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Climate change, food sovereignty and food and nutrition security in Brazil

— Maureen Santos

Defense documents and climate change

— Rubens de Siqueira Duarte

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Summary

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Climate change, food sovereignty and food and nutrition security in Brazil

— *Maureen Santos*[1]

Abstract

The impacts of climate change on food and nutrition security have been increasing in Brazil and worldwide. This is already present at a time when conditions are extreme in populations and countries. With the implications of climate change, this complex situation will get worse, bringing even more complications to guarantee food and nutrition security. The article deals with the essential concepts for understanding the relationship between food and nutrition sovereignty and security and climate change, developing them from a look at the treatment of agriculture in the international climate change regime and the impacts of the subject in Brazil. In addition to reflecting on how to advance in ensuring food and nutrition security and sovereignty in Brazil in the context of climate change with a focus on family farming and Traditional Peoples and Communities.

KEYWORDS
Food Sovereignty and Food and Nutrition Security; Climate Change; Adaptation; Agriculture and Climate.

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1. Introduction

The climate change impacts on food and nutrition security have been a growing concern in Brazil and the world. This is because we live in a moment where the present conditions of vulnerability of the populations and countries are already extreme. With the advance of climate change, this picture will aggravate, bringing even more significant complications for the food and nutrition security guarantee.

In Brazil, on the one hand, there was an exponential growth of hunger and poverty during the Covid-19 pandemic, with alarming data indicating that more than half of the population currently lives in a food insecurity situation[2], and 33.1 million people suffering from hunger (Rede PENSSAN, 2022). The data disclosed also point out that the famine in the country has a specific color and gender, with black women as the most affected. On the other hand, an unprecedented socio-environmental crisis provoked by the expansion of the exporter agro-industrial complex to the detriment of food production, unbridled deforestation, and the retreat of public policies and legislation aimed at environmental protection and the human right to food.

This context, along with the increase in the frequency and intensity of extreme climatic phenomena in several regions of the country[3], is an alert for the need to face the current climate and food crisis to guarantee access to food and nutrition security in the future. In this sense, the present article aims to bring elements for contribution to the debate on food security and nutrition security in Brazil in the context of climate change and climate injustices as a way of combating inequalities in the distribution, regularity, and access to food.

This article is divided into three parts. The first one will address the essential concepts for understanding the relationship between food and nutrition security and climate change. In the second part, data on the treatment of the agriculture theme concerning the international climate change regime and the impacts of climate change on food and nutrition security will be presented. Finally, the third part analyzes the subject from the national perspective, bringing elements for reflection and proposals to advance in guaranteeing Brazil's food and nutrition security and sovereignty.

2. Understanding the distinct dimensions of the theme and associated concepts

The 1996 final declaration of the 1996 World Food Summit organized by the United Nations Food and Agriculture Organization (FAO) coined the definition of food security that points out that "food security exists when all people, at all times, have physical and economic access to sufficient, insurance, secure and nutritious foods that meet their food needs and preferences

2. Data published in the II Survey of Food Insecurity in the Context of the Covid-19 Pandemic (II VIGISAN) indicate that more than 125 million people live with some degree of food insecurity — mild, moderate, and severe — the last being hunger characterized by deprivation of food consumption.

3. In 2022 alone, extreme weather events generated severe consequences and victims in several Brazilian states such as Rio de Janeiro, Pernambuco, Minas Gerais, Bahia, and São Paulo, raising the urgency of including prevention and adaptation policies in the public agenda.

for an active and healthy life" (FAO, 1996). In 2009, the FAO approved the inclusion of the nutrition dimension to the concept of food security (FAO, 2009).

The definition houses four pillars that show that food and nutrition security are only fully attained if availability, access, use, and stability are guaranteed. Availability is defined as the supply determined by production, stock, warehousing, and trade. Access is influenced by elements such as price, income, and markets. The use is related to the human body's physical capacity to absorb the many nutrients of food, i.e., it concerns food practices and cultures, the diversity of diets, and the form of food preparation. And finally, stability, in the sense of regularity in the food supply, refers to the time and way external (price volatility crisis, for example) and extreme events (such as political crises, armed conflicts, and climate change) can have an impact on the sustainability of food consumption (HLPE, 2012; Alpino *et al.*, 2022).

In Brazil, that concept included these dimensions and was adopted at the II National Conference on Food and Nutrition Security (SAN) in 2004 and reaffirmed in article 3 of the Organic Law on Food and Nutrition Security (N.º 11.346/2006), which states that:

> Food and Nutrition Security consists in accomplishing the right of all people to regular and permanent access to quality foods, in sufficient quantity, without compromising access to other essential needs, based on food practices for health promotion that respect cultural diversity and are environmental, cultural, economic, and socially sustainable.

SAN acts as a public policy, i.e., part of the understanding that people have the right to food, and the State must provide the necessary resources for this to be guaranteed (Caldart *et al.*, 2012, p. 715). When the definition was coined in 1996, despite the recognition indicating a particular advance, social movements of various parts of the world gathered at La Vía Campesina International proposed another concept. When questioning that the FAO definition fell only in the guarantee of productivity and availability, limiting itself more to the interests of corporations of the agro-industrial global chain than to the rights and interests of the peasants and the population, the social movements developed the concept of food sovereignty, as a way to ensure food production and access to all peoples, through a:

> Group of public and social policies that must be adopted by all nations (...) to ensure that the food necessary for the survival of the population of each location is produced. This concept reveals a broader policy than food security because it starts with the principle that, to be the sovereign and protagonist of their own destiny, the people must have the conditions, resources, and support needed to produce their own food (Caldart *et al.*, 2012, p. 715).

"The diagnosis promoted by the concept of food sovereignty confirms the perspective that hunger and food and nutritional insecurity in the world have a close relationship with the unsustainable practices of the global agro-industrial complex — which through its large corporations and the financial system, control all the links of the agro-food chain from end to end."

From then on, the Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), a global collaborative consultive process organized by the World Bank, FAO, among other organizations of the UN System, recognizes the concept of food sovereignty and defines it as "the right of each nation to maintain and develop its capacity to produce its basic foods respecting cultural and productive diversity." (IAASTD, 2008).

The diagnosis promoted by the concept of food sovereignty confirms the perspective that hunger and food and nutritional insecurity in the world have a close relationship with the unsustainable practices of the global agro-industrial complex — which through its large corporations and the financial system, control all the links of the agro-food chain from end to end (Grain, 2009; HLPE, 2012; De Schutter, 2010; Santos and Glass, 2018; Santos, 2021).

By bringing these unsustainable practices to the center of the debate, food sovereignty, in contrast, bases its perspective on an effective alternative for food production and combating hunger mobilized by the natural resources available and implemented by "local agriculture in its multiple vocations (social, environmental and cultural)" and intended for regional markets (Marques, 2010, p. 81). In this sense, it is configuring itself as a more comprehensive definition and enabling better dialogue with the socioecological transformation necessary for the confrontation of climate change, as well as with the human right to be adequately provided

for in international treaties and devices of Brazilian legislation, having been incorporated into Article 6 and other principles of the Federal Constitution.

In Brazil and the world, the concept has been adopted regarding the proposals for public actions and policies, academic studies, and organized civil society and its national and international networks that act in the research and formulation of public policies on Food Sovereignty and Food and Nutrition Security (SSAN) (Pacheco, 2021; Leão and Maluf, 2012).

Finally, as the subject treated in the article requires a multiscale and systemic approach, another concept that has been used worldwide is that of food systems. In this article, we will use the definition established by Professor Renato Maluf in an essay developed from the multiscale perspective,

> (...) in which food systems constitute complex arrays consisting of the flows of interdependence between their components whose evolution involves complementarity, conflicts, and contradictions, therefore, requiring public and private mechanisms for coordination between the components of the respective systems that have non-harmonic functioning and whose evolution is open to various possibilities (Maluf, 2021).

This notion will be important in the third part of this article by connecting the SSAN approach with climate change. The latter, as a natural and global phenomenon, requires a systemic and multiscale approach, given its complexity.

Thus, regarding the concept of climate change, the Intergovernmental Panel on Climate Change (IPCC) defines in its fourth report that "it refers to any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC, 2007). In its sixth report, published in 2021, the Panel is more categorical by claiming that the increases in Greenhouse Gas (GHG) concentrations since 1750 are unequivocally caused by human activities (IPCC, 2022). The United Nations Framework Convention on Climate Change (UNFCCC), signed in 1992 during the United Nations Conference on Environment and Development (UNCED), defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (The United, 1992).

It is a consensus among the vast majority of scientists from around the world that the climate on Earth has changed as a consequence of human action[4]. The characterization of extreme events throughout 2022, such as the heat waves that reached Europe and Canada, the intense droughts that China and Europe have been suffering to the point of reviving remnants of old civilizations and archeological objects from the bottom of rivers and lagoons, unprecedented floods such as those occurring in the Philippines and Pakistan, point to the severity of the problem (O Globo, 2022; Exame, 2022; DW, 2022).

This severity is increased in combination with the preexisting vulnerabilities. The form in which capitalist development is configured and the fossil basis on which the system is maintained generates a series of socio-environmental crises that accumulate together with phenomena such as climate change. It is essential to highlight that this study understands as vulnerable an individual or community in a situation of insecurity, without defense and exposed to risks, stress, and external shocks, with difficulty reacting to the problem and without the means to deal with losses (Chambers, 1995; Conway, 2006). FAO and the Department for International Development (DFID)[5] apply this concept to food and nutrition security because they understand vulnerability as the probability of an "acute decline in the access to food or in consumption levels below the minimum amount for survival." Authors such as Neil

4. A study published in Environmental Research Letters (2021), found that over 99% of the 88,125 scientific reports and papers from the 2012-2020 period analyzed agreed that climate change is caused by human action.

5. Pre-existing situations introduce the notion of double exposure, which points out that certain populations are already exposed to unfavorable socioeconomic circumstances and more prone to be impacted by extreme natural events, being potentially more vulnerable to climate change (Peiter, 2011, p. 61).

Adger and Benyong Wei point to the relationship between food and nutritional vulnerability and security with a "state of susceptibility to harm from exposure to stresses associated with environmental and social changes and from the absence of capacity to adapt" (Monteiro, Alves and Piffer, 2022, p. 4).

With the notion of vulnerability, the article proposes connecting the confrontation of the risks associated with climate change to improving the general population's quality of life, especially people and groups in vulnerable situations. That means that public policies need to advance not only in prevention (another relevant concept) and adaptation but from bases that overcome the pre-existing problems while preparing the cities, rural areas, and forests for a less unequal and more dignified future.

