food and Nutrition Security" within the scope of the Climate Plan; ii) the construction of a Regulatory Framework for Action on Food and Climate Change by the National Secretariat for Food and Nutrition Security (Sesan) (Portaria MDS nº 907, 2023); iii) the creation of a Workgroup on Calamities and Emergency Situations, by the General Secretary of the Presidency of the Republic, with institutional support from CAISAN, with the purpose of organizing the actions of public authorities in emergency, disaster and calamity situations; iv) the creation of the Brazil Without Hunger Plan, with a section dedicated to the "Impact of climate change and unsustainable agricultural models on food patterns and the environment"; v) the creation of the Feed Cities Strategy, with the purpose of expanding the production, access, availability and consumption of adequate, healthy and sustainable food in cities; vi) updating the Brazilian Strategy on Food Loss and Waste; vii) creation of the National Urban and Peri-urban Agriculture Program that promotes FNS and seeks the "development of healthier, more sustainable and resilient cities to climate change, in order to combat environmental racism and encourage the adoption of adaptation and mitigation practices for climate change" (Decreto nº 11.700, 2023, n. p.).

Underlying these actions is the interpretation that food systems are largely responsible for CC, however, building healthy and sustainable food systems is also an approach towards mitigating CC. Thus, from a timid approach, the topic of CC gained complexity on the MDS agenda. The impacts of CC on FNS and the repercussions on CC by how food is produced, processed, and consumed are problematic issues that justify the formation of this agenda. The statement below highlights the contemporary problems that place this issue on the government agenda.

We've been facing this challenge since January, of devising a new cycle of public policies. So, in this search for a new cycle of public policies, we constantly fall back on this theme. One [key

planning point], which is to end hunger, but while ensuring food quality... And another thing, at the same time, we need to think about production and consumption, which supports the mitigation of climate effects. [...] to think about how the production and consumption of food, you know, of production and consumption, impact climate change. The way we produce and consume food impacts climate change, but the current situation causes extreme events that end up increasing food and nutrition insecurity for people. And that also demands a series of responses from the State regarding those emergency actions. So, climate change is already producing, right, these extreme weather events that put the population of a given place in a situation of insecurity (Interview #5, MDS manager, personal communication, October 10, 2023).

Similarly, to the MDS, the MDA began to incorporate the topic into its agenda, albeit timidly, starting in 2012, within a political context of creating various policies for family farming and agroecology. Published since 2003 (having been suspended in the period 2019-2022), the Family Farming Crop Plans signal the Ministry's actions for the following agricultural year, with CC being mentioned only in the 2012-2013 and 2023-2024 Crop Plans, both with the perspective of fostering public policies that would promote greater resilience for family farming (Ministério do Desenvolvimento Agrário [MDA], 2012, 2023).

In 2013, also in a marginal way, the topic of CC was mentioned again in the First National Plan for Agroecology and Organic Production (Planapo 2012-2015). At the time, the aim was to “promote the agrobiodiversity management, multiple-use and integrated forest management of the Caatinga and Cerrado biomes with an agroecological focus as a strategy for adapting to and mitigating the effects of climate change and combating desertification” (MDA, 2013, p. 60). In the II Planapo (2016-2019), the topic of CC began to occupy more space, with statements such as:

[...] Planapo's actions related to the dissemination of sustainable technologies for water, soil and forest management, combined with innovative primary production practices and environmental regularization, can be strong allies in advancing the agenda for the adaptation to climate change (MDA, 2016, p. 13).

After a period of dismantling public policies for family farming and agroecology (2016-2022), in a new political stream with Lula's third term (2023) and in the face of the intensification of the effects of CC on family farming, the MDA began to pay greater attention to the topic (Niederle et al., 2023).

