

Army Present, Amazon Protected: The Strategic Role of the Amazon Military Command in Environmental Protection

Exército Presente, Amazônia Protegida: a vocação estratégica do Comando Militar da Amazônia na proteção ambiental

Ejército Actual, Amazonía Protegida: la vocación estratégica del Comando Militar Amazónico en la protección ambiental

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Research article

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Abstract

The Brazilian Amazon is a national treasure, not only for its immense biodiversity and natural resources but also for its strategic value. In addition to being a vital source of water and oxygen, the Amazon plays a crucial role in the global climate balance, acting as a carbon sink and climate regulator. Therefore, protecting the Amazon is not merely an environmental concern, it is a matter of national security and sovereignty. Within the Brazilian Army (BA), the Military Command of the Amazon (CMA) is responsible for defending and safeguarding the Western Amazon in its terrestrial military capacity. To ensure national sovereignty and the interests of the Brazilian state over the planet's richest tropical forest, home to abundant biodiversity, freshwater reserves, and numerous mineral resources, the CMA keeps its troops in a permanent state of operational and logistical readiness. The methodology for this study is exploratory and descriptive, based on a bibliographic review conducted to understand the Amazon's environmental context, including studies on the role of the Armed Forces, particularly the CMA. The findings highlight key contributions to the field, underscoring the importance of protecting the Amazon not only as an environmental issue but also as a pillar of national security and sovereignty.

Keywords: defense, sovereignty, military bases, defense and state security policy

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Resumo

A Amazônia brasileira é um tesouro nacional, não apenas pela sua imensa biodiversidade e recursos naturais, mas também pelo seu valor estratégico. Além de ser uma fonte vital de água e oxigênio, a Amazônia desempenha um papel crucial no equilíbrio climático global, atuando como um sumidouro de carbono e regulador do clima. Portanto, proteger a Amazônia não é apenas uma questão ambiental, mas também uma questão de segurança nacional e soberania. No Exército Brasileiro (EB), o Comando Militar da Amazônia (CMA) é responsável pela defesa e proteção da Amazônia Ocidental, em sua vertente militar terrestre. Para garantir a soberania nacional e os interesses do Estado nacional sobre a floresta tropical mais rica do planeta, com enorme biodiversidade, água doce abundante e inúmeras riquezas minerais, o CMA mantém suas tropas em permanente estado de prontidão operacional e logística. Para tanto, a metodologia utilizada tem natureza exploratória e descritiva, a partir de uma revisão bibliográfica, realizada para compreender o contexto ambiental da Amazônia, e isso inclui estudos sobre o papel das Forças Armadas, em particular do CMA. Os resultados descrevem as principais contribuições para o campo, destacando a importância da proteção da Amazônia não apenas como uma questão ambiental, mas também como uma questão de segurança nacional e soberania.

Palavras-chave: defesa, soberania, bases militares, política de defesa e segurança do estado

Resumen

La Amazonía brasileña es un tesoro nacional, no sólo por su inmensa biodiversidad y recursos naturales, sino también por su valor estratégico. Además de ser una fuente vital de agua y oxígeno, la Amazonia desempeña un papel crucial en el equilibrio climático global, actuando como sumidero de carbono y regulador climático. Por lo tanto, proteger la Amazonía no es sólo una cuestión ambiental, sino también una cuestión de seguridad y soberanía nacional. En el Ejército Brasileño (EB), el Comando Militar Amazónico (CMA) es responsable de la defensa y protección de la Amazonía Occidental, en su vertiente militar terrestre. Para garantizar la soberanía nacional y los intereses del Estado nacional sobre la selva tropical más rica del planeta, con enorme biodiversidad, abundante agua dulce e innumerables riquezas minerales, la CMA mantiene a sus tropas en permanente estado de disponibilidad operativa y logística. Para ello, la metodología utilizada es de carácter exploratorio y descriptivo, basada en una revisión bibliográfica, realizada para comprender el contexto ambiental de la Amazonía, y esto incluye estudios del papel de las Fuerzas Armadas, en particular de la CMA. Los resultados describen los principales aportes al campo, destacando la importancia de proteger la Amazonía no solo como una cuestión ambiental, sino también como una cuestión de seguridad y soberanía nacional.

Palabras clave: defensa, soberanía, bases militares, política de defensa y seguridad del estado

Introduction

The Brazilian Amazon¹ attracts global interest in various fundamental issues, including the availability of clean water, the balance between exploitation and preservation of natural resources, the push for sustainable development, and ongoing concerns about climate change (Becker, 2009). These factors not only impact on the security of nations, institutions, and individuals but can also represent significant threats. In other words, the Amazon is strategic and a priority for the national government.

Covering approximately 5% of the planet's total area and 40% of South America, the Amazon is a region of vital importance. It holds about 20% of the world's freshwater reserves and approximately one-third of the global tropical forests. Its hydrographic basin extends over more than 7 million square

kilometers, encompassing countries like Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela, and French Guiana. Additionally, the region is rich in minerals and energy resources (Matos, 2014).

Brazil asserts its unconditional sovereignty over the Brazilian Amazon, a vast region spanning over 4 million square kilometers. This area is home to extensive mineral reserves of all kinds and the richest biodiversity on the planet. Brazil's cooperation with other nations that share territory in the Pan-Amazon region is essential to preserving these invaluable natural resources. (Brasil, 2016, p. 16)

In this context, the Amazon Cooperation Treaty (ACT) is an attempt to address regional challenges from an international perspective. Signed in 1978 between Brazil, Bolivia, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela, the treaty aimed to promote coordinated action for local development.

In 1995, the eight countries decided to establish the Amazon Cooperation Treaty Organization (ACTO) to strengthen and implement the Treaty's objectives. As part of these efforts and challenges, an amendment to the ACT was approved in 1998, and the Permanent Secretariat was established in Brasília on December 13, 2002, and definitively installed in March 2003 (ACTO, 2024).

This initiative aims to prevent any external attempt at international control over the area, based on the assumption that by regionalizing the solution to the problems would safeguard the signatory countries' decision-making capacity over the continental Amazon.

In the Western Amazon, the Amazon Military Command (CMA) serves as the land force of the Armed Forces (AF), tasked with the defense and security of the states of Amazonas, Acre, Rondônia, and Roraima, covering an area of 1 961 183.48 square kilometers. This region stands out for its remoteness from major national production centers, a sparse road network, limited access to basic services, and deficiencies in healthcare provision. This descriptive and exploratory work aims to outline the strategic vocations of the CMA in the areas of defense, security, and environmental protection within the Western Amazon.