"...public policies need to advance not only in prevention (another relevant concept) and adaptation but from bases that overcome the pre-existing problems while preparing the cities, rural areas, and forests for a less unequal and more dignified future."

The discussions on vulnerability, its effects, and the relationship with climate change and food and nutrition sovereignty and security point to the premise that, even though the climate debate has a technical character, the political, social, and ethical dimensions are fundamental to understanding the aspects related to rights perspectives, on the one hand, and the production of new types of inequality, on the other. In that sense, the option of the present study to explore these dimensions finds in the concept of climate justice a key to essential reading. Climate justice is seen in Political Ecology as an unfolding of the concept of environmental justice through the perception that the impacts of climate change, despite its reach to the entire planet, get countries and social groups in distinct ways and different intensities. And the least responsible for climate change will be potentially the most affected by it.

Therefore, climate justice reaffirms the right to fair and equitable access to policies to face climate change, information, and social participation, as well as the guarantee that no social group bears a disproportionate portion of the impacts generated by climate change nor the weight of decisions rendered in the name of climate crisis' confrontation. Some authors, like Wolfgang Sachs, Karen O'Brien, and Robin Leichenko, frame climate change as a social issue and use the expression "socio-environmental vulnerability" to encompass a similar interpretation that considers elements of these perspectives (Peiter, 2011).

"...climate justice reaffirms the right to fair and equitable access to policies to face climate change, information, and social participation, as well as the guarantee that no social group bears a disproportionate portion of the impacts generated by climate change..."

In this way, the dimension of climate justice is directly linked to the urgency of meeting these social groups' specific demands and strengthening policies of prevention and adaptation to climate change because this phenomenon leads to direct and indirect consequences for those who already find themselves in a socio-environmental vulnerability situation. In practice, these concerns, for example, issues related to public health, with the increase of new diseases and even the resurgence of diseases already eradicated, the growth of respiratory and infectious diseases, as well as impacts on food and nutrition security.

Thus, climate justice has considerable importance for the adaptation debate. However, the leading research centers that feed the decision-makers do not point out this connection in a visible way and limit the use of the concept of vulnerability, as is the case of the IPCC, which defines adaptation as the reaction capacity to the consequences of climate and non-climate events through adjustments to the changes that have occurred to reduce its impacts and harness its benefits. According to the Panel, "A wide number of adaptation options is available, but more extensive adaptation than is currently occurring is required to reduce vulnerability to climate change." (IPCC, 2007).

The IPCC Sixth Assessment Report, released in March 2022, as a contribution from Working Group II[6], points to a worrying scenario when analyzing the risks of climate change in the near future and why it is necessary to start adaptation and mitigation policies immediately. The Brazilian Ministry of the Environment adopts the concepts used by IPCC and understands mitigation as reducing greenhouse gas emissions to avoid or reduce the incidence of climate change. At the same time, adaptation is necessary regardless of how much we can

6. IPCC is divided into three Working Groups and a permanent Task Force on National Greenhouse Gas Inventories to produce the reports that are released by the Panel and organize on-demand temporary task forces. Working Group II (WG II) refers to climate change impacts, vulnerability, and adaptation. For more information, see: www.ipcc.ch.

mitigate as historical emissions have already changed the climate, so the Earth's average global temperature is already increasing (MMA, 2016). This point will be developed in the third part of this article.

"...dealing with the impacts of climate change on food and nutrition sovereignty and security has at its heart the relationship with the development issue. This reference should be obvious, but it is not."

The understanding of the concepts discussed above points out that dealing with the impacts of climate change on food and nutrition sovereignty and security has at its heart the relationship with the development issue. This reference should be obvious, but it is not. By treating the connections of these impacts with political and economic choices, privileging some sectors to the detriment of others, unsustainable practices are reinforced, like the global agro-food complex, one of the main sectors responsible for climate change.

Rethinking the current development model against the urgencies that the conjuncture imposes on us presupposes dealing with public policies, economic actors, and political subjects to be involved and public investing channeling. Any development policy that seeks to face the challenges of the present and the future needs to guarantee SSAN and structuring of the confrontation of climate change on other bases, with climate justice as an axis. This implies guaranteeing the right to social participation in the construction of public policies and stimulating the production of healthy and diversified foods, such as agroecology so that agriculture can coexist with socio-environmental protection.

There is no doubt that climate change is one of the leading and most complex environmental challenges of our time. However, it is essential to understand that the challenges of climate change exceed the climate issue itself; being necessary to think from a broader environmental perspective and to include its reflexes in economic, social, cultural, and political themes. This relationship implies that our development options, public policies, economic actors, and political subjects to be involved and receive public investment should consider overcoming inequalities, environmental degradation, deforestation, climate injustices, and food insecurity.

3. Impacts of climate change on agriculture, sovereignty, and food and nutrition security

Analyzing the impacts of climate change on Food Sovereignty and Food and Nutrition Security requires a greater understanding of the evolution of the agriculture theme in the international negotiations of the climate regime and how the debate has been conducted at the same time by experts on climate change and experts in agriculture and food systems.

"...it is essential to understand that the challenges of climate change exceed the climate issue itself; being necessary to think from a broader environmental perspective and to include its reflexes in economic, social, cultural, and political themes."

The agriculture theme has timidly entered the climate change negotiations. However, its first mentions date to the creation of the climate regime itself. In the text that approved the creation of the UNFCCC in 1992, the food production guarantee is mentioned in the Convention's primary objective. Article 4.1(c) cites agriculture as one of the relevant sectors for reducing GHG emissions (The United, 1992). The theme is mentioned again in the Kyoto Protocol, in Article 3.4, as an optional emission reduction action (UNFCCC, 1998). In the Thirteenth meeting of the Conference of the Parties in 2007, the Bali Action Plan mentioned the need to implement Article 4.1(c) of the Convention (The United, 2007).

In the following years, the theme gained support in the negotiations, with the demands for the Executive Secretary to prepare technical documents and promote workshops on mitigation opportunities in the agriculture sector. On the part of the Global South countries, there was a demand for this theme to enter the adaptation negotiations because they are countries that have the vast majority of the economy based on the agricultural sector, and there was a concern for approaches that led to more protectionism in the international trade. At this point, there was no explicit mention of food security.

The Paris Agreement, approved at COP 21 in 2015, opens this possibility in its preamble by recognizing the "fundamental priority of safeguarding food security and ending hunger, and

the particular vulnerabilities of food production systems to the adverse impacts of climate change" (MCTIC, 2015). Following the new climate agreement at the COP 23, held in Bonn in 2017, the decision 4/CP.23 establishing the Koronivia Joint Work on Agriculture was approved, involving the two subsidiary bodies of the UNFCCC, i.e., the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI). For this, informal workshops and conversations would be held to address the theme, considering the vulnerabilities of agriculture to climate change and addressing food security.

The COP 23 decision identified six elements that served as the axes for the Koronivia Joint Work, and these are (a) Modalities of implementation on issues related to agriculture and other future topics that may arise from this work; (b) Methods and approaches for assessing adaptation, adaptation co-benefits and resilience; (c) Improved soil carbon, soil health, and soil fertility under grassland and cropland, as well as integrated systems, including water management; (d) Improved nutrient use and manure management towards sustainable and resilient agricultural systems; (e) Improved livestock management systems; (f) Socioeconomic and food security dimensions of climate change in the agricultural sector.

At COP 26, held in Glasgow in 2021, the Koronivia Joint Work finished its work and produced a final document. For the COP 27, which will be held in November 2022, in Sharm el-Sheikh, Egypt, the recommendation to the SBSTA and SBI is that the Parties continue to negotiate the agricultural considerations and approve the draft decision to be adopted at the end of the conference.

To relate to the conduction history of the subject in the climate regime, although the first studies on the impacts of climate change on food and nutrition security date to the early 1990s (Alpino *et al.*, 2022), only since the mid-2010s were intensified more periodic and robust analyses by experts in food issues on the relationship between agriculture, climate change, and food and nutrition security. Various studies have been produced in the FAO case since then, correlating these aspects with narratives such as population growth and increased food demand. It is essential to highlight that in 2009, the FAO created the High-Level Panel of Experts on Food Security and Nutrition (HLPE-FSN), linked to the Committee on World Food Security (CFS) that, according to IPCC proposition, seeks to produce analyses based on scientific evidence and recommendations for decision-makers.

In 2012, the HLPE-FSN produced a report on the theme in which it revised FAO evaluations and initiatives on the effects of climate change on food and nutrition security, with a focus on the most vulnerable regions and populations and the interface between climate change and agricultural productivity, including the challenges and opportunities for adaptation and policies and mitigation actions for food and nutrition security. This report brought some critical reflections to the field of studies on the theme, such as the dichotomous approach to differentiate agricultural systems that contrast large-scale farming with small-scale farming (HLPE, 2012, p. 31), denominated in the Brazilian Law n.º 11326/2006 as family-farm-based agriculture. This is because the SSAN guarantee is more related to the second, whose data in many countries in the world point to the fact that it is the sector that produces the majority of the foods consumed nationally in small properties, mostly with intercropping. At the same time, the former is connected to large-scale grain production through monoculture in large extensions of land, with great concentration on the stages of chain production and directed to export.

The draft decision that will be in negotiation at COP 27 highlights this differentiation in two paragraphs of its preamble:

> Acknowledging that the increasing frequency of extreme weather events has exposed millions of people, especially small-scale farmers, those from low-income households, indigenous peoples, women and youth in developing countries, to acute food and water insecurity and that, according to the Food and Agriculture Organization of the United Nations, more than 800 million people face hunger every year, a figure set to increase as a consequence of climate change,
>
> Highlighting that farmers, including smallholders and pastoralists, are stewards of the land and are inclined to apply sustainable land management approaches, and acknowl-

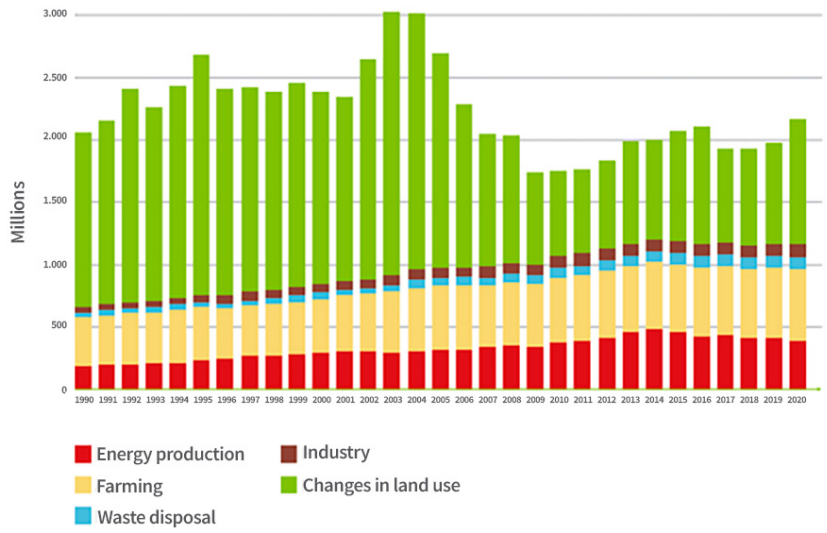
> edging that their vulnerability to climate change presents a challenge in fulfilling this important role and that policy responses in agriculture are more likely to succeed if they consider the role of farmers as key agents of change, (...) (The United, 2022).