A set of actions under construction and/or implementation is elucidated: i) construction of the Sectoral Adaptation Plan for Family Farming; ii) creation of the Permanent Committee on Climate Emergency, Water Security, Renewable Energies and Energy Sovereignty, within the scope of the National Council for Sustainable Rural Development (Condraf), with the purpose of discussing the impacts of CC on family farming; iii) launch of the National Food Supply Plan, which proposes a set of actions aimed at building resilient food supply systems and practices focused on sustainability and food sovereignty (MDA, 2024a); iv) construction of the III Planapo (2024-2027), which establishes guidelines for the sustainable use of natural resources, expanding the supply of organic food and promoting the integration of agricultural, social and environmental policies (MDA, 2024b);

v) implementation of the Productive Forests Program, with the objectives of restoring ecosystem services and diversifying agricultural production, simultaneously contributing to the reduction of GHG emissions and climate adaptation (Tabosa, 2024).

Thus, similarly to the MDS, which had marginal incorporation, the topic of CC has gained greater attention on the MDA agenda in the recent period. The new political context and the incidence of extreme events and droughts in family farming were factors that contributed to the incorporation of the topic into the ministerial agenda.

[...] all of us have had contact with the MDA at other times and this environmental agenda, in a broad sense, was not an MDA agenda. Today, it actually is, isn't it? Even though they're having lots of challenges in moving it forward, it's a very effective agenda. [...] we're already seeing stronger effects, including in an area that, historically, has actually benefited from (inaudible) politics, having a higher level of production, all that stuff. And that's frightening, because we also start to direct too many policies. [...] Of course, we have family farming, we have a more developed one in the south and center, and there was a great need to invest in policies in the Northeast. And when you reach a point like that, where we need to offer support, you know? Farmers who are more developed and so on, you know, with policies, with substantial resources and all that, it also generates concern in that sense. Our insurance claims rate is extremely high, it's unsustainable [...] and these things have been driving the agenda. And that's perhaps why the ministry of finance has been among the most involved parties in this discussion. Because they're seeing impacts on economics, including barriers in international markets as well (Interview #4, MDA manager, personal communication, August 18, 2023).

The Ministry of Finance (MF) began incorporating the topic of CC into its agenda starting in 2009 when addressing the economic aspects related to climate change (financing, carbon pricing, etc.) and being the Designated National Authority for the Green Climate Fund (GCF) (Melo & Silva, 2018; Ministério da Economia, 2022). For the purposes of this article, we highlight the ministry's most recent actions.

In 2023, in a new political stream, the MF launched the Ecological Transformation Plan (ETP) at COP28. The Plan begins with a diagnosis of the global climate situation, the threats and opportunities for the country, and seeks to promote environmental sustainability, social justice, employment, and productivity. The Plan is organized into six axes, one of which is Bioeconomy and Food Systems (Ministério da Fazenda [MF], n.d.).

This area includes actions such as promoting low-carbon agriculture; financing sustainable agricultural practices; encouraging the productivity of family farming; and launching the National Bioeconomy Strategy, coordinated by the MF in partnership with the MMA and the Ministry of Development, Industry, Trade and Services. One of its guidelines is the "promotion of regenerative agriculture, productive restoration, recovery of native vegetation, sustainable forest management and production, especially sustainable food systems" (Decreto nº 12.044, 2024, p. 4).

Furthermore, one of its objectives is "to promote national, regional and local development through the use of biological resources that are environmentally and economically sustainable, in order to

contribute to the water, food and energy security of the population” (Decreto nº 12.044, 2024, p. 4). In 2023, within a new governmental context and for the first time in the country’s political-administrative structure, the Ministry of Indigenous Peoples (MPI) was created.

While strategic for addressing climate change, the lifestyles, subsistence production, and food practices of indigenous populations have been significantly affected by CC (FAO et al., 2023a). In response to this influx of problems, the MPI has created a Department of Climate Justice; is coordinating the development of the Sectoral Adaptation Plan for Indigenous Peoples, within the framework of the Climate Plan; and has established a Technical Cooperation Agreement (TCA) with other ministries, such as the TCA with the Ministry of Integration and Regional Development for the management of risks and disasters in indigenous territories.

