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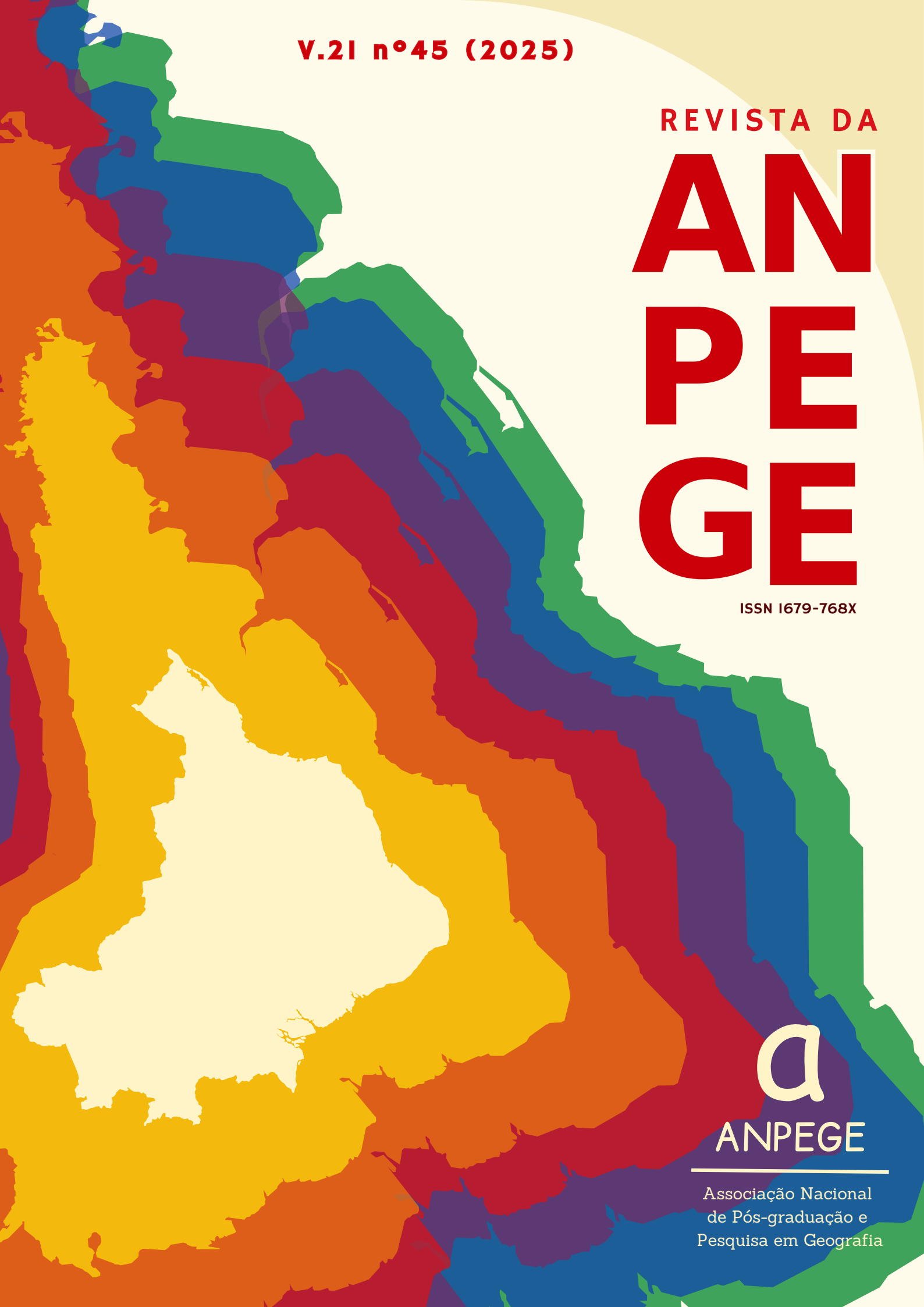

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DOSSIÊ AMAZÔNIA, AMAZÔNIAS

Political structure and the establishment of the palm oil culture in the rural space of the Brazilian Amazon

Estrutura política e a consolidação da dendeicultura no espaço rural da Amazônia

Estructura política y el estabelecimiento de la cultura de la palma de aceite en el espacio rural de la Amazonía Brasileña

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ABSTRACT: The evolution of oil palm cultivation in the Amazon has been shaped by various political and economic forces, notably through the National Program of Production and Use of Biodiesel (NPPUB) and the Agroecological Zoning of Palm Oil (ZAE-Palm Oil). This study examines the roles of the State and companies in expanding and perpetuating oil palm in the region. Through literature review and fieldwork, three phases were identified: the experimental phase (1940-1970), the pre-NPPUB period (1970-2004), and the NPPUB period (2004-present). While integrating family farming into the palm oil chain has provided income and autonomy, it has also fostered land subversion for capital gain, causing dependency and tension between market interests and rural communities, challenging long-term sustainability.
Keywords: commodity crop; environmental policies; sustainability; neoextractivism; environmental justice.