The impacts of climate change on the SSAN demand considerations on agriculture as one of the sectors with a significant contribution of GHG emissions. Agriculture, forest, and land use (AFOLU) generate 18.4% of global greenhouse gas emissions (Ritchie, Roser and Rosado, 2020). The emissions generated by all the stages of the global agro-industrial chain demonstrate the unsustainability of the model promoted by it. Studies point to the high degree of concentration in practically all the stages, ranging from the input production to the production itself, storage, processing, and distribution, with the domination of the agro-food system by a small number of transnational corporations (Santos and Glass, 2018).

The mode of production of the global agro-industrial chain as a whole is not only unsustainable from the point of view of emissions. By prioritizing the use of high-yield varieties in monocultures and wide extensions of the earth, large amounts of pesticides, fertilizers, and water are used in its production, severely impacting the soil and biodiversity.

The agroindustry is on the central axis of Brazilian GHG emissions. Data produced by the Brazilian Climate Observatory (Observatório do Clima) (see Chart 1 below) point to greenhouse gases emissions separated between agricultural production and the changes in land use and forest. However, the changes in land use — i.e., deforestation and soil degradation, especially — have a significant participation of the agricultural sector, from the impact of livestock and the expansion of agricultural production. If we join the two sectors, we can assess that around 75% of the GHG emissions in Brazil refer to changes in the use of the soil (deforestation) and farming.

Chart 1. Brazil's greenhouse gas emissions from 1990 to 2020 (GtCO2e)



Source: *Observatório do Clima* (2021). Analysis of the Brazilian greenhouse gas emissions and its implications for the climate goals of Brazil.

In this sense, the treatment of the subject in the climate regime, also from the point of view of emission reduction, is fundamental because there is an urgency to establish strategic climate action in the agriculture sector if we want to avoid irreversible impacts on SSAN. Considerations are necessary on the effects of climate change on agriculture due to the increase in temperature, rainfall regime changes, sea level elevation, and extreme events. This scenario points to the loss of productivity with a reduction of production, loss of farmlands, change in the agricultural calendar, an increase of pests and diseases, crop failures, crop displacement between regions, increase in food price, expansion in the change of land use with the conversion of forests and expansion to traditional lands, and the generation of land conflicts (Machado Filho *et al.*, 2016; HLPE, 2012).

In the diagram below on the impacts of climate change on food security, it is possible to conceive this scenario in a more detailed way:

Diagram 1. Main impacts of climate change on Food and Nutrition Security

Temperature Increase	Increase in the CO2 concentration and greenhouse gases	Change in the rainfall pattern	Increase in the severity of the droughts and floods	Growth of the intensity of extreme events
Reduction of farmland area.	Negative effects on the food (crop health).	Reduction of water availability for consumption and use in production and livestock.	Reduction in crop income.	Soil erosion.
Reduction in crop productivity.			Forest fires and deforestation.	Increase in the degradation of farmland and desertification.
Impacts on livestock.			Reduction of the crop area.	Inability to cultivate crops.
Impacts on the fishing stock.			Reduction of availability and change in water quality.	Reduction of crops (quantity and productivity).
Reduction of availability and change in water quality.				Effects on supply.
Food and nutrition insecurity (Access, availability, use, and regularity)				

Source: Reiten, Almone and Masipa (Alpino *et al.*, 2022, p. 279).

The effects of climate change are fatal to SSAN guarantee. The significant vulnerability of food systems and the situation of inequality and poverty in the world point to the confrontation of the climate and food crisis of the present; productive sustainability and the distribution and access to adequate food in the quantity, quality, and time, are also central elements and need to be considered in formulating public policies and guidelines so that the distinct sectors of society, especially the private sector, can be aware and accountable for their role in the necessary change.

Poor populations become more vulnerable when exposed to new risk scenarios, aggravating poverty, social inequality, and food insecurity. This has been proven in several studies prepared to evaluate the impacts of the Covid-19 pandemic, such as the study of Rede PENSSAN, mentioned in the introduction of this article. The poorest ones usually have fewer resources to face a crisis, less access to health services, and little representation in policy-making and political decisions spaces. Thus, there is great concern that climate injustice arises because the poorest regions are the most affected by extreme events. It is worth mentioning that, within this social group, those suffering discrimination due to gender, age, race, class, and sexual orientation are the most severely affected (Alpino *et al.*, 2022).

Negotiating agriculture in the climate regime could bring light to these issues, advance a broader understanding of climate justice, and make it less open to the pressures of the economic sectors of the agro-industrial chain. For Brazil, this debate is of fundamental interest precisely because the country is considered one of the ten hotspots for climate change in the world and

> (...) [it] is where food insecurity, as well as poverty, is considered a public health problem, especially due to inequality and inadequacy of conditions of access and distribution of food to the population. The current global food system leverages harmful types of nutrition (malnutrition, deficiencies, overweight, and obesity) through higher emissions of greenhouse gases, deforestation and soil degradation, loss of biodiversity, and massive use of pesticides. These contribute to climate and environmental changes (Alpino *et al.*, 2022, p. 282).

In the case of family-based agriculture, these impacts are even more substantial, as we can see in Box 1 below, in which a literature review on climate change and its effects on family agriculture in the North and Northeast of Brazil is elaborated from a study published by the International Policy Centre for Inclusive Growth (IPC-IG), supported by the United Nations Development Programme (UNDP) and the International Fund for Agricultural Development (IFAD).

Box 1. General considerations on the impact of extreme events and climate variability on family agriculture

Literature review

- Ninety-five percent of the losses in the Brazilian agricultural sector occurred due to floods or droughts (ASSAD *et al.*, 2008). It is projected that such events will occur more frequently.
- Considering the relative magnitude of the variability of precipitations in three interannual temporal, decennial, and long-term scales (100 years), "the proportion of the total variation explained by the short-term variability is three times greater than the long-term variability (climate change) and twice as much than the decennial variability" (BAETHGEN, 2010).
- The general trend indicates a rainfall reduction over time for the North and Northeast regions (INPE, 2015).
- The major losses in the rural environment projected by Embrapa indicate the loss of farmland as the main factor.
- The semi-arid regions of Brazil's Northeast region will become drier, while the eastern part of the Brazilian Amazon will turn into a biome similar to the savannah.
- For agriculture, the drought trend may lead to negative results in the food security scope, a factor that will cause concerns for family farmers. An example that reflects this concern is the projection that cassava may disappear from the semi-arid portions of the Northeast region. Northeast's Agreste maize production is projected to be severely impacted (ASSAD *et al.*, 2008).
- Some seed cultures adapted to the tropical climate may migrate to the South of Brazil or higher regions to compensate for the temperature increase (ASSAD *et al.*, 2008). This migration may result in competition between the areas and the migration of the rural workforce to more favorable regions.
- Other factors expected in the stress factor created in agricultural systems are the reduction of water fluidity and the irrigation potential, an increase in the incidence of pests and diseases, changes in biomes, and a decrease in the biodiversity of animals and plants (WORLD BANK, 2013).

Considerations of the literature

- The efforts of adaptation to the impacts of climate change would also be more structured from the increase of resilience to climate variability.
- Decision-makers should consider the investment in cultures more resilient to dry climates.
- Future rural development strategies, including small farmers, should consider the changes in the land at the time of the decision to invest in cultures.

Source: Machado Filho, H. *et al.* (2010) Climate change and the impacts on family agriculture in the North and Northeast of Brazil. p.17.

With retrocession in public policies specific to family agriculture, especially in the last five years, with the spending ceiling and the current government's economic and social policy choices, the sector has become more fragile to the effects of climate change. The last part of this article will be dedicated to deepening this perspective from the Brazilian scenario, articulating elements on how to advance the guarantee of food sovereignty and security in Brazil in the climate change context.

4. Elements for reflection on how to advance the guarantee of food sovereignty and food and nutrition security in Brazil in a climate change context, with a focus on family agriculture and Traditional Peoples and Communities

The confrontation of the climate and food crisis of the present, productive sustainability, the farmers' law, and the autonomy of the States to determine their agricultural policies and to guarantee the distribution and access to adequate and healthy food in the necessary quantity, quality and time, base us for the reflections below.

Brazil lives in a current political and economic crisis with a reduction of policies to fight hunger and poverty, budget cuts, changes in legal devices, and deregulation in policies aimed at family agriculture. The Covid-19 pandemic aggravated the general picture. Data from the Food Insecurity and Covid-19 report in Brazil, produced by the II Food Insecurity Survey in the Covid-19 Pandemic Context (II VIGISAN), point out that:

> In population terms, 125.2 million people live in households with FI (food insecurity), and more than 33 million are in a hunger situation (severe FI). The inequality of access to food manifests itself with greater strength in rural households, 18.6% of whom face hunger daily. In geographical terms, 25.7% of the families in severe FI reside in the Northern region; 21.0% in the Northeast. FI is also directly related to other inequality conditions. Hunger is present in 43.0% of the families with a per capita income of up to 1/4 of the minimum wage and reaches more the families that have women as responsible and/or those in which the reference person (head) self-declares as black or brown (Rede PENSSAN, 2022).

A severe diagnosis of the coexistence between food and water insecurity accompanied these data[7]. They indicate that 42% of the families in a water insecurity situation are also in a hunger situation. In addition, most rural households and those in the North Region of Brazil are noteworthy. With the climate crisis's aggravation and its impacts in relation to water stress, more prolonged droughts, for example, point to the size of the challenge and the need to reorientate the State's actions.