Thus, there has been increased attention to this issue on the government agenda in recent times. The ministry’s focus has been on ensuring macroeconomic stability and securing tax revenue to finance climate mitigation and adaptation policies. Regarding the topic of this article, the emphasis is on agriculture and biodiversity.

4. TAKING ADVANTAGE OF WINDOWS OF OPPORTUNITY IN DIFFERENT WAYS: CROSS-ANALYSIS OF THE SURVEYED MINISTRIES

When we revisit the integration of the CC, agriculture, and FNS interface into the government agenda of the various ministries, three key periods stand out, representing windows of opportunity for the emergence of new public policies.

The first period dates back to the mid-1990s, with the ratification of the United Nations Framework Convention on Climate Change and the beginning of the construction of global agreements (such as the Kyoto Protocol). At that time, even though the crisis caused by CC was not on the agenda, the FHC government’s interests in disputing global agreements, whether due to the limitations or the economic opportunities they would offer the country, prompted the MCTI to incorporate the topic into its agenda and address the interface between CC, agriculture, and FNS. The MCTI faced the problem of a lack of reliable and adaptable data and information on CC for the national context, both to support international negotiations and (later) the development of national public policies – and, as a solution, several institutional frameworks were created.

A second moment refers to President Lula’s second term (2007-2010), when there was international pressure on controlling deforestation in the country, government interest in influencing international agreements and gaining international political recognition, and a need to recognize the importance of reducing GHG emissions and the impacts of CC, which culminated in the creation of various institutional frameworks, demanding/stimulating responses from the ministries. Driven by different pressures, values, and interests, the MMA, MS, MAPA, and MPO began to recognize the problem (in quite different ways) and build solutions.

Gaining greater prominence and responsibility in the 2000s, the MMA sought to mitigate GHG emissions, promote adaptation actions, and ensure coherence among government actions. Emblematic examples in this regard were the coordination of the Sectoral Plans for Mitigation and Adaptation to CC, the creation of the PNA, and, more recently, the updating of the Climate Plan. By organizing the planning of the different ministries, the MPO addressed the same problems as the MMA, deepening

the interface with FNS in the most recent PPA. Evidence regarding the impacts of CC on the health and FNS of the Brazilian population has driven the problem stream within the MS, leading to the creation of institutional frameworks, adaptation strategies, and new public policies. In turn, the association of agriculture with deforestation and GHG, and potential implications for international competitiveness, manifested as problems in the MAPA, culminating in the creation of the first Sectoral Plan for Mitigation and Adaptation to CC and actions focused on low-carbon agriculture.

The third window of opportunity opened in 2023, with Lula's third term, which, in a context of increased occurrence of extreme events and manifestations of CC in Brazil, put the topic back on the agenda in the Ministries. This new phase has generated changes in ministries that were already active and greater engagement from others, such as the MDS, MDA, ME, and MPI. Although CC has already appeared in a few MDS actions, it was in 2023, with the resumption of food policies and the impacts of extreme events on agricultural production and FNS, that the MDS began to produce solutions, manifested in new institutional frameworks and public policies.

Similarly, with the re-establishment of the MDA, the resumption of policies for family farming and agroecology, the occurrence of droughts and floods, and the need for resilience and adaptation actions for family farming, the ministry began to incorporate CC more effectively into its agenda. In the case of the ME, the recognition of the economic impacts of CC and the need to promote a green economy and attract investment through the transition to a low-carbon economy drove the creation of the Ecological Transformation Plan and the National Bioeconomy Strategy. Regarding the MPI, the increased vulnerability of indigenous communities to CC has led to the development of resilience actions.

The following table summarizes the information gathered from the documentary research and interviews, structured based on Kingdon's streams, identifying convergent elements regarding how problems, solutions, and political action are categorized.