RESUMO: A evolução do cultivo de dendê na Amazônia foi moldada por forças políticas e econômicas, destacando-se o Programa Nacional de Produção e Uso de Biodiesel (PNPB) e o Zoneamento Agroecológico da Palma de Óleo (ZAE-Dendê). Este estudo examina o papel do Estado e das empresas na expansão e perpetuação do cultivo de dendê na região. Através de revisão bibliográfica e trabalho de campo, foram identificadas três fases: a fase experimental (1940-1970), o período pré-NPPUB (1970-2004) e o período NPPUB (2004-presente). Embora a integração da agricultura familiar na cadeia produtiva do dendê tenha proporcionado geração de renda e autonomia, também promoveu a subversão da terra para ganhos de capital, criando dependência e tensão entre os interesses de mercado e as comunidades rurais, desafiando a sustentabilidade de longo prazo.
Palavras-chave: commodities; políticas ambientais; sustentabilidade; neoextrativismo; justiça ambiental.

RESUMEN: La evolución del cultivo de palma aceitera en la Amazonía ha sido moldeada por fuerzas políticas y económicas, destacándose el Programa Nacional de Producción y Uso de Biodiésel (NPPUB) y el Zonificación

Agroecológica de la Palma de Aceite (ZAE-Palma Aceitera). Este estudio examina el papel del Estado y las empresas en la expansión y perpetuación del cultivo de palma aceitera en la región. A través de revisión bibliográfica y trabajo de campo, se identificaron tres fases: la fase experimental (1940-1970), el período pre-NPPUB (1970-2004) y el período NPPUB (2004-presente). Aunque la integración de la agricultura familiar en la cadena productiva de la palma aceitera ha generado ingresos y autonomía, también ha promovido la subversión de la tierra para el beneficio del capital, creando dependencia y tensión

Palabras-clave: cultivo comercial; políticas ambientales; sostenibilidad; neoextractivismo; justicia ambiental.

1. Introduction

The palm oil cultivation in the Amazon has undergone various stages, evolving from experimental phases to large-scale projects. This industry did not reach an established condition by itself, being strongly stimulated by many State actions. Programs such as the National Program for Production and Use of Biodiesel (NPPUB), National Program of Family Farming Strengthening (PRONAF - Programa Nacional de Fortalecimento da Agricultura Familiar in Portuguese) and the Agri-ecological Zoning of Palm Oil for Deforested Areas in the Amazon (ZAE-Palm Oil) provided the advance of the culture of palm oil over space, modifying the territory's use, social relationships and causing environmental impacts (NAHUM; SANTOS; SANTOS, 2020).

At the beginning of 21st century, the palm oil was positioned as a promising crop for the regional development of the Amazon, following the global demand for palm oil and the trend on expansion of production in the tropical countries as seen in Malasya, Thailand, Indonesia, Colombia and Nigeria. In Brazil, the vigorous promotion of palm oil cultivation within this context was based on the rhetoric of economic and social integration, driven not only by favorable climate conditions but also by its high productivity, sustainable initiative and economic market trends (BECKER, 2010; HOMMA; VIEIRA, 2012).

Major international scale instruments such as the Roundtable on Sustainable Palm Oil (RSPO), created in 2004, strongly influenced the Amazonian rural space, by setting up different patterns of land management for palm oil cultivation, affecting family farmers way of living. In addition to it, the Brazilian Program of Sustainable Palm Oil (PSOP), from 2010, spread the idea of a sustainable-based palm oil integrated to family farming, stablishing new dynamics in the relations of antagonistic actors on the palm oil expansion process, where less favorable portions of the rural society started to accept and being part of the productive chain of an historically oppressive palm oil agroindustry. These

instruments also affected communities outside the productive chain, such as riverside people, quilombolas, indigenous and peasants, generating new conflicts and alliances (BECKER, 2010; CÓRDOBA; ABRAMS; SELFA, 2022).

However, in 2019 the PSOP was archived, shutting down the program but perpetuating its discourse through the ZAE-palm oil. Thus, the main remaining instruments that still operates at national scale for palm oil cultivation are the NPPUB and the ZAE-Palm Oil. This paper brings into question the political-economical context that influenced the construction of a political structure designed for palm oil, and how this political structure operates in the perpetuation of the palm oil culture - described by Nahum and Santos (2022) as a spatial process facilitated by collaborations between the State and the business sector, enabling the expansion of palm oil cultivation - as a unique solution for the rural Amazon. The Brazilian environmental laws are also considered under a dubious context, making debatable the reliability of the sustainable banner promoted by programs and companies of palm oil.