In this sense, the expected impacts of climate change on the rural population, especially on family agriculture and Traditional Peoples and Communities (PCTs), are worrying. Because it is a sector with high socio-environmental vulnerability due to its structural conditions, the problems of access to land (land and agrarian question), the means of production, financing, and credit, technical assistance and rural extension, and health and education.

And this has direct reflexes on SSAN since family agriculture is key to producing food for domestic consumption in the country. The 2006 IBGE Census of Agriculture highlighted the fundamental participation of family agriculture in 70% of the country's primary food production. A decade later, the IBGE Census of Agriculture pointed out that 77% of agricultural establishments are family-based agriculture. In addition to that, it is the economic basis of 90% of the small Brazilian municipalities (with up to 20,000 inhabitants), employs 67% of the workforce in the fields, and accounts for 80% of the cassava production, 42% of the bean production and 48% of the coffee and banana production (IBGE, 2017).

7. The study used the Household Experience Scale of Water Insecurity (EDIH), in a significant contingent of the Brazilian population, as pointed out in the general methodology of the II VIGESAN, covering all 27 Brazilian states and 5 macro-regions (rural and urban), with face-to-face interviews in a sample of 12,745 households between November 2021 and April 2022 (Rede PENSSAN, 2022).

The sector lacks research that relates family agriculture and PCTs with climate change and SSAN. Much of the literature on agriculture and climate change and policy recommendations pertains only to the agro-industrial chain with a focus on the productivity of agricultural commodities. There is limited production and financing to research aspects that do not sum up to this. The same occurs regarding public policies to fight climate change in Brazil. This points to the need to invest in case studies and multidisciplinary and interinstitutional research methodologies, which combine the knowledge exchange between academia and traditional knowledge.

At the same time, family agriculture and PCTs should not be thought of only in terms of socio-environmental vulnerability and climate injustices but also mitigation and the economic, social, cultural, and environmental benefits the sector generates for society. This means that they need to be an object of public policies beyond the fight and eradication of poverty, which may be connected to the specificities of family and peasant production, the national supply, as well as to their contribution as subjects with traditional knowledge, of adaptive and resilient practices that need to be strengthened and disseminated.

The so-called sovereign policies of food supply would include actions and instruments that promote an expansion of access to adequate and healthy food from sustainable forms of production, diverse and with social inclusion, in line with adaptation to climate change. In Brazil, Professor Renato Maluf has been working on the concept of decentralized food systems (sistemas alimentares descentralizados - SAD) as an unfolding of the food systems approach to include the issue of territories and locations. Their multiple dynamics range from producing, distributing, and consuming food (Maluf, 2021) to capturing and valuing its specificities and richness in terms of biodiversity and environmental and climate protection, thus, being multifunctional.

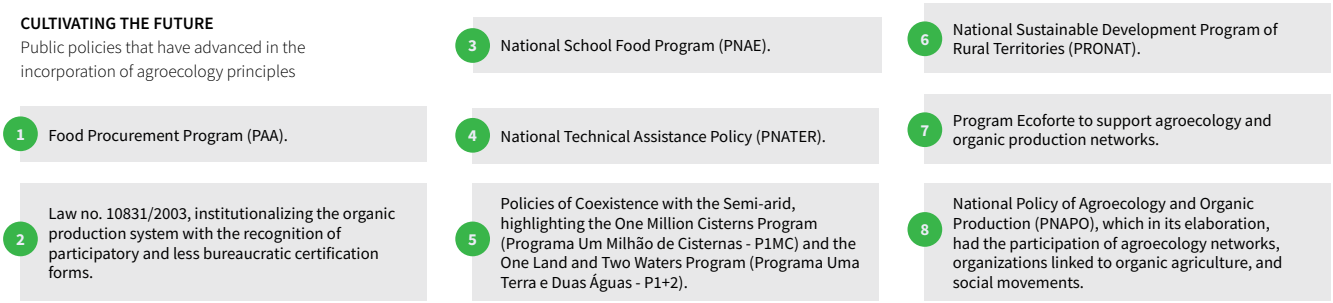
The international recognition of the importance of family-based agriculture and its multifunctionality had relevant recent developments, such as the approval in 2018 of the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas by the 73rd United Nations General Assembly, which in addition to recognizing the concept of food sovereignty, highlighted:

> Recognizing also the past, present and future contributions of peasants and other people working in rural areas in all regions of the world to development and to conserving and improving biodiversity, which constitute the basis of food and agricultural production throughout the world, and their contribution in ensuring the right to adequate food and food security, which are fundamental to attaining the internationally agreed development goals, including the 2030 Agenda for Sustainable Development (UNGA, 2018).

In 2019, the UN launched the Decade of Family Farming to strengthen family agriculture through public policies highlighting its multi-functionality. This points to the fact that the importance of family agriculture is not summed up to the production of food but also to the generation of jobs and income, and the protection of socio-biodiversity and ecosystems, due to its diversified systems that guarantee SSAN. With this, it is a fundamental sector to reduce the risks of global warming.

In recent years, Brazil has been countering this international recognition with the retrocession in sector-specific laws and cutting public policies and essential budgets. The country, for more than a decade, was a reference in public policies where the keynote of this understanding was exemplified in practice through multiple initiatives, which advanced to reference other development models by recognizing agroecology as a practical, scientific, and innovative dimension, as we can see in Figure 1 below.

Figure 1. Public policies that have advanced in the incorporation of agroecology principles



Source: Santos, M. and Glass, V. (eds.) (2018) *Atlas do Agronegócio.* p. 52.

However, historically, there has always been a lack of a more precise connection between the National Climate Change Policy (PNMC) and the policies pointed out in Figure 1, in addition to opening to the participation of SSAN field policymakers in national climate governance led by the Interministerial Committee on Climate Change and Green Growth (CIMV)[8].

The synergy, recovery, and strengthening of these policies are essential to construct socio-environmental resilience of agroecosystems that may face the causes of socio-environmental vulnerabilities, on the one hand, and at the same time, strengthen the production and distribution of healthy food to guarantee SSAN.

Brazil has a National Adaptation Plan (PNA), included in its Nationally Determined Contribution (NDC)[9] and deposited in the Paris Agreement. However, this Plan, although at its inception, was opened in the MMA for social participation in its construction, did not advance and ended up being approved as a simple reconfiguration of existing policies without any strategic goal in the short, medium, and long term. Therefore, it is necessary to reformulate the PNA from new objectives and align with the guarantee of SSAN and climate justice through supporting and valorizing family agriculture and PCTs in the NDCs' implementation policies.

Faced with the current challenges, we cannot risk seeking solutions that will not endure the development debate and maintain our current standard of production, distribution, and consumption, where concentration is the leading brand of the agro-industrial global chain, of which Brazil is a fundamental part. This chain has promoted the current climate crisis, reducing biodiversity and severely impacting food production. Sustainability in agriculture depends on the diversification and resilience of decentralized food systems to strengthen adaptation to climate change and cause climate justice to reach family farmers, PCTs, and the majority of the population suffering or about to suffer the impacts. At this point, agroecology has much to contribute because it articulates the production of healthy foods with social inclusion, the protection of socio-biodiversity, and environmental conservation.

8. Former Interministerial Committee on Climate Change (CIM).

9. The Nationally Determined Contributions (NDCs) are the voluntary targets submitted by countries under the Paris Agreement commitments and are to be reviewed every five years on a progressive basis.

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Soberania & Clima

Defense documents and climate change

— *Rubens de Siqueira Duarte*[10]

Abstract

How is climate change reflected in Brazil's defense documents? Climate change is relevant to national defense, as it can directly or indirectly trigger impacts on the Brazilian population, sovereignty, and the functioning of the Armed Forces. Through an extensive literature review, this article seeks to identify the main issues linked to national security and defense, both in the international and domestic dimension, in order to analyze how official documents of defense address these topics. The research findings indicate that these issues are addressed in the documents. Nevertheless, there is room for improvement regarding quality, depth, and expansion of the ideas presented there, as well as in the elaboration of practical guidelines.

KEYWORDS
Defense; Climate Change; Brazil; Sovereignty; Environment.

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1. Introduction

After the end of the Cold War in the last decade of the 20th century, the tension of a nuclear war between the two superpowers was gradually decreasing. With this, the various actors of the international community, including the academic scope, began to pay more attention to what became known as "new threats". However, they did not appear at that time. Among them, climate change consolidated as one of the main agendas of the 21st century. The severity of the negative impacts of anthropogenic activities on the climate and the understanding that they have the potential to multiply risks to states, societies, and individuals underlies the emphasis placed on this topic in the face of a world in constant change.

Since climate change and its consequences can directly or indirectly affect the population and sovereignty of states and the functioning of their Armed Forces, this subject has become indispensable for defense. This statement is especially relevant to countries such as Brazil, for still seeking better economic and social development indexes and having biological, genetic, and mineral riches in its territory. For this reason, this article seeks to answer the following research question: how does the climate change issue reflect in the Brazilian defense documents?

This article is divided into three parts to achieve the proposed objective, besides the introduction and the conclusion. The first moment is dedicated to analyzing the international scenario and its impacts on the defense. Next, it seeks to understand the potential impact of climate change on the Armed Forces. In these two sections, we seek, besides understanding the international and domestic context, prospecting the main topics and subjects pointed out by the literature as relevant for national defense. The third part is intended to analyze the defense documents, seeking the subjects identified in the two previous sections. Methodologically, this paper is based on an extensive literature review in order to contextualize and guide the debate. At the same time, empirical data reinforces or tense what is laid out in scientific papers. Regarding the analysis of the official defense documents of the Brazilian State, critical discourse analysis was employed (Wodak, 2013).

2. The international climate change regime and its impacts on defense

The Anthropocene concept is gaining ground in the discussions on climate change. This idea is based on the argument that the human being developed the ability to transform nature to the point that some scientists consider that the world has entered a new geological era in which humanity is the main motor of the changes that occur on the planet (Gemenne, 2021). It is not the objective of this article to discuss the relevance of this concept. Still, there is little doubt that societies' means of organization and production geometrically increased their impact on nature since the Industrial Revolution in the 18th century. The technological development, the incorporation of machinery in the production process, the society model, as well as the growth of the world population generated the highest use rate of natural resources (minerals, flora, and fauna) for immediate consumption, for use as raw material or as a source of energy.