TABLE 1 ENTRY OF THE TOPIC ONTO THE AGENDA AND CHARACTERIZATION OF POLITICAL, PROBLEM, AND SOLUTION STREAMS ON THE AGENDA OF THE STUDIED MINISTRIES

Year	Ministry	Political stream	Problem stream	Solution stream
1994	Ministry of Science, Technology and Innovation (MCTI)	International agreements with implications for Brazil and, subsequently, governments that sought greater influence in international negotiations about CC.	Lack of production of reliable CC data and information adaptable to the national context, aimed at supporting the development of national public policies and the country's participation in international negotiations.	General Coordination of Global Climate Change; Interministerial Commission on Global Climate Change; Climate Network, with a sub-network in agriculture; National Communications; Action Plan in Science, Technology and Innovation for Climate; Adapta Brasil Platform
2007	Ministry of Health (MS)	Greater recognition of the importance of the topic by the federal government; a surge in the creation of institutional frameworks related to CC; demands from CIM.	Evidence points to the impacts of CC on public health, including the spread of diseases (dengue fever, waterborne diseases, etc.), as well as increased food insecurity and mortality in vulnerable populations.	Technical Group on Climate and Health; Sectoral Health Plan for Mitigation and Adaptation to Climate Change; PNA Health Strategy; update of the PNA Health Strategy; National Situation Room for Climate Health Emergencies; Guide "Climate Change for Health Professionals".
2008	Ministry of the Environment (MMA)	International pressure to reduce deforestation, greater recognition of the importance of the issue, the creation of institutional frameworks related to CC by the Brazilian government, and expectations of greater influence in international debate and action.	Reduce GHG emissions from agricultural production (and other sectors) and promote adaptation actions in various areas (including FNS, traditional peoples and communities, family farming, etc.), producing coherence between these actions.	Amazon Fund; PNMC; Sectoral Mitigation and Adaptation Plans for CC; PNA; Climate Plan update

(Continue)

Year	Ministry	Political stream	Problem stream	Solution stream
2009	Ministry of Agriculture, Livestock and Supply (Mapa)	Governmental changes, with the creation of institutions linked to CC and a political positioning aimed at gaining greater international recognition on the subject.	Growing understanding of the agricultural sector as a major emitter of GHG, major cause of deforestation, etc., generating tensions in international competitiveness. Need for building a positive image of the sector.	ABC Plan and Program; Agriculture Strategy in the PNA; ABC+ Plan (2020-2030).
2010	Ministry of Finance (MF)	International agreements have demanded a greater commitment to reducing emissions and to sustainable economic practices. Emergence of a new government that is actively resuming the discussion.	Pressure to promote a green economy and attract investments aligned with the transition to a low-carbon economy. Recognition of the impacts of extreme weather events.	Ecological Transformation Plan (in 2023); National Bioeconomy Strategy.
2012	Ministry of Planning and Budget (MPO)	Involvement of several ministries in the subject, requiring budget allocations. In 2023, a new government took office and the focus returned to addressing hunger, FNS, and CC.	Funding necessary for actions to mitigate GHG emissions in various sectors and for adaptation measures.	Incorporation of the topic into the 2012-2015 and 2024-2027 Multi-Year Plans.
2012	Ministry of Social Development and Fight against Hunger (MDS)	Political context of structuring policies and institutions related to FNS, as well as growing institutions linked to CC. In 2023, a new government took office and the focus returned to addressing hunger, FNS, and CC.	Impact of climate change on FNS and contributions of how food is produced, processed and consumed towards CC.	I and II PlanSAN; Technical Committee on FNS and CC at CAISAN; FNS Strategy in the PNA; update of the Sectoral Plan for FNS in the PNA; Workgroup on Calamities and Emergency Situations; Regulatory Framework for Action in Food and CC; Food and Nutrition Security Strategy; update of the Brazilian Strategy on Losses and Waste; National Program for Urban and Peri-urban Agriculture.