Public policies and development of the Amazon: a brief context

A widely recognized case among Brazilian military officials, frequently cited by several scholars, concerns the statement made by French President François Mitterrand in 1989, questioning Brazil's ability to protect the environment, particularly the Amazon Rainforest. Mitterrand declared that "Brazil must accept a relative sovereignty over the Amazon" (Benatti, 2007, p. 27).

Similarly, figures such as Al Gore, then a candidate for the presidency of the United States, and Margaret Thatcher, former British Prime Minister, among others, declared that the Amazon is a heritage of humanity and suggested Brazil should accept the internationalization of the region (Silva, 2024).

Despite facing several difficulties, Brazil has sought over the years to remain ready for debates on the international political stage, advocating not only for environment preservation, but also for the integrity of its national interests (Becker, 2001). This positioning is crucial given the diverse interests and different international actors concerning the Amazon, many of which often conflict with Brazil's national interests (Viola, 1998, cited in Sant'ana, 2023).

In response to such assertion, an increase in the rhetoric of developed countries regarding environmental preservation was observed. This rhetoric aimed to reduce the degradation of natural resources, mitigate the effects of climate change, and influence the economic growth of developing countries. As a result, the protection of strategic resources has become a key issue on the agenda of governments worldwide.

Through statements from world leaders and media coverage, it can be inferred that the alleged inability of developing countries to safeguard the environment could serve as a pretext for international intervention (Buzan *et al.*, 1998, cited in Sant'ana, 2023), thereby jeopardizing the national sovereignty of nations like Brazil.

Thus, the CMA plays a crucial role in the protection and defense of the Amazon, which is one of the largest biomes on the planet and a region of strategic importance for both Brazil and the world. The strategic vocations of the CMA in the Amazon encompass a range of responsibilities, from national security to contributing to the socioeconomic development of the region. Discussing securitization and Amazonian development, Araújo (2006, cited in Matos, 2014) asserts that:

The military regime's strategy regarding the Amazon (...) was based on the discourse that intertwined security and development, on actions for the settlement of the region (which involved the creation of adequate infrastructure), and on diplomatic action that, in multilateral forums, fostered alliances with other peripheral countries to ensure the 'right to development.' The proposal for internal securitization comprised the discourse – also made abroad – that, for Brazil, this constituted a matter of national security. (p. 12)

Becker (2001) and Carvalho (2001) argue that public policies for Amazonian development began during the government of Getúlio Vargas, with the creation of the Superintendency for the Economic Valorization of the Amazon (SPVEA), later known as the Superintendency of the Development of the Amazon (SUDAM).

Other authors, such as Paim and Franchi (2020), argue that the colonization and settlement of regions in the northern part of the country facilitated the integration of military contingents and civilian settlers, supporting border protection and population settlement. This process linked territorial security to national development and to the creation and installation of military units in the Amazon region

Franchi (2013) adds that the Military Colonies originated as early as the Imperial period, as a means to occupy and colonize borders, thereby guaranteeing the territorial protection. Decree No. 45 479 of 1959 properly highlights the legacy of these military colonies since their conception in Imperial Brazil, as observed:

Art. 40. It must always be kept in mind that the Military Border Colony, in addition to its military purpose, aims to establish local people, by creating conditions in remote and unpopulated points of the Amazon frontier that favor the congregation of the dispersed human elements, and the use of their labor in addressing the food security, particularly within emerging community. (Brasil, 1959)

During the military governments, large-scale projects were implemented in the Amazon region, driven by the perception that the Amazon was underdeveloped and underutilized, posing a threat to national sovereignty. These continuous geopolitical concerns existed despite a lack of frequent attention to potential climate damage, environmental conservation, and biodiversity preservation at the time.

Carvalho (2001) notes that during the Sarney government (1985-1990), new actors emerged on the political scene — including an ascendant environmental movement, both in Brazil and abroad — there was gradually an apparent shift in the government's discourse concerning environmental issues and the development of the Amazon region. This pressure resulted in the creation of the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the National Council of the Environment (CONAMA), and the government program *Our Nature*, representing initial efforts to integrate environmental concerns into the development model.

In this context, the Amazon not only attracts the interest of the AF but also a priority for at least two ministries: the Ministry of Environment and Climate Change, and the Ministry of Indigenous Peoples. Although the reasons for this interest may vary, the overarching goal is the same, prompting reflection on the pursuit of collaborative solutions capable of uniting and integrating the areas of action of these specific actors.

During the governments of Fernando Collor (1990-1992) and Itamar Franco (1992-1995), there was a continued increase in the importance attributed to environmental issues in official discourses. However, the predominant emphasis remained on matters related to security and territorial protection.

The political-strategic dimension also deserves attention. The National Defense Policy (NDP) is described as “the highest-level conditioning document for the planning of actions aimed at the defense of the Country” (Brasil, 2020, p. 7). This policy underscores the need to integrate the Amazon with the rest of the country, reinforcing both regional protection and national development.

From the Defense perspective, the NDP emphasizes that “in addition to the regions where political and economic powers are concentrated, priority should be given to the border strip, the Amazon, and the South Atlantic” (Brasil, 2020, p. 13, emphasis added). Additionally, the National Defense Strategy (NDS) outlines concern about the actions of foreign entities in the region:

The sustainable exploration and socioeconomic development of the Amazon will remain crucial for national integration. This requires increased capabilities to provide security and sovereignty, intensifying military presence and effective state action, and preventing exogenous entities from influencing local communities. (Brasil, 2020, p. 33)

Rodrigues and Kalil (2021) argue revitalization policies — such as large-scale infrastructures projects and state incentives for the development of agribusiness and other private enterprises in the Amazon — have led to significant negative social and environmental consequences. These include the perpetuation of structural violence, such as illegal mining and deforestation, international drug trafficking, the invasion and degradation of indigenous reserves and environmental protection areas, among other offenses.

In line with the authors’ viewpoint, it is pertinent to emphasize that the CMA was created in the context of “a series of relevant and complex problems in the Amazon region, such as the protection of the border against periodic attacks by foreign elements on the rubber plantations and the increasing importance of the problem of combating smuggling” (Brasil, 1956, n. p.).