Understand the foundation behind the NPPUB and ZAE-Palm oil provides a clear perspective on the intention to generate rural inclusion and sustainable production, when in fact this political structure acts by territorial dominance for capital reproducing. The adopted definition of "political structure" refers to a process of coordinating State actions, manifested through the release of programs, plans, projects and laws. Therefore, this paper will focus on the NPPUB and ZAE-Palm Oil. To achieve it, a thorough literature review was conducted in the official documents of NPPUB and ZAE-palm oil, major environmental laws and scientific papers, supported by fieldworks at the Arauai settlement and Quilombo Jambuaçu, where interviews with family farmers, quilombolas and observations of the social life and work were conducted.

The major assumption is that the territorial dynamics of the palm oil culture in the eastern Amazon are associated to a political structure that made it possible to transform the landscape and spatial setup of the places and regions integrated by the palm oil production chain. The objective is to relate environmental law, public policies and the expansion process of the palm oil culture in the Amazon, reflecting on and identifying the political moments and the enabling policies that transformed the rural space, resulting in the proliferation of palm oil crops in the Brazilian Amazon.

2. Methodology

We used Google Scholar, Scientific Eletronic Library Online (Scielo) and *Periódicos* CAPES as platforms for searching articles. The search for official documents were made through the webpage of *Empresa Brasileira de Pesquisa Agropecuária* (EMBRAPA)[1] and Google. Laws, decrees and

[1] https://www.embrapa.br/

ordinances were obtained through *Portal do Planalto*[2], the official webpage from the Brazilian government.

The main keywords for searching were, both in English and Portuguese: “Palm oil/Dendê”, “Palm oil culture/Dendeicultura”, “Palm oil and environmental impacts/Dendê e impactos ambientais”, “Palm oil and the Amazon/Dendê e Amazônia”, “Palm oil and social impacts/Dendê e impactos sociais”, “Expansão do dendê/Palm oil expansion”. Articles published between 1950 and 2024 were used to create a timeline of events.

The literature review on the establishment process of palm oil culture in the Amazon allows us to identify distinct periods, based on state actions. Thus, we delineate a period of “Experimental phase” spanning from 1940 to 1980, characterized by an experimental phase. The “period before NPPUB”, ranges from 1980 and 2004. Lastly, we identified the “period of NPPUB”, from 2004 until the present. The purpose of this periodization is to highlight the continuities and ruptures in the consolidation process of the palm oil culture.

To build this periodization, we meticulously analyzed various public documents related to laws, programs, and projects that may directly or indirectly contribute to the establishment of palm oil culture in the Amazon. Additionally, our discussion is underpinned by the wealth of knowledge accumulated through fieldwork conducted in the rural areas of the microregion of Tomé-Açu, facilitated by the research project "Palm Oil Observatory". Our fieldwork included investigations in the Arauai settlement, where family farmers are integrated into the palm oil production chain, and at the Quilombo Jambuaçu, where the community faces the repercussions of territorial pressure from palm oil companies. However, for this article, we have presented our observations from these fieldworks within a broader analytical framework. Articles specifically focused on the contexts of Arauai and Jambuaçu are currently under development.

3. Results and Discussion

3.1. Experimental phase (1940 – 1970)

In 1940, the economic foundation of the Amazon rested on rubber exploration, spurred by the speech of the president Getúlio Vargas, which promoted the “march to the west”. The representation in the speech was filled with symbols that stimulated the “conquer of the territory” as an expression of power from the Brazilian New State. This government sought the national economic integration through the colonization of regions considered “far away and uninhabited” (ANDRADE, 2010). Consequently, an image of the Amazon as a “jungle that devour man”, where the environment reigns over the human condition, was being draw and reinforced.

[2] https://www4.planalto.gov.br/legislacao

The construction of an imaginary depicting an underused Amazon was essential to justify its exploration. This strategic narrative was not employed for the first time, nor would it be the last, portraying the Amazon as a region in need of external intervention where the "technique" and "development" provided by the state should supersede the "delay" found in the Amazon (SECRETO, 2007).

This representation of the region aimed to promote efforts to integrate it into the interests of the national and international capital. Under this context, the first seeds of *Elaeis guineensis* were planted in the Lira Castro settlement, in the state of Pará, in 1942. The introduction of palm oil was discreet and directed towards specific interest groups, not directly tied to the development plans of the Amazon at the time. This marked the beginning of the experimental phase of palm oil cultivation in the Amazon (ANDRADE, 2010; HOMMA, 2016).

From 1957, with the publication of Condurú (1957) "Notas sumárias sobre a cultura do dendê na Amazônia" (Brief Notes on the Oil Palm Culture in the Amazon) we can trace the initial indications of the interest in introducing palm oil crops to the agricultural frontier that was colonizing the Amazon, from a scientific perspective, where EMBRAPA led the researches on palm oil genetic and production improvement. At the same time, starting from the mid-1950s, investments in palm oil research were conducted by official government institutions such as EMBRAPA, Agronomical Institute of North (IAN - *Instituto Agronômico do Norte*), and Superintendence of the Amazon Economic Valorization