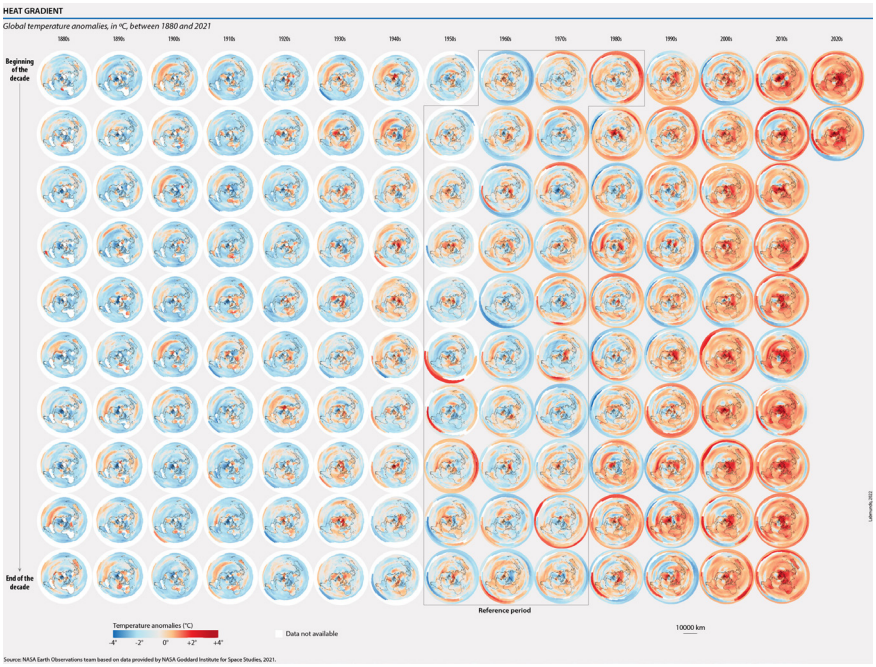
Faced with the predatory character, which is partially inherent in the adopted life model, it did not take long for nature to begin showing signs of being negatively impacted: the extinction of

fauna and flora species, acid rain, thermal inversion, change in the rainfall regime, increased frequency of extreme climate events, and, of course, the warming of the planet's average temperature. Indeed, the Earth's temperature varies naturally over the ages, but it draws attention that the elevation of the average temperature is at a significantly more accelerated pace than was observed. The laws of nature revolve around delicate balances, and human beings have been unbalancing these equations, which can be called anthropogenic climate change.

Although these warning signs have become more evident, at least since the beginning of the 20th century, the international community did not respond immediately to debate and fight climate change. The reactive character was the keynote of the first international negotiations. In these meetings, questions that were (and still are) relevant but needed to capture the comprehension and severity of the problem's origin. On the agenda were more restrictive negative impacts, either on the scale or geographical disposition. That was the case, for example, of discussions about preventing acid rain, which mainly affected European industrialized countries and their neighbors; regulation of transboundary pollution; rules for hunting animals, which were at risk; as well as the establishment of ecological sanctuaries and reserves to protect endangered areas (Yamin and Depledge, 2004; Lago, 2013). The technical and scientific character predominated in these meetings in search of solutions to these issues (Ribeiro, 2001).

In the 1970s, the international political field began to change. The adverse effects of anthropic action on the climate were even more evident, leading to a greater awareness of the international community's urgency to seek solutions (Ribeiro, 2001). Recorded average temperatures were rising rapidly (IMAGE 1). The understanding that climate change was a global problem that would affect everyone emerged, albeit asymmetrically. The unilateral responses would be ineffective, demanding an international cooperation effort (Milani *et al.*, 2014). Also contributing to the escalation of interest in the topic was the certainty that by discussing climate change, they would also be addressing sensitive issues regarding the way of life, development model, and rules that would limit the ability of action for international actors.

Image 1.



In this context, the United Nations Conference on the Human Environment was held in 1972. The Stockholm Conference, as it became known, turned into a milestone for the creation of the international climate change regime by the number of actors who participated in the event and for having launched principles and values that would become the basis for the establishment of the United Nations Environment Program (UNEP). If the technical and sci-

entific character marked the negotiations of the 20th-century beginning, the year 1972 might be considered a moment of inflection in a process marked by debates increasingly permeated by the political game among actors (Ribeiro, 2001; Lago, 2013).

The meeting was also characterized by the confrontation between two opposing currents on ways to deal with climate change. In the Cold War, the division seen in the political field of climate change was not East-West, but North-South. The Club of Rome, which defended the perspective of the rich countries of the North, published a report called *The Limits of Growth,* which supported preservationism. Essentially, the document was based on neo-Malthusian-inspired ideas to argue that the planet's population was growing geometrically and could not be kept up with the productive capacity or the use of natural resources, leading to the conclusion that it would be necessary to establish a "zero growth" policy in the world (Yamin and Depledge, 2004). In turn, the countries of the South, which were aiming to improve their economic and social indices, realized that this proposal not only "blamed" them indirectly (since the highest demographic growth rates were in these countries) but would also lock the geometry of world power and its asymmetries. The proposal defended by the South countries, including Brazil, was the conservationist, who preached the rational use of natural resources so that it continued to allow development (Lago, 2013).

It is not the objective of this article to make a detailed historical retrospective on the creation of the international climate change regime. However, this brief retrospective is essential to contextualize the close relationship between climate change and defense. If the most apparent dispute since the Stockholm Conference was about development, it was not long before there was an overflow into security and national defense (Ribeiro, 2001). Initially, this phenomenon occurred due to the proximity of the defense and development binomial: it is impossible to think of one without the other, but it soon became the stage for other perspectives.

It is not disputed here that several actors are genuinely concerned with preserving the environment and mitigating the effects of climate change. Still, it is assumed that other interests also permeate these motivations, whether of states, companies, individuals or organized civil society. For this reason, the debates' politicization has consolidated, albeit diffusely, on two main vectors: (1) ensuring the maintenance of the international lifestyle and geometry of power; and (2) ensuring growth and access to necessary resources. As a result, other debates have arisen, such as concerning the responsibilities of combating climate change and dealing with existing natural resources. It was not long before this politicization was associated with discussions about development and, soon after, defense (Silva, 2022).

The government's concern for defending the country's right to development and respect for peoples' autonomy was evident by analyzing Brazilian diplomatic action on other international themes. The speech of Chancellor Araújo Castro in 1963, on the occasion of the opening of the United Nations General Assembly, may be considered a symbol of this posture. An eventual victory of the Club of Rome's ideas would mean the Southern states' acceptance of a hierarchically inferior geopolitical position to the Northern countries and the underdeveloped condition of their society. For the South, this asymmetry was fundamental to understanding past experiences of colonization, imperialism, and interventions (political, cultural, and military) and, therefore, can exemplify the risks of this proposal.

Access to natural resources also becomes a sensitive subject since most of them are located in territories of the South States, such as hydrocarbons, metals, and water. Added to these riches is the importance of the biodiversity of the fauna and flora, which, besides the inherent ethical need to prevent species extinction, gains economic relevance with the genetic revolution, becoming raw material for the medical and pharmaceutical industries (Duarte, 2022b). Since the classic function of national defense is to protect society, territory, and its riches from external threats, it is clear that debates about climate change are pertinent to defense.

It is noteworthy, however, that the norms and principles crystallized in the international regime currently reflect the interests of the South countries. The dispute between conservatism and preservationism was decided in the 1987 Brundtland Report, which coined the definition of "sustainable development," removing the vision presented by the Club of Rome in the pre-

vious decade. The debate on considering natural resources as global public goods — which would be an essential step towards a process that could lead to their internationalization — was resolved, albeit temporarily, by the Forest Principles, signed during the ECO-92 in Rio de Janeiro. Finally, accepting a historical reading of responsibility for climate change was also a victory for Southern countries, which stressed that countries that industrialized earlier should have a greater burden. Brazil was a fundamental actor in the negotiations that led to this scenario. The country realized it was necessary to participate in the dialogues and show itself willing to negotiate to ensure national interests.

The international context is fundamental to analyzing the impact of climate change on the defense and Armed Forces in Brazil. As previously argued, the existing norms in the international regime today are favorable to the countries of the South, including Brazil. However, this context is in constant dispute and, therefore, in modification, which is aggravated by the deterioration of the Brazilian image in the world and the decision to adopt a posture averse to negotiations, reducing Brazil's capacity to guarantee their national interests[11] (Franchini and Viola, 2019; Duarte, 2022). In this sense, the movement towards securitization of climate change is a phenomenon that may require caution in Brazil.

With the end of the Cold War, the perception that there are other threats other than traditional — i.e., the conventional war between States — strengthened in the international scenario. *An Agenda for Peace,* presented in 1992 during the passage of Boutros Boutros-Ghali as United Nations Secretary-General, and the *Never Again* movement, which denounced the inaction of the international community to prevent and combat genocide in Rwanda in 1994, sedimented the understanding that individuals are also targets of threats, that their rights should be protected by their states and that, faced with their inability or disinterest in the international community. This understanding is one of the bases of the current international security regime, which guides the mandates of peace missions, the "Responsibility to Protect" (R2P), and debates on the authorization to use force (Duarte and Dias, 2021).

The concept of human security also derives from the understanding that individuals and societies have rights, including the right to life, threatened and, therefore, must be protected. In the search to overcome the insecurity of individuals and societies, different perspectives emerge on how to guarantee the right to live with dignity, without fear, and with freedom (Diez *et al.*, 2016; Trombetta, 2008). Scholars from the Copenhagen School argue that the securitization process occurs when securitizing agents convince their audience that a particular issue is a risk that states must protect (Scott, 2009). This phenomenon varies in scale and can be local or even global. Several subjects began to be securitized according to each actor's perceptions of the main threats to human security, and climate change was no exception.

The understanding that climate change can put individuals and societies at risk has been incorporated and spread by myriad actors. Among the reasons that are often listed to exemplify the risks are: the increase in extreme weather events, which cause floods and landslides that leave people homeless; access to drinking water, both in the face of increased droughts and the salinization of water that is no longer drinkable; deterioration of access to a healthy diet, which can occur by the scarcity in the face of reducing farmland or losing the capacity of local and traditional communities to seek their livelihood on fishing, hunting, and agriculture; and elevation of the oceans that would flood cities, considering that most of the world's population lives in coastal regions, and submerge island countries. Although they have different origins and motivations, these ideas have found resonance in the above mentioned objectives, which have existed since Stockholm in 1972.

Two main effects are expected by securitizing a particular niche of the policy. The first is that the subject is perceived as a priority and, therefore, tends to receive higher priority on the agenda (national and multilateral) and more robust budgets. Faced with budget constraints, actors seeking to expand their resources in the face of competition with other themes begin to use the subterfuge of securitization to gain an advance on their agenda and a larger share of funds. As the securitized issue comes to be seen as a threat, the second effect is that more

11. This point will be discussed further in the third section of this article.

rigid or even military responses to that problem progressively gain legitimacy (Mathews, 1989). Thus, social, economic, or cultural issues are treated as public or national security issues, sometimes requiring the use of force.