During the colonial period, in October 1821, the Portuguese Crown unified the military establishment in the northern region of Brazilian territory by creating the Government of Arms of the Province of Pará. Headquartered in Belém, its jurisdiction covered the areas of the current states of Pará, Amapá, Amazonas and Roraima.

The CMA was officially created on October 27, 1956, by Decree No. 40 179 (Brasil, 1956). Initially headquartered in Belém, its jurisdiction extended over the Army units in Amazonas, Pará, northern part of Goiás (including the Municipality of Porto Nacional), part of Mato Grosso (Municipality of Aripuanã), and the Federal Territories of Amapá, Acre, Rio Branco (present-day Roraima) and Guaporé (now Rondônia).

In 1969, Decree No. 64 366 of April 17 (Brasil, 1969) relocated the headquarters of the CMA from Belém to Manaus, establishing the 12th Military Region within the same headquarters. It is worth highlighting the government's permanent vision of distributing military personnel throughout the Amazon region, a practice spanning the colonial and imperial periods, and continuing into the Republic phase.

It should also be noted that in July 2013, through Decree No. 8053 (Brasil, 2013), the Northern Military Command (CMN) was established in Belém-PA. This resulted in the separation of the CMN's territory, covering the eastern part of the Legal Amazon, from the CMA's territory, which covers the western portion of the Legal Amazon.

Consequently, the CMN's area of jurisdiction was defined to include the states of Pará and Amapá, as well as parts of Maranhão and Tocantins. Therefore, the strategic decision to separate the Army's Military Commands based in the Amazon Region (CMA and CMN), evidently aligned with the distinct physiographic criteria between Western and Eastern Amazonia, and was an integral part of the process of expanding the presence of the Brazilian State on the country's northern border.

Defense policies should be established as state policies, ensuring their full function by not being subject to governmental instability. De Almeida (2010) emphasizes the need for political consensus that underpins the national defense structure, bringing together military personnel, civilians, political parties, and society. This approach allows for management that transcends mere rivalries, enabling active participation in defining priorities, allocating resources, and drafting the budget.

However, defense policies do not currently hold a prioritized position on the Brazilian agenda, partly due to the many social needs that dominate discussions. This reality explains the significant difficulty in maintaining the regularity of programs established by the national defense system; urgent issues like hunger, health, and education take precedence in the country, relegating defense policies to a position of lesser importance.

It is evident that among the frequently addressed issues on the Brazilian defense agenda requiring special attention is the Amazon, along with the need to protect this territory against potential external and internal threats.

Regarding the social dimension, it is worth noting that the absence of government policies aimed at promoting social inclusion through the encouragement of regular economic activities contributes to the poverty experienced by population in border areas. This condition is the primary reason why residents of these regions become involved in, and even participate in illegal activities, as pointed out by Amorim (2012).

The development of public policies reinforces interconnected aspects by recognizing the importance of promoting development to ensure the security and defense of the Amazon. The first edition of the NDS (Brasil, 2008) states that:

The sustainable development of the Amazon region will also come to be seen as an instrument of national defense: only it can consolidate the conditions to ensure national sovereignty over that region. Within the plans for the sustainable development of the Amazon, land regularization will play a fundamental role. To defend the Amazon, it will be necessary to free it from the condition of legal insecurity and widespread conflict in which, due to the lack of a solution to the land problem, it finds itself.

Why protect Amazon biodiversity?

The Amazon region is exceptionally rich in resources. Its biodiversity, soil and subsoil, energy potential, climate balance, and essential sources of drinking water collectively form a complex economy that is challenging to manage and protect. Examining biodiversity as a strategic resource of the 21st century requires reflection on historical explorations. In 1800, the renowned German naturalist Alexander Von Humboldt, accompanied by French botanist Aimé Bonpland, explored the rivers of the Amazon region, meticulously studying its diverse plant species. Humboldt, upon encountering the vast tropical forest, was profoundly impressed by its enormous variety of natural life, naming it *Hileia*, a term that subsequently gained international usage as a synonym for the Amazon (Amim, 2015).

The preservation of biodiversity has been the central focus of various events, both nationally and internationally. On these occasions, political-economic, sociocultural, and biological factors have been identified as elements directly linked to the use of Amazon forest resources (Lavilla, 1996).

One of the most controversial issues in biodiversity conservation is biopiracy, a growing concern in global environmental policy. Shiva (2001) highlights the potential losses that Brazil could face in the future if it fails to adequately protect its array of strategic resources.

Biodiversity in the region can also result in the spread of previously unknown diseases, transmitted by different vectors, which increases logistical demands on the health sector. All these elements, together with the diverse environments, require a high level of preparedness and deployment from the Armed Forces.

The vast distances in the Amazon define an area with extremely diverse vegetation, predominantly composed of dense forests, crisscrossed by rivers with varied characteristics. These river courses present significant adversity, especially during dry periods.

Compared to other regions, the states that forming the Legal Amazon have low population densities, as noted earlier, a result of their historical and economic development. The precarious infrastructure and immense distances contribute to a lack of local opportunities, resulting in a reduced state presence. This situation creates “power vacuums” that facilitate the expansion of illegal activities, particularly those related to the exploitation of strategic resources. According to Sawyer (2015),

[...] the division into municipalities combines very extensive areas, the size of many countries, sometimes with elongated shapes along rivers, with tiny populations. [...] The small population size and the distances make municipal management much more difficult in the interior of the Amazon than in other regions of Brazil. For example, few municipalities have the human and financial resources to set up an environmental department. (p. 39)

Natural resources constitute an essential part of the national heritage, and their protection is a fundamental measure to safeguard the country's interests and sovereignty. According to the Federal Constitution (Brasil, 1988), Article 20 designates certain assets as belonging to the Union, including:

III - lakes, rivers, and any watercourses within its domain, or that border more than one State, serve as boundaries with other countries, or extend to foreign territory or originate from it, as well as the marginal lands and river beaches;

[...]

V - natural resources of the continental shelf and the exclusive economic zone;

[...]

VIII - hydroelectric potential;

IX - mineral resources, including those from the subsoil;

XI - lands traditionally occupied by indigenous peoples.