(Continue)

Year	Ministry	Political stream	Problem stream	Solution stream
2012	Ministry of Agrarian Development (MDA)	Context for the creation of policies for family farming, agroecology, and CC. New government, reactivation of the MDA, with the resumption of policies focused on family farming, FNS, and agroecology.	The need to promote greater resilience and adaptation measures for family farming.	I and II Planapo; Sectoral Plan for Adaptation of Family Farming in the Climate Plan; Permanent Committee on Climate Emergency, Water Security, Renewable Energies and Energy Sovereignty in Condraf; National Food Supply Plan; III Planapo; Productive Forests Program.
2023	Ministry of Indigenous Peoples (MPI)	In 2023, a new government took office; focus returned to addressing hunger, FNS, and CC; creation of a specific Ministry.	The impact of CC on indigenous peoples and the need to recognize the importance of indigenous communities in addressing CC.	Department of Climate Justice; development of the Sectoral Adaptation Plan for Indigenous Peoples - Climate Plan.

Source: Elaborated by the authors.

5. FINAL CONSIDERATIONS

We have identified that three windows of opportunity offered possibilities for the inclusion of the CC, agriculture, food and FNS topic on the agenda of federal government ministries. Less frequently found in the literature, the first window of opportunity was opened by elements external to the Brazilian government, manifested in the economic limitations and possibilities that could arise from global climate agreements. The creation of this window of opportunity was reinforced by the role of political entrepreneurs capable of translating international commitments into domestic opportunities, as observed in the Kyoto Protocol negotiations and the creation of the ABC Plan in 2010.

The other two windows, reaffirming the evidence from the literature on multiple streams, resulted from governmental changes (routine political window) and the crisis manifested in the intensification of CC (problem window) (Rutledge, 2016; Thomas & Hubo, 2024). The legitimacy of President Lula during his second term (2007-2010) and the strengthening of his strategy of influence in geopolitics and international agreements provided a more lasting window of opportunity, resulting in the creation of important institutions such as the Amazon Fund, the CIM, and the PNMC (which challenged the ministries' agendas with the Sectoral Mitigation and Adaptation Plans).

Subsequently, after a period of dismantling public policies and climate change denial, the beginning of Lula's third term – historically favorable to the climate and food agenda – opened a new window for the resumption and institutionalization of public policies, in a context of intensified extreme weather events, highlighting the relevance of adaptation and mitigation policies.

In turn, the climate crisis has manifested itself and has been interpreted differently among the ministries. Each has responded (to varying degrees) to different problems, demands, implications, and impacts arising from CC. While some reacted to the direct impacts of CC on the daily lives of the population and on the dynamics of the country (MMA, MS, MPI), others sought to respond (initially) to the economic and political elements in dispute (MCTI and MAPA). Other ministries (MDS, MDA and MF), although they had already addressed it marginally, began to address the interface between CC and FNS following the recent increase in the occurrence of extreme events. Urgent issues have placed disaster and adaptation at the forefront of the agenda.

Thus, a combination of external pressures (climate agreements), governmental changes, and distinct interpretations and demands based on CC produced different timelines, treatments, and solutions for the CC, agriculture, food, and FNS topic on the government agenda of the ministries. This diversity reflects the complex articulation of streams, in which interests, values, and priorities shaped distinct solutions and specific temporalities (Kingdon, 1984).

The results indicate that, although governed by the same governmental cycles and impacted by a common crisis, the ministries responded in a heterogeneous manner, influenced by internal and external dynamics. We reaffirm the validity of the multiple streams approach by highlighting how the convergence of external factors, political changes, and crises structure different paths for including the interface between CC, agriculture, and FNS on the government agenda. The effectiveness of policies, however, depends on greater inter-ministerial coordination and the development of integrated approaches, ensuring that the issue is treated as a cross-cutting priority in Brazil.

Finally, the study offers an innovative perspective on the heterogeneity of the state's response to the climate and food crisis, contributing to the advancement of debates on inter-ministerial coherence, policy integration, and governance under conditions of systemic crisis. As an agenda for future research, we suggest even deeper investigations into the mechanisms of cross-sectoral articulation between climate and food policies, as well as to explore the roles played by political entrepreneurs in intersectoral policy-making processes.

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DATA AVAILABILITY

All data supporting the results of this study are available upon request to the corresponding author (Christiane Marques Severo). The dataset is not publicly available because it contains information that compromises the privacy of the research participants.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest related to this work.

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