The consequences of securitization at the domestic level in Brazil will be discussed in depth in the next section. At this point, it is worth exploring the implications of the securitization of climate change on the international level. It is worth remembering that the Brazilian foreign policy presented the concept of Responsibility while Protecting (RwP) to counter the R2P. This normative movement evidences a concern that the R2P was used as a legal justification to legitimize interventional actions or changes in national regimes and governments. It is not interesting for Brazil that environmental issues be considered justification for intervention, given the natural characteristics and the social, economic, and political sensitivities that the country has. For this reason, national diplomacy has always associated the discussions on climate change with development issues, criticizing countries that defend the United Nations Security Council as an appropriate forum for discussions.

Therefore, it is up to Brazil to have a perennial policy of environmental responsibility in the domestic environment and active participation in international negotiations to enhance the search for national interests (Duarte, 2022b). International cooperation has a fundamental role since unilateral actions tend to have fewer international impacts. With the vacuum left by the extinction of the Council of South American Defense, the process of regaining the protagonism of the Amazon Cooperation Treaty Organization (ACTO) is growing in importance.

3. Climate change and the Armed Forces in Brazil

Since the previous section focused on the international scenario, it becomes relevant in this second part of the article to focus on the Brazilian domestic environment. In scientific literature, there is a long debate on climate change's potential to cause armed conflicts (Homer-Dixon *et al.*, 1993; Brzoska, 2015). This dispute, however, does not directly impact the analyses proposed in this work to the extent that there is agreement that climate change is at least a risk multiplier, capable of giving rise to or aggravating social, economic, cultural, productive, or military issues, leading to the outbreak or escalation of conflicts (Trombetta, 2008). Although the primary and classic function of the Armed Forces, which are and must be State institutions, is the protection of a country's sovereignty against external threats (traditional or otherwise), defense policy is also permeated by domestic factors, be they social, cultural, economic, political or geographic (Duarte, 2022a). In addition, the Brazilian Armed Forces need to organize on the national scene to fulfill their missions, have dissuasive power, be in a state of readiness, and develop capacities to be employed whenever necessary.

"In this regard, Bayer and de Struck (2019) dialogue with Brazoska's (2015) thinking to raise four dimensions in which climate change may affect the actions of the Armed Forces of various countries: (1) prevention of climate change; (2) change in values and logistics; (3) employment and preparation of the Forces; and (4) adaptation."

Even though scientific literature is still scarce on research specifically on climate change's impact on the Armed Forces (especially in Brazil), and there is also no international consensus on criteria to measure these "good practices" (Jones, 2022), there are works providing clues to be used as guides when thinking about the Brazilian case. In this regard, Bayer and de Struck (2019) dialogue with Brazoska's (2015) thinking to raise four dimensions in which climate change may affect the actions of the Armed Forces of various countries: (1) prevention of climate change; (2) change in values and logistics; (3) employment and preparation of the Forces; and (4) adaptation. In this section, we will discuss these four points raised by the authors and seek empirical data from Brazil and other countries that may contribute to the debate.

Regarding the **prevention of climate change,** it is a matter of measures that the Armed Forces can adopt to contribute to the national and global effort to achieve the greenhouse gas emissions targets. Some basic steps can be taken to reduce the emission of CO_2 or equivalent gases, such as maintaining equipment, investing in renewable energy sources — especially power units in remote regions — and using military capabilities to protect existing ecosystems. Bayer and de Struck (2019) cite Brazil as an example of this measure, recalling the Operations and

Management Center of the Amazonian Protection System (Censipam) work to monitor Brazil's Legal Amazon area, contributing to the action of the Brazilian State and its institutions.

Other initiatives should also be highlighted, such as the two Verde Brasil Operations and Samaúma Operation, in which Brazilian military personnel was used to respond to the sharp increase in fires in the Amazon. Brazilian military officers also report the preservation and recovery work of existing fauna and flora within the territorial limits of military organizations (Nunes *et al.*, 2012). As another example, in 2018, the Brazilian Army's Engineering and Construction Department created, through Ordinance No. 55, the Verde-Oliva (Olive-green) sustainability label that awards military organizations that care for the environment. Currently, it has been awarded to five Brazilian Army military organizations[12]. All these measures illustrate how the Armed Forces can contribute to State policies and present themselves as responsible actors in preventing climate change.

A second dimension concerns **the internalization of climate change costs and the variation in logistics.** Bayer and Struck (2019) argue that with climate change, some products and equipment needed for the proper functioning of the Armed Forces may become scarcer or more costly. It can occur directly by raising the prices of the products or indirectly, either by increasing the prices of the input necessary for the production process or by the transport difficulties or the supply chain.

These scenarios can lead to budgetary dilemmas, impacting the distribution of resources allocated to defense. The cost of maintaining the material capabilities of the Armed Forces will get higher, putting pressure on other areas. Recently, the *Companhia Brasileira de Cartuchos* developed with the Military Engineering Institute the technology to replace nitrocellulose, which is facing a scarcity scenario on bio-stabilizing products, with a minor impact on the environment (Rodrigues *et al.*, 2021). This empirical example demonstrates how investment in innovation can simultaneously contribute to technological development, autonomy in the defense industry, and environmental policies.

The **preparation and employment of the Armed Forces** can also be impacted because the terrain, scenario, frequency, and profile of the missions can be changed. Humanitarian operations tend to be more frequent, either to assist victims of extreme climate events or in areas experiencing the process of droughts or floods. In addition, the number of states that go through a situation of fragility and, for this reason, become unable to fulfill their functions can increase, leading to local or regional instability and triggering actions of the international community (Brzoska, 2015). This concern is already high on the security agenda of several Northern countries, as evidenced by Germany's seat on the Security Council in the 2019-2020 biennium (Dröge, 2018). In addition to the frequency, the use of the Armed Forces on peace missions, for example, can undergo adjustments on their type of mandate and on the active environment and capabilities that will be needed, demanding an effort to update peacekeepers.

At the domestic level, there are also more frequent occasions when the Armed Forces are used in disaster response and humanitarian operations. Only in 2022, extreme climate events in the mountainous region of Rio de Janeiro, Bahia, Pernambuco, Minas Gerais, and Santa Catarina left thousands homeless and caused hundreds of deaths. Even though these regions have their capacities and institutions, some demand additional support due to the emergency's severity and scale. In the Brazilian case, the Armed Forces are often triggered because of their capillarity on the national territory and capabilities in readiness (Rodrigues *et al.*, 2020).

Some countries in the North and South have already incorporated this demand in their defense policies. That is the case, for example, of Spain, which created the *Unidad Militar de Emergencias* in 2005, linked to the Ministry of Defense. The United States Department of Defense has published the Doctrine for Military Operations Other Than War since 1995, updated to include climate issues. In 2022, Chinese President Xi Jinping adopted a model similar to the

12. The following are awarded a Verde-Oliva label: Chemical and Pharmaceutical Laboratory of the Army; 7th Combat Engineering Battalion; Natal Garrison Hospital; São Paulo Area Military Hospital; and Regional Works Commission 5. This information was obtained via a request to the Citizen Information Service of the Brazilian Army through the Access to Information Act, under protocol number 60143.007836/2022-56.

American (Siebens and Lucas, 2022). The Canadian National Defense Department states in its official documents that its Armed Forces must serve various purposes and quotes, among them the ability to respond to disaster and provide humanitarian aid (Ministry of Defence of Canada, 2018). India, in turn, created a reservist unit specifically to act in situations related to climate change (Jayram, 2020).

The awareness that climate change is already occurring and that it generates negative impacts on various societies in the world led to the understanding that measures to prevent the increase in the planet's average temperature are not enough. Nations must also prepare for effects that can no longer be avoided. For this reason, **adaptation** and prevention have been the pillars of the climate regime since the United Nations Conference on Environment and Development in 1992. The Armed Forces are not exempt from this need. For example, in addition to the destruction caused by extreme climate events, climate change is responsible for accelerating the deterioration of infrastructure worldwide (Stewart *et al.*, 2011). The elevation of the ocean level — which also leads to the elevation of some watersheds and the change in water salinity — affects many critical and military infrastructures worldwide (Bustamante, 2022).

Climate change can also generate the need to revise the doctrine. The best strategy and the most appropriate equipment to use in changing areas — for example, due to desertification of areas, changes in the navigability of rivers, and impacts on existing infrastructure — must be analyzed. Even military uniforms, designed to camouflage, must be revisited since the properties of the terrain can also change. In particular, climate change challenges the engineering and logistics of the Armed Forces since they will have to be ready to act in extreme climates, whether in Brazil or employment outside the territory, developing capabilities adapted to progressively more adverse situations.

Once the four dimensions in which climate change can impact the Armed Forces are detailed, it is noted that a significant part of the examples listed is for domestic employment, which creates an apparent paradox with the classic function of these institutions, which is outward-looking. It is worth questioning the relevance of these dimensions to be contemplated in the defense policy and, consequently, in the documents that establish the political guidelines. First, the lack of a responsible environmental policy and an open posture to negotiation on the international level can harm Brazil's image. As Morgenthau teaches us, prestige is a fundamental element in the political game of nations, and its deterioration can lead to a decrease in the country's dissuasive capacity and an increase in the possibility of external threats (Duarte, 2022b).

Moreover, as argued in the previous section of this article, Brazil is not interested in securitizing climate change at the international level. The same applies to the domestic plan. The eventual securitization of this political field in Brazil can lead to a change in the public policies' nature, legitimizing the use of force, even when it was not the most appropriate answer. Besides diverting the Armed Forces from their core functions, which may, in the extreme, affect the level of readiness, it will also expose the institutions to criticism from society for being employed in situations for which they have not been trained.

The recent history of the Brazilian case demonstrates that, in the absence of an efficient public policy, the State usually resorts to the Armed Forces to supply it. In addition to the Law and Order Guarantee (GLO) operations in public security, the Carro-Pipa Operation can also be mentioned — which, despite having been created as temporarily in 1998, continues to exist more than two decades later — and the role of the military in providing access to basic public goods for populations living in hard-to-reach areas. The Verde Brasil Operations are also an example of the employment of the Armed Forces in an emergency to respond to society to a problem aggravated by the State's previous inefficiency. Subsidiary missions are foreseen for emergency and punctual use. Still, the less careful use of this constitutional artifice in the long run and the absence of a stable and efficient public policy presents a risk for the Armed Forces: they become public policy itself. To avoid this outcome, the actors involved in formulating defense policy must adopt a proactive stance, proving themselves responsible and sensitive to climate change while delimiting the Forces' role on the issue.