Therefore, in the Amazon, such resources play a fundamental role in security and defense policies, such as strategic minerals, freshwater reserves, oil, forests with their biological diversity, among others. Pereira (2020) notes that in 2018

[...] metallic minerals accounted for about 80% of the total value of Brazilian mineral production. Among these substances, eleven stand out, accounting for 99.7% of the value of the production of this class, namely: aluminum, copper, chromium, tin, iron, manganese, niobium, nickel, gold, vanadium, and zinc. The value of these eleven minerals totaled 103 billion reais, with particular emphasis on the significant contribution of iron to this amount (69.9%). (p. 20)

The Amazon, vast and complex, represents one of the most crucial natural resources and, simultaneously, one of the most pressing challenges for Brazil and the world. As one of the largest biomes on the planet, its preservation not

only ensures global environmental sustainability but also as a fundamental component of national sovereignty and defense strategies.

In this context, the role of the BA and the CMA emerges as crucial, not only in safeguarding the Amazon but also in defining policies that balance environmental preservation with the country's strategic needs.

Strategic roles of the CMA in defense, security, and protection of the western Amazon

Strategic vocation refers to the inherent ability or propensity of a particular region, country, or entity to play a significant role in terms of strategy, security, or national interests. Identifying an entity's strategic vocation is crucial for guiding policies, planning, and decisions aimed at achieving specific strategic objectives.

This can be determined by a variety of factors, including geographical location, natural resources, infrastructure, military power, international relations, and other aspects that contribute to an area's influence or strategic importance.

From a military perspective, strategic vocations refer to the specific capabilities, functions, and abilities that a military institution possesses and develops to fulfill its missions and achieve its strategic objectives. These vocations are shaped by geopolitical contexts, perceived threats, available resources, and national priorities, and are essential for guiding the planning, organization, and employment of military forces in diverse operational scenarios.

Legal Amazon has an area of 5 015 146.008 km² which corresponds to 58.9% of Brazil's national territory. It's divided into Western Amazon and Eastern Amazon. The Western Amazon alone spans 1 961 183.48 km², accounting for 40% of the Legal Amazon territory, consisting of the states of Amazonas, Acre, Rondônia, and Roraima (IBGE, 2022).

The CMA is located in the Western Amazon. It was established on October 27, 1956, by Decree No. 40 179 (Brasil, 1956), with its headquarters in Belém, Pará. On April 17, 1969, Decree No. 64 366 (Brasil, 1969) moved the CMA's headquarters to Manaus, assigning it military jurisdiction over the Western Amazon states (Acre, Amazonas, Rondônia, and Roraima).

Throughout its 67 years of existence, the CMA has balanced its 'Strong Arm' role, primarily through actions based on Article 142 of the CF/1988: homeland defense, guaranteeing constitutional powers, and maintaining law and order (Brasil, 1988). Simultaneously, it extends a 'Friendly Hand',

under the scope of Complementary Law 97/1999 (Brasil, 1999). This includes supporting the Amazonian population during emergencies like water crises caused by river droughts, health crises, such as COVID-19 operations, and combating forest fires, among others.

The CMA is responsible for the defense and protection of approximately 25% of the national territory, covering 9925 kilometers of land borders shared with the Republic of Guyana (964 km), Venezuela (2199 km), Colombia (1644 km), Peru (2995 km), and Bolivia (2123 km), as shown in Figure 1. The CMA works alongside with the CMN in safeguarding the Amazon Rainforest, home to the largest biodiversity on the planet.

Figure 1. CMA Area of Operation – border lines



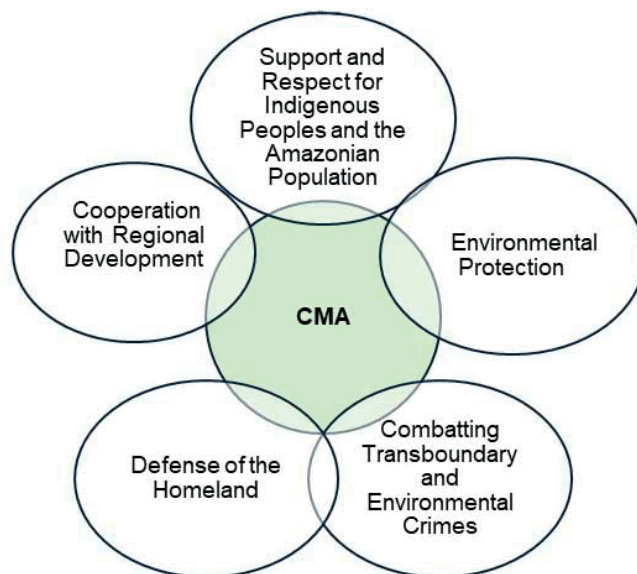
It is worth noting that the Brazilian Constitution (Brasil, 1988), in Article 20, Paragraph 2, defines the border strip, with its 150 km width, as a fundamental area for the defense of the national territory. It further stipulates that the occupation and use of this strip will be regulated by law. De Almeida Paim and Franchi (2019) observe that military operations in the border strip are subsidiary in nature, aiming to mitigate largely cross-

border crimes linked to international organized crime, as supported by Complementary Law No. 97, of June 9, 1999 (Brasil, 1999).

According to this same law, in its section II, article 17-A, the Army has “the mission of [...] cooperating with federal agencies, when necessary, in the repression of crimes of national and international repercussion, in the national territory, in the form of logistical support, intelligence, communications and instruction” (Brasil, 1999).

Due to the strategic importance of the region, the CMA has incorporated new Military Organizations into its structure, significantly increasing its personnel to approximately 20 000 military members. In fulfilling its core activity, the CMA supervises four Operational Large Units (GU), headquartered in these locations: the 1st Bda Inf Sl (Boa Vista-RR); the 2nd Bda Inf Sl (São Gabriel da Cachoeira-AM); the 16th Bda Inf Sl (Tefé-AM); and the 17th Bda Inf Sl (Porto Velho-RO). Additionally, the CMA includes the 12th Military Region, a Large Territorial Command responsible for providing logistics throughout the CMA’s area. The 2nd Engineering Grouping further supports the CMA, offering assistance for mobility, counter-mobility, protection, and the coordination of military works within its area of operation. Figure 2 illustrates the strategic vocations of the CMA.

Figure 2. Strategic vocations of the CMA



The CMA plays several vital roles in Western Amazon, reflecting its strategic vocations. First, its mission includes borders protection, actively preventing illegal activities such as smuggling, drug trafficking, and illegal

extraction of natural resources. Additionally, the CMA plays a fundamental role in homeland defense, safeguarding the integrity of the national territory against both internal and external threats. Regarding indigenous peoples, the CMA has operated within indigenous territories to ensure the protection of Amazonian biodiversity and the preservation of their cultures.

It is not uncommon to find in literature about the Spanish colonization process references to the Amazon as a paradise, often associated with the myth of *El Dorado*. There are variations related to the myth, depending on the traveler or location, the core belief among some native South America peoples was in the existence of an extremely rich kingdom or city, hidden deep within the jungle, east of the Andes Mountains (Tássio, 2013).

The author also describes that, far from the myth of the searching for cities covered in gold, for the Brazilian military personnel throughout the 20th century, the vision of the “Amazonian Eldorado” was related to the potential of resources that nature itself could provide in that region, which needed to be discovered and explored. The centuries-long search for “Eldorado” has been associated with the hope of finding wealth and material prosperity, or simply of alleviating poverty. Franchi (2013) observes that:

These feelings led countless men to try their luck in the Amazon region. The Portuguese Bandeirantes and missionaries were the best-known groups in previous centuries who entered the region. The Armed Forces attribute to the Bandeirantes an entire historical legacy of land ownership by the Brazilian nation. (p. 224)

Martins Filho (2001) notes that the environmental issue should not become a pretext for foreign intervention, so that the issue became a matter of defending national sovereignty. Consequently, throughout the 20th century, the perception that the AF would be responsible, albeit indirectly, for populating the region. For Franchi (2013):

[...] the colonizing vision guided part of the process of building the presence of the Armed Forces in the region, with the founding of military colonies and the involvement of institutions in projects linked not exclusively to defense, but also to regional development, such as highways and other infrastructure works. (p. 268)

The CMA plays an active role in environmental protection, as evidenced by operations carried out with other government agencies such as the IBAMA, the Chico Mendes Institute for Biodiversity Conservation (ICMBio), the National Indigenous Peoples Foundation (FUNAI), and the Federal Police (FP). These operations aim to combat illegal deforestation, illegal exploitation of natural resources, wildlife trafficking, and other activities that threaten biodiversity and environmental sustainability.

Methods

This study uses an exploratory and descriptive approach, based on bibliographical research and the analysis of official documents. We followed the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guidelines to ensure a systematic review. Our goal is to understand the environmental context of the Amazon's environmental context and the role of the AF, especially the CMA, in protecting and defending the region. The methodology was structured in three main stages: (1) bibliometric research, (2) data collection, and (3) data analysis.

Bibliometric research

The systematic search was carried out on Google Scholar using the following descriptors: “Amazon”; “environmental protection”; “Amazon Military Command”; and “Environment”.

Inclusion and exclusion criteria

- *Inclusion:* studies published between 2010 and 2025, peer-reviewed articles, and relevant scientific works, with at least two citations that specifically address the intersection of the Amazon Military Command and environmental protection.
- *Exclusion:* studies outside the Amazon's geographic scope, works without full-text access, and publications in languages other than Portuguese, English or Spanish.

Selection of works

The selection was conducted in three stages:

- *Identification:* searching databases and removing duplicate studies.
- *Screening:* reading titles and abstracts to exclude irrelevant studies.
- *Eligibility:* evaluating the full text to verify inclusion criteria.

Data collection

In addition to the articles found in the bibliometric research, official documents issued by the Ministry of Defense and the Brazilian Army were analyzed, including the Strategic Plan of the CMA and Military Operations Reports. These documents were chosen for their reliability and relevance, providing current and official data on the CMA's activities.

Data analysis

Data analysis was conducted using an inductive approach, which allowed us to identify concepts and understand the reality based on the author's observation as an Analyst at the Strategic Studies Center of the CMA, as well as collected data. This included major CMA operations and their outcomes in protecting the Amazon. The data were organized into two categories: publications related to the topic and results of military operations.

Results

This section presents the results of bibliographic research. From the extraction and processing of data from the selected works on the investigated topic (Table 1), a co-occurrence analysis was performed (Table 2). The most frequent keywords were also identified, providing a comprehensive view of the predominant themes.

Table 1. Results of the bibliographic research

Title	Keywords	Author(s)	Year	Citations
The environmental issue and the increasing presence of the Brazilian Army in the Legal Amazon at the end of the 20th century	Amazon, Brazilian Army, Environmental history	Franchi, T., Bursztyn, M., Drummond, J. A. L.	2011	19
The contribution of the Brazilian Army to the defense and development of the Western Amazon	Brazilian Army, Western Amazon, National Defense, National Development, Well-being	Torres, A. L.	2020	2
Wings that devastate the Amazon: An analysis of the scenario of landing strips and irregular flights that support illegal mining in the Yanomami Indigenous Land	Brazilian Amazon, Yanomami Indigenous Land; Illegal mining; Landing strips and clandestine flights; Operation Yanomami Shield	Furtado, E. B., Franchi, T., Rodrigues, L. B., Simões, G. F.	2024	4

Franchi *et al.* (2011) discuss the relationship between environmental issues and the increasing military presence of the Brazilian Army in the Amazon region, particularly from the 1970s to the early 21st century. During the 1970s and 1980s, military units were strategically positioned near major development projects, aligning with the prevailing ideology of integrating the Amazon rather than ceding it to external pressures. This approach served as a

response to both national interests and international environmental criticism.

The work by Torres (2020) describes the contributions of the Brazilian Army to the defense and development of the Western Amazon region, specifically concerning the structure and capabilities of the CMA in fulfilling its constitutional missions and subsidiary actions.

Finally, Furtado *et al.* (2024) emphasizes the implications of illegal gold mining, linking it to environmental crimes and the involvement of organized crime. The article contributes to understanding the dynamics of illegal gold mining on the Amazon, highlighting the interconnection between air transport and environmental degradation.

Despite its relevance, there are few academic productions, specifically on the subject in question. This limitation reflects the need for further research on the topic, highlighting a gap in the literature that this study seeks, at least partially, to fill. However, it is possible that there are other works published on the subject but are not indexed in the researched database.

Table 2. Co-occurrence matrix of terms used in selected articles

Terms	Co-occurrence										
	AM	BA	EI	IM	EC	IC	DE	IA	AT	ED	MP
AM	0	3	2	2	1	1	2	1	1	1	0
BA	3	0	0	0	0	0	2	0	0	0	2
EI	2	0	0	0	0	0	0	0	0	0	0
IM	2	0	0	0	1	0	0	0	1	0	0
EC	1	0	0	0	1	0	0	0	0	0	0
IC	1	0	0	1	0	0	0	0	0	0	0
DE	2	2	0	0	0	0	0	0	0	0	0
IA	1	0	0	0	0	0	0	0	0	0	0
AT	1	0	0	1	0	0	0	0	0	0	0
ED	1	0	0	1	0	0	0	0	1	0	0
MP	0	2	0	0	0	0	0	0	0	0	0

Legend: Amazon (AM), Brazilian Army (BA), environmental issues (EI), illegal mining (IM), environmental crimes (EC), international criticism (IC), development (DE), integration of the Amazon (IA), air transport (AT), environmental degradation (ED), military presence (MP).