4. The pro forma and disjointed presence in the defense documents

The first section of this article focused on climate change in the international context, including the debate over traditional threats and the advancing understanding of human security. In turn, the second part had as its primary objective to look at the domestic sphere and the impact of climate change on the preparation and employment of the Armed Forces, seeking empirical examples of how the subject is being thought about in Brazil and other countries. These two steps were fundamental to contextualize and give the conceptual and empirical bases for this section, in which we propose to answer the central research question of this article: how is the issue of climate change reflected in Brazil's defense documents? In order to facilitate the critical exercise, the analysis will follow the topics that were previously addressed: the traditional threats and the securitization process of climate change at the international level; and the potential impact on the performance of the Armed Forces, whether in terms of prevention, budget, and logistics, employment and preparation, or adaptation.

Before getting into the analysis, it should be clarified that, for this article, three defense documents will be evaluated: the *Livro Branco de Defesa Nacional (LBDN)* (National Defense White Paper), the *Política Nacional de Defesa (PND)* (Policy of National Defense) — previously titled Política de Defesa Nacional — and the *Estratégia Nacional de Defesa (END)* (National Defense Strategy). Of course, other official documents from State institutions deal with defense themes — such as the case with the *Livro Verde de Defesa* (Green Paper of Defense), which is a normative milestone in the Brazilian scope for discussions on the theme. However, these three are the ones that the Brazilian Legislative inserted in the functions attributed to the Minister of State of Defense and introduced the mandatory review and appreciation by the National Congress every four years[13]. These factors suggest a hierarchy — although not expressed — among these three instruments and the others. The documents can be understood as a public manifestation of intentions (Duarte, 2022a) and contribute to the transparency of defense policy, as well as to increase the accountability of public administration, essential factors to foster a public debate on the theme (Gröhs, 2022). For these reasons, the LBDN, PND, and END will be the basis of the study, without prejudice to the use of other documents that may contribute to the analysis.

It is also worth clarifying that despite the legal requirement for a four-yearly review of the documents, the drafts sent by the Ministry of Defense to the National Congress in 2020 have not completed the cycle required for approval[14]. Only in June 2022 was the text approved in the Senate and sent to the Chamber of Deputies *(Agência Senado,* 2022). For this reason, the Ministry of Defense understands that the documents in force are those published in 2016[15], although the 2016 versions are no longer available on the Ministry's website.

Despite these facts, it is pertinent to analyze the 2020 drafts since they are official proposals from the Ministry and may indicate trends.

13. This attribution was legally established through Complementary Law No. 136 of August 25, 2010, in article 9. This legal device altered Complementary Law No. 97 of June 9, 1999, which provides general rules for the organization, preparation, and employment of the Armed Forces.

14. It should also be noted that despite the prerogative of the National Congress to influence the formulation of defense documents established by law, these institutions rarely do so. On the contrary, the slowness in the documents' appreciation and the absence of contributions suggest a lack of interest. A number of elements can be used to explain this uncommitted behavior of Congress, such as the preference for themes that have electoral consequences (Duarte, 2022a).

15. This information was obtained via an Information Service request of the Ministry of Defense through the Access to Information Act, under protocol number 00137.011618/2022-73.

4.1. The international scope

The efforts of the Brazilian government through its diplomacy to renew its credentials in world policy in the 1990s had essential impacts internationally and on the domestic scope. Holding the mentioned ECO-92 in Rio de Janeiro symbolizes this movement. However, this was not enough to incorporate the subject in the 1996 National Defense Policy (Ministério da Defesa do Brasil, 1996) and its revision in 1999. The first mention of the subject was in the 2005 PND (Ministério da Defesa do Brasil, 2005), in an item that was reserved for addressing climate change and indicating that the potential environmental, social, and political consequences of this phenomenon would require a State's capacity to act — without demonstrating how this demand would be. It is noteworthy that the term "climate change" is in quotation marks, even though it is not a quotation[16].

This mention, however, changes many times throughout the document's revisions in terms of the items' length and the perspective they show in linking climate and the role of defense. The 2012 PND (Ministério da Defesa do Brasil, 2012b) changes the term climate change in quotation marks and uses climate change on two items of the international landscape's description. The first addresses the natural riches of Brazil and argues that it can become an object of covetousness for other international actors. The second item, significantly less extensive, associates climate change with social issues and impacts on the State's capacity for action. The 2016 version returns with "climate change" in quotation marks but deepens the debate on the interface between socioeconomic development, climate change, and national sovereignty. The 2020 PND drafting of these items is significantly changed, removing the mention of climate change and replacing it with the "world expansion of human activities" (Ministério da Defesa do Brasil, 2020b p. 16). The climate issue is mentioned in some items later, alongside pandemics, by recognizing the potential impacts of these phenomena.

In turn, the White Paper also presented significant changes in the climate change perspective in its revisions in the context. Since its first version in 2012, the document has a specific section titled "international regimes on the environment", analyzing the "21st-century strategic environment". In this 2012 excerpt, the Rio de Janeiro Declaration on Environment and Development is quoted in this section by highlighting the importance of the sustainable development concept. As argued in the article's first section, the consolidation of this principle was a victory for the countries of the South, including Brazil. In this same section, there is also the recognition that the State must provide a counterpart responsible for creating public policies that avoid damage to the environment in its territory (Ministério da Defesa do Brasil, 2012a).

Despite the environmental subject progressively gaining importance in Brazil and the world, the space dedicated to this section in defense documents has taken the opposite path. The 3,683 characters in the first version were reduced to 2,825 in 2016. In the 2020 draft, the section was limited to 873 characters — a reduction of almost 70%, although the climate was not the only subject suffering reductions (Ministério da Defesa do Brasil, 2012a; 2016a; 2020a). Among the lines that were cut are subjects of expressive relevance: (1) the recognition by the Ministry of Defense of its responsibility for preservation, control, and maintenance of the country's forest areas; (2) mentions of forest regimes and biological diversity; and (3) the role of regional cooperation in ensuring national interests in the environment.

It also draws attention to the structural organization of the document. In 2012 and 2016, the paragraphs on the environmental subject were organized in a subitem called "international treatises and regimes with defense reflexes" alongside other themes such as disarmament, non-proliferation, export controls of sensitive goods, and new information and communication technologies. In the 2020 draft of the 2020 version sent to the National Congress, a new section was created, removing the themes of the environment and cy-

16. Besides climate change, only the term "hybrid warfare" is in quotes throughout the document; however, the latter receives a footnote to develop the concept further.

berspace from the original provision. It needs to be made clear that such modification was made consciously. However, it suggests that environmental issues do not "reflect on defense" but affect it indirectly since they impact the terrain in which the Armed Forces operate — "Sea, Antarctica, and Outer Space", which gives its name to the section created.

Hence, it is possible to defer that concerning the analysis of the international scenario in defense documents, there is recognition of the impacts that climate change can have on the integrity of sovereignty, thus recognizing the relevance of the theme for national defense. By analytically distinguishing the concern with traditional threats and those arising from human security, it is evident that there is an asymmetry between the weight given to these two dimensions. The importance of human security is recognized by associating climate change with social, economic, political, and health issues, although the concept is not expressly used. On the other hand, the excerpts that mention potential international covetousness for the riches of Brazil are more frequent, extensive, and polished. It reinforces the hypothesis that the priority concern, in the predominant perception of the Ministry of Defense and the Armed Forces, is that environmental issues are instrumentalized as a pretext to trigger traditional threats.

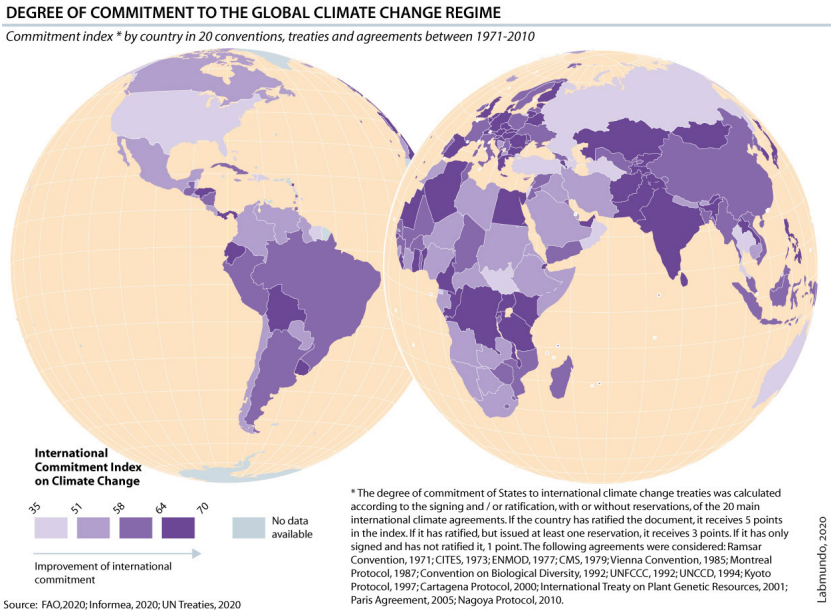
This vision, of course, is reflected in the actions understood as necessary and in document updates. For example, recognition of multilateralism and regionalism as tools to secure national interests by fostering international cooperation is present in versions of the White Paper and the PND. The 2012 and 2016 versions of the White Paper evoke the importance of nations' development to achieve a peaceful environment to indicate that climate change — as well as other issues — impacts the security of countries and demands negotiated solutions, making multilateralism indispensable. It is essential to highlight that this excerpt aligns with the Brazilian foreign policy tradition, although it can be argued that there would be room for this idea to be worked on more deeply.

As mentioned earlier, it is interesting for Brazil to work to avoid securitization of the climate change regime by maintaining its association with socioeconomic issues. However, the excerpt was also removed from the text sent to Congress in 2020, indicating a mismatch between the direction that defense documents are taking and Brazilian diplomacy on the subject, hindering these public policies' articulation that is fundamental for the international integration of the country. Some excerpts link environmental issues with development, but none with greater prominence and clarity.

Besides the valorization of multilateralism and more evident climate change association with the development issue, regionalism has also been negatively impacted throughout the official documents' revisions. In the 2012 and 2016 versions of the White Paper, the importance of international cooperation in dialogue and combat climate change and its various impacts is recognized (IMAGE 2). Like the others, this excerpt was excluded from the 2020 version. Surprisingly, the Amazon Cooperation Treaty was not mentioned anywhere in the three 2020 documents, despite being present in earlier versions. This suppression occurs in a context where UNASUR is abolished, making that organization the only specific international instrument to deal with a region recognized as a priority for national defense.

The analysis of the trajectory of defense documents raises questions about the international posture that is understood as appropriate by national defense actors. It opens room for questions about the existing perception of regionalism and multilateralism, to the extent that the gradual exclusion can be read as a preference for unilateralism and a posture more averse to negotiations — since every negotiation presupposes a degree of willingness to compromise. In the scientific literature, it is established that countries in low or middle positions in the world power hierarchy depend more on international negotiation instruments to secure their interests. An eventual Brazilian self-isolation can harm Brazil's capacity for dialogue and, consequently, influence the outcome of the norms created at the international level.

Image 2.



As argued in the first section of this article, climate change is a problem that impacts all actors on the planet, albeit asymmetrically, which calls for organized responses. Therefore, actions will be taken — because they are seen as vital by most actors — and will shape the international regime, generating constraints for Brazil. Postures that lead to its isolation will neither strengthen sovereignty nor increase autonomy. On the contrary, the norms decided against Brazil will limit the country's actions.

4.2. The impact on the Armed Forces

In all versions of the three official defense documents, there is recognition that climate change may generate impacts on the Armed Forces. However, as described in the case of the global plan analysis, a tendency to reduce these topics' weight over time can also be perceived. Since the sections that mention the impacts on the Armed Forces are less extensive compared to the analysis of the international scenario, the loss of space is minor in absolute terms.

The main measures in the document lines are related to climate change prevention. Especially in the END versions, the Brazilian Navy's role in fighting environmental crimes is reinforced. The ecosystems and biodiversity preservation, both in waterways and ocean territory, are part of Blue Amazon, given its strategic, commercial, and economic importance and biological richness. In its 2012 and 2016 versions, the White Paper also brings in the dual character of the Blue Amazon Management System (SisGAAz) in preventing environmental pollution. This mention was removed in 2020.

The concern with the Amazon region stands out when it comes to the Army because it is the Land Force. The documents also reveal a notion, albeit incipient, of ideas regarding human security and the association of climate issues with development — although this notion has not been able to stimulate excerpts that work against the securitization of climate issues. In the 2012 PND, there is mention of "effective State action in sustainable development (social, economic and environmental) and the expansion of cooperation with neighboring countries, aimed at the defense of natural riches" (Ministério da Defesa do Brasil, 2012b, p. 31). Similarly, the END establishes that "the sustainable development of the Amazon region will be seen, also, as an instrument of national defense: only it can consolidate the conditions to ensure national sovereignty over that region" (Ministério da Defesa do Brasil, 2012c, p. 82). However, these excerpts do not appear in the subsequent versions. In another paragraph of the END 2012 version, there is the idea that

the Amazon security involves the region's sustainable development and social justice. However, in doing so, it associates this topic with land issues without mentioning climate change, although they are closely related.

Despite these passages that reveal the existence of close visions — consciously or not — to the idea of human security, the concern with traditional threats still has a greater weight. It again interprets climate change as a pretext to hide less noble interests to legitimize international actions that can put Brazilian sovereignty at risk. In a joint analysis of all the documents and their versions, it is clear that the Brazilian Army's primary concern is with the strategy of presence in the region and with mobility to prevent "organizations or individuals serve as instruments for foreign interests" (Ministério da Defesa do Brasil, 2012c, p. 54). The known characteristics of the Amazon always justify this concern: an extensive territory with low population density, full of human, animal, vegetal and mineral riches, as well as the hydraulic potential for energy production. The zeal for presence and mobility is also highlighted when it comes to airstrips' construction and maintenance in the region by the Air Force. To this end, the Armed Forces' capabilities are also cited, which can have dual use in monitoring the region and supporting other Brazilian State institutions.

It is important to note that clearer statements about the responsibility of the Ministry of Defense and the Armed Forces in protecting the environment at the domestic level were also gradually being withdrawn or weakened, as occurred with the excerpt analyzing the international scenario. Another document, Defesa & Meio Ambiente: preparo com sustentabilidade (Defense & the Environment: a sustainability preparation), published in 2017, was responsible for deepening the subject. The "Green Book of Defense", as it is also known, establishes that the Armed Forces should be responsible for the five axes of the Public Environmental Agenda, an initiative of the Ministry of the Environment to encourage sustainable practices in public administration. Among these good practices, one can cite the rational use and management of natural resources, the treatment of residues, concern with sustainability when making constructions and acquisitions, and attention to the impacts on the workers' quality of life.

The document innovates by organizing and bringing to light examples of actions implemented by the Armed Forces but that were not highlighted, such as protection of areas against deforestation, recovery or reforestation of degraded areas, investment in clean energy, and operations in support of the environment. Before the Green Paper, the only mention of GLO operations associated with climate issues was in the 2012 White Paper, indicating that the Army would have to develop priority strategic projects to enable the Force for various purposes, among them operations in support of environmental protection. However, this concern cannot be seen in the description of the priority projects that followed in that document.

This 2017 publication, the first produced by a Brazilian State institution aiming specifically to think about the interface between climate change and the role of the Armed Forces, does not seem to have been taken into account in the 2020 documents revision. That was when the process of emptying the theme in the text's final content deepened, indicating a lack of connection between them. Moreover, reading the documents also suggests an ongoing difficulty in turning the documents' ideas, principles, and statements into concrete measures. Despite the recognition of the impact of climate change on the sovereignty and security of the population, there is no mention of it in the national defense objectives or the strategic defense actions announced in the versions of the PND and the END, respectively. Even if, as seen, there is a tendency to reduce — or suppress — the weight presented by climate changes in the White Paper and PND, the END omission in all editions indicates a mismatch between the initial thought and the resulting guideline in the strategy.

Finally, it can be seen that the actions indicated in the White Paper, in PND, and END are summarized as prevention. Much is discussed in these documents about the importance of a more robust and stable budget, but there is no reflection on how climate change may impact financial planning and logistics. Mentions of preparation and employment are

superficial and sporadic, while reflections on the importance of adaptation are nonexistent. The exception is again the Green Paper, which indicates that military training should include concern for the environment — although this issue is not elaborated on, nor does it guide how this could be applied in practice.

5. Final Considerations

"Therefore, any hypothesis that the theme is ignored by Brazil's institutions responsible for defense policy is ruled out. On the other hand, the analysis made in this article suggests that there is room for improvement in the quality, deepening, and expansion of the ideas therein and in developing practical guidelines."

In analyzing how the issue of climate change is reflected in Brazil's defense documents, the first observation must be made that the subject is present in the National Defense White Paper, the National Defense Policy, and the National Defense Strategy. Therefore, any hypothesis that the theme is ignored by Brazil's institutions responsible for defense policy is ruled out. On the other hand, the analysis made in this article suggests that there is room for improvement in the quality, deepening, and expansion of the ideas therein and in developing practical guidelines. Suppose the understanding that climate issues should not be central to defense policy remains absent from the documents. In that case, a reading will be perpetuated that puts the country's sovereignty and the fulfillment of the Armed Forces' mission at risk instead of strengthening them.

The reading that climate change work as a pretext for traditional threats carries considerable weight in the documents. Undoubtedly, it is a credible hypothesis that the Armed Forces should be aware of and prepared to respond to them. However, the impression is that the texts focus only on a worst-case scenario reading of the international system without recognizing that its current characteristics and norms are beneficial to Brazil. In addition, since the end of the Cold War, other threats have generated concern for states and their societies, demanding an equal level of attention. In this sense, defense documents need more clarity regarding the specifics of human security, its roots, and consequences for the global political game and the Brazilian scenario. The qualitative consolidation of this diagnosis can open new lines of action and strengthen the Brazilian defense policy. In the same sense, the association between development and climate change, in order to better delimit the role of defense in this relationship while removing stimuli to the securitization process, needs to be deepened. This point, which would generate synergy with the Brazilian diplomatic tradition, existed — even if timidly — in the first versions of the White Paper but lost space until it disappeared completely.

If the analysis of the international plan needs to be deepened and thickened, the lack of analysis on the climate change impact on the Armed Forces' performance suggests that awareness on the subject still needs to be expanded to include new points. Topics such as the impact of climate change on the budget, logistics, the kind of investment in innovation needed, the preparedness of the Forces, and adaptation measures are absent from the documents. By not addressing these issues, there is a risk of a chain reaction, as these topics lose priority, reducing their awareness, hindering the monitoring of impacts, and ultimately causing the response, when it occurs, to be done in a reactive and unplanned way, reducing the chances of success.

On the other hand, prevention is more present in the documents. The Green Paper did not bring an extensive list of actions taken by defense institutions in the prevention and mitigation of climate change. Still, the document is vital in mapping these initiatives and trying to induce this debate in the domestic scenario. While the impact of this initiative in the medium and long term is still imponderable, the draft 2020 defense documents have not shown any effect. On the contrary, its contents were even more muted, deepening a movement that, although not linear, clearly tends to reduce the weight of climate change discussions. This process raises questions about the reason for this phenomenon and whether it is conscious on the part of the formulators since self-proclaimed state institutions primarily draw up defense documents. Therefore, greater stability would be expected.

Finally, there is a mismatch between the ideas in the document and the measures listed in the objectives, projects, and suggested actions. Compared to the White Paper and the PND,

the END presents minor topics related to climate change. For now, the Armed Forces posture reflects capabilities-based planning, which seeks to organize actions according to response potential rather than outlining future scenarios and analyzing potential threats. In the most recent situations where Armed Forces have been demanded, their capabilities have allowed quick responses on a national scale, indicating the relevance of planning. On the other hand, this model also encourages a reactive posture in the political arena, which, in the long run, can reduce the incidence of defense in formulating public policies.

Finally, it is essential to remember that the absence of some issues in the advocacy documents does not mean there is no concern or concrete action. In addition to the examples mentioned throughout the article, it is worth mentioning the preparation of the Cartilha de Práticas Ambientais nas Organizações Militares do Exército Brasileiro (Environmental Practices Guidebook from Military Organizations of the Brazilian Army), published in 2017. However, the absence of official, centralized guidelines fails to create incentives, foster cooperation between actors, and facilitate the distribution of resources. As a result, these initiatives tend to be more sporadic and difficult to maintain because they do not receive priority or emphasis

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