The matrix reveals significant patterns, highlighting the main concerns and challenges related to the Amazon. One of the most prominent relationships

identified is the strong association between “Amazon” and “Brazilian Army”. The frequent co-occurrence of these two terms indicates the central role played by the AF in the region. This military presence, however, is not limited to security and defense; but it also extends to development initiatives.

The co-occurrence of “Brazilian Army” and “development” suggests that the Armed Forces are seen as relevant actors in promoting socioeconomic progress in the Amazon. The matrix also highlights the centrality of environmental issues in discussions about the Amazon, evidencing academic researchers’ concern with the impacts of human activities on the biome, especially the illegal exploitation of natural resources and the consequent environment degradation.

Other themes, although less frequent, were also relevant in the analysis. The presence of “international criticism” indicates that Amazon has been the object of global attention, with several actors expressing concern about the biome’s future. The importance of “Amazon integration” and “air transport” highlights the logistical challenges and the crucial need for infrastructure investment to promote the sustainable development of the region.

Operations of the CMA (2019-2024)

Based on the analysis of the data, the main contributions of the CMA and its operational and logistical readiness measures were highlighted, highlighting the vital importance of prioritizing the protection of the Amazon as an environmental and sovereignty issue, here some key operations.

In February 2022, the CMA led the first operation in the Javari Valley Indigenous Land (TIVJ), Brazil’s second-largest indigenous territory and home to the highest concentration of isolated peoples. The CMA operated for more than 120 days, with different types of actions such as: recognition of river axes, combating illegal mining and other illicit activities, civic-social initiatives, and borders recognition. During this operation, 44 dredges were destroyed, 91 were prevented from operating, and 82 kg of mercury were seized (Amazon Military Command, 2024c).

Operation Catrimani II primarily focused on removing miners from the Yanomami Indigenous Land (TIY). In this operation, 1559 m³ of timber were seized. Directly linked to mining, authorities confiscated 11.45 kilos of gold; 18 aircraft; 25 vehicles, approximately 92 000 liters of fuel, and seized or destroyed 121 dredgers and 477 engines (Amazon Military Command, 2024c; Franchi and Moreira, 2024).

These actions significantly reduced of mining areas in TIY, from 814 in 2022 to just 54 in 2024, that is, a reduction of 93%, according to data from the TIY illicit monitoring panel (Brasil, 2024). By 2024, the mines and

camps deactivated or abandoned during Operation Catrimani II covered approximately 760 hectares. Additionally, 26 unused airstrips were identified (Amazon Military Command, 2024c; Franchi and Moreira, 2024).

In 2023, the CMA integrated Operation Ágata, which focused on combating cross-border and environmental illicit activities, alongside conducting civic and social actions to benefit riverside and indigenous communities. During the operation, forces and resources from the Jungle Infantry Brigades, supported by the 12th Military Region, were deployed. Additionally, the Brazilian Navy, Air Force, Public Security Agencies, and Inspection Agencies contributed to the effort. As Table 3 illustrates, the operation achieved significant results.

Table 3.Results of Operation Ágata – 2023

Materials Seized/Destroyed	Seized values/Damage caused to criminals (US\$)
300 cubic meters of seized wood	80 000
5 578.78 kilograms of marijuana	638 000
236 dredges	49 900 000
1895 grams of gold	108 000
400 kilograms of cocaine	1 000 000
12 vehicles seized	382 000
16 aircraft seized	1 200 000
Cash seized	8 000
4 tons of cassiterite	650 000
6 tractors	154 000
24 boats seized	141 000

Source: Amazon Military Command (2024b)

In 2023, during the severe drought that affected the state of Amazonas, the CMA coordinated Operation Amanaci. This operation involved delivering over 22 000 food baskets, more than 2000 bundles of clean water, along with providing various medical and dental services, and dispensing over 40 000 medications to residents affected by the drought.

The data presented demonstrate the CMA’s activities between 2019 and 2023, covering 9925 kilometers of borders and areas within the four states under its responsibility. However, Franchi *et al.* (2024) point out that seizures carried out in cooperation with other government agencies are often reported by those agencies rather than the CMA itself.

The strategic vocations of the CMA go beyond participation, coordination, and executing defense, security, and protection operations in the Western Amazon. Since 2021, this Major Operational Command has focused on enhancing the infrastructure of its Military Organizations by installing equipment and systems designed for the supply and use of clean, sustainable energy, such as photovoltaic power plants within the Special Border Platoons (PEF).

The 6th Construction Engineering Battalion (6th BEC), located in Boa Vista (RR), developed a photovoltaic plant project at the 5th PEF in Auaris (RR) (Figure 4). Utilizing an AC-COUPLED architecture (Alternating Current Coupling) and a modularized system, this project enabled energy storage and generation, with an installed power of 198 kW and a capacity of 248.4 kWh. This initiative allowed the PEF to eliminate its reliance on air-transported diesel fuel for generators, thereby contributing to cost-effectiveness and providing clean, carbon-emission-free energy.

Figure 4. Photovoltaic plant at the 5th PEF (Auaris/RR)



Source: Department of Construction Engineering (2020)

In November 2023, the CMA launched an initiative to plant approximately 20 000 native Amazonian trees. Titled *Every Soldier, A Tree*, this action involved every member of the CMA in planting a tree, aiming to contribute to the preservation of the Amazonian flora. In a joint effort with Petrobras, the Manaus garrison alone received 7,000 seedlings of native species such as açai, munguba, and ingá macaco. Other Military Organization headquarters also participated in the initiative. The partnership between the CMA and Petrobras demonstrated the importance of institutional integration for conserving of the Amazon biome (Amazon Military Command, 2023).

In December 2023, the 2nd Engineering Group (2nd Gpt E) completed the second phase of the Modernization Project of the Energy Storage System of the Photovoltaic Plant, of the 7th PEF, located in Tunuí (AM) (Figure 5). This project benefited from the cooperation of the Itaipu Binacional company, which mobilized engineers and technicians from the electricity sector to support the execution and installation of the plant (Brazilian Army, 2023).

Figure 5. Photovoltaic plant of the 7th PEF (Tunuí/AM)



Source: Brazilian Army (2023)

With the activation of the photovoltaic plant and the energization of the transmission line, the 7th PEF now benefits from 24 hours of clean, renewable energy generation, significantly enhancing its operational capability.

Military Engineering, in support of regional development, carried out significant infrastructure projects, under the supervision of the following Military Organizations: 6th BEC (Boa Vista/RR) – paving of BR-432/RR, 21st Cia E Cnst (São Gabriel da Cachoeira/AM) – maintenance of BR-307/AM, 7th BEC (Rio Branco/AC) – re-adaptation of the Santa Rosa do Purus/AC aerodrome, and 5th BEC (Porto Velho/RO) – implementation of side roads in JARU/RO (Department of Construction Engineering, 2020).

Whether in military operations, subsidiary activities, or infrastructure improvements, the complex environment in the Amazon rarely allows for simple solutions or the involvement of a single actor. Instead, it demands integrated work from various agencies and institutions, each contributing their unique perspectives to address the region's challenges (Sant'ana Júnior *et al.*, 2023).

The collaboration among various governmental and institutional actors has significantly increased the capabilities and strategic vocations of the CMA, resulting in synergies that enhance the effectiveness of defense, protection, and security in the Western Amazon.

Final considerations

The strategic vocations of the CMA truly reflect the Amazon's importance to both Brazil and the world. Protecting the Amazon is not just an environmental issue; it is also about national security, sovereignty, and development. Therefore, it is vital that the Army continues to play an active role in the protecting and preserving of this national treasure, promoting the balance between Brazil's strategic needs and safeguarding the Amazon's natural resources.

As demonstrated, the CMA's activities require a collaborative environment. They work closely with federal government agencies like IBAMA, FUNAI, ICMBio, Federal Police, along with state and municipal entities, to protect of Amazonian biodiversity. This cooperation involves tasks like providing logistical support for operations, command and control, strategic communication, information operations and electronic warfare, and intelligence activities to identify locations and individuals involved in environmental crimes.

The vast distances, limited infrastructure, and territorial restrictions — especially in indigenous lands — present significant challenges for the state. At the same time, these conditions create opportunities that unfortunately facilitate the actions of external agents and criminal groups. This is particularly evident in activities like drug trafficking, arms trafficking, and the illegal exploitation of mineral and plant resources.

It is important to highlight that ensuring order and fostering progress in the Amazon region are strategically crucial for reducing long-standing social inequalities. In this way, regional development can act as a barrier to the occurrence of illicit activities.

Lastly, the CMA's strategic vocations in the Amazon cover a broad range of tasks and responsibilities ranging from territorial and border defense to environmental protection, harmoniously contributing to socioeconomic development.

Notes

¹ In this work, the focus will be on Western Amazonia, in Brazilian territory, covering by the states of Acre, Amazonas, Rondônia and Roraima, and the area of operation of the Amazon Military Command.

References

- AMAZON COOPERATION Treaty Organization (ACTO) (2024). *Quem somos?* <https://otca.org/pt/quem-somos>
- AMAZON MILITARY Command (2023). *CMA deve plantar até o Dia da Bandeira, 20 mil árvores nativas da região*. <https://cma.eb.mil.br/index.php/mais-noticias/cma-deve-plantar-ate-o-dia-da-bandeira-20-mil-arvores-nativas-da-regiao>
- AMAZON MILITARY Command (2024a). *Vocações Estratégicas*. <https://nee.cma.eb.mil.br/voca%C3%A7%C3%B5es-estrat%C3%A9gicas-do-cma.html>
- AMAZON MILITARY Command (2024b). *Ficha de Informações de Ações Subsidiárias – 2023*.
- AMAZON MILITARY Command (2024c). *Resultados das operações do CMA e organizações militares subordinadas entre 2022 e 2024*.
- AMIM, M. M. (2015). A Amazônia na geopolítica mundial dos recursos estratégicos do século XXI. *Revista Crítica de Ciências Sociais*, 107, 17-38. <https://doi.org/10.4000/rccs.5993>
- AMORIM, M. A. B. M. (2012). *A Problemática da Segurança Pública na Fronteira Brasil Bolívia com Foco no Estado do Mato Grosso*, 84-101. [Specialization thesis, Escola Superior de Guerra].
- ARAÚJO, K. (2006). *A securitização do desenvolvimento da Amazônia e o TCA* [Master's thesis, Instituto Rio Branco], 153 p.
- BECKER, B. (2009). *Amazônia: geopolítica na virada do III milênio*. Garamond.
- BECKER, B. K. (2001). *Revisão das políticas de ocupação da Amazônia: é possível identificar modelos para projetar cenários?* https://docs.ufpr.br/~adilar/GEOPOL%C3%8DTICA2019/Geopolitica%20da%20Amazonia/Amaz%C3%B4nia_Pol%C3%ADtica%20de%20ocupa%C3%A7%C3%A3o.pdf
- BENATTI, J. H. (2007). Internacionalização da Amazônia e a questão ambiental: o direito das populações tradicionais e indígenas à terra. *Revista Amazônia Legal de Estudos Sociojurídico-Ambientais*, 1(1), 23-39. <https://www.avesmarinhas.com.br/Internacionaliza%C3%A7%C3%A3o%20da%20Amaz%C3%B4nia%20e%20a%20quest%C3%A3o%20ambiental.pdf>
- BRASIL (1956). *Decreto nº 40.179, de 27 de outubro de 1956. Cria o Comando Militar da Amazônia*.
- BRASIL (1959). *Decreto nº 45.479, de 26 de fevereiro de 1959. Aprova o Regulamento das Colônias militares de Fronteiras na Amazônia*.
- BRASIL (1969). *Decreto nº 64.366, de 17 de abril de 1969. Transfere a sede do Comando Militar da Amazônia, cria 12ª Região Militar e dá outras providências*.

BRASIL (1988). *Constituição da República Federativa do Brasil*.

BRASIL (1999). *Lei Complementar nº 97, de 9 de junho de 1999. Dispõe sobre as normas gerais para a organização, o preparo e o emprego das Forças Armadas*.

BRASIL (2008). *Decreto Nº 6.703, de 18 de dezembro de 2008. Aprova a Estratégia Nacional de Defesa, e dá outras providências*.

BRASIL (2013). *Decreto Nº 8.053, de 11 de julho de 2013. Altera o Decreto nº 3.213, de 19 de outubro de 1999, que dispõe sobre as áreas de jurisdição dos Comandos Militares de Área e das Regiões Militares no Exército Brasileiro, para criar o Comando Militar do Norte*.

BRASIL (2016). *Livro branco de defesa nacional*.

BRASIL (2019). *Anuário mineral brasileiro*. Agência Nacional de Mineração.

BRASIL (2020). *Política Nacional de Defesa e Estratégia Nacional de Defesa*.

BRAZILIAN ARMY (2023). *Operação Tunuí leva energia solar para comunidade indígena*. <https://www.eb.mil.br/web/noticias/w/operacao-tunui-moderniza-sistema-e-leva-energia-solar-para-comunidade-indigena>

CARVALHO, G. (2001). Histórico e impacto das políticas públicas na Amazônia. In: Barros, A. C. (Org.). *Cadernos Temáticos: sustentabilidade e democracia para as políticas públicas na Amazônia*. Rio de Janeiro: FASE/IPAM. (Projeto Brasil Sustentável e Democrático).

DE ALMEIDA Paim, R., and Franchi, T. (2020). Military colonies in the north region of Brazil: Colonization, settlement and its legal architecture over the years. *Revista da Escola de Guerra Naval*, 26(3), 705-738. <https://doi.org/10.21544/1809-3191.v26n3.p705-738>

DE ALMEIDA, C. W. (2010). Política de defesa no Brasil: considerações do ponto de vista das políticas públicas. *Opinião Pública*, 16(1), 220–250. <https://doi.org/10.1590/S0104-62762010000100009>

DEPARTMENT OF Construction Engineering (2020). *Informativo 6, novembro/dezembro*. <https://www.calameo.com/read/00500934803a28e3dabe0>

FURTADO, E. B., Franchi, T., Rodrigues, L. B., and Simões, G. F. (2024). Wings that devastate the Amazon: An analysis of the scenario of landing strips and irregular flights that support illegal mining in the Yanomami Indigenous Land. *Revista (Re)definições das Fronteiras*, 2(6), 1-43.

FRANCHI, T., Bursztyn, M., and Drummond, J. A. L. (2011). The environmental issue and the increasing presence of the Brazilian Army in the Legal Amazon at the end of the 20th century. *Novos Cadernos NAEA*, 14(1), 21-41. <http://dx.doi.org/10.5801/ncn.v14i1.597>

FRANCHI, T. (2013). *Da conquista do inferno verde à proteção do paraíso tropical: o discurso brasileiro sobre a Amazônia no século XX* [Doctoral thesis, Universidade de Brasília]. <https://repositorio.unb.br/handle/10482/14525>

- FRANCHI, T., and Moreira, A. S. (2024). O braço forte do exército brasileiro NO COMBATE aos crimes ambientais: a desintrusão das terras indígenas. In T. Franchi, M. A. Ferreira, and T. E. Neto (Eds), *Defesa e segurança nas fronteiras amazônicas* (pp. 319-327). Editora IDESF de Estudos e Projetos. https://www.researchgate.net/publication/386453545_Defesa_e_Seguranca_nas_Fronteiras_Amazonicas
- IBGE (2022). *Cidades e Estados*. <https://www.ibge.gov.br/cidades-eestados/am.html>
- LAVILLA, E. O. (1996). Reflexiones sobre la protección de la biodiversidad Amazónica. In C. Pavan (Org.), *Uma estratégia latino-americana para a Amazônia* (1). UNESP.
- MARTINS FILHO, J. R., and Zirker, D. (2001). Forças Armadas, Soberania Nacional e Defesa da Amazônia. *Estudos de História*, 8(1), 253-300, Editora da UNESP.
- MATOS, S. R. R. (2014). Segurança e desenvolvimento nas políticas de defesa dos países da Organização do Tratado de Cooperação Amazônica. *Boletim Meridiano* 47, 15(144), 10-16. <https://periodicos.unb.br/index.php/MED/article/view/4947>
- PEREIRA, A. D. L. (2020). *O papel do Exército Brasileiro na defesa dos recursos naturais estratégicos brasileiros da Amazônia* [Specialization thesis, Escola de Comando e Estado-Maior do Exército]. <https://bdex.eb.mil.br/jspui/handle/123456789/8718>
- RODRIGUES, T., and Kalil, M. (2021). A military-green biopolitics: The Brazilian Amazon between security and development. *Brazilian Political Science Review*, 15(2), e0005. <https://doi.org/10.1590/1981-3821202100020006>
- SANT'ANA JÚNIOR, T. P., Silva, M. V. G., Triani, W. R., and Franchi, T. (2023). *Amazônia: como desenvolvê-la com preservação ambiental, justiça social e cuidado com todos amazônidas?* Observatório Militar da Praia Vermelha, ECEME. <https://ompv.eceme.eb.mil.br/geopolitica-e-defesa/amazonia-dimensao-geopolitica-e-meio-ambiente/655-amazonia-desenvolve-preservacao-ambiental-justica-social-cuidado-todos-amazonidas>
- SANT'ANA, M. V. R. (2023). *As Operações de GLO Ambiental 2019-2021: a influência internacional na politização das ações em prol da preservação do Meio Ambiente no Brasil* [Specialization thesis, Escola de Comando e Estado-Maior do Exército]. <https://bdex.eb.mil.br/jspui/handle/123456789/13721>
- SAWYER, D. (2015). *População e desenvolvimento sustentável na Amazônia*. Fundo de População das Nações Unidas.
- SHIVA, V. (2002). *Water wars: Privatization, pollution, and profit*. Between the Lines Press.

- SILVA, M. V. G. (2024). Comando Militar da Amazônia: o vetor da relação entre o Exército Brasileiro e os Povos Originários na Amazônia Ocidental. *Revista Geopolítica Transfronteiriça*, 8(1), 1-17. <https://periodicos.uea.edu.br/index.php/revistageotransfronteirica/article/view/3687/2029>
- TORRES, A. L. (2020). *A contribuição do Exército Brasileiro para a defesa e desenvolvimento da Amazônia Ocidental* [Specialization thesis, Escola Superior de Guerra]. <https://repositorio.esg.br/handle/123456789/1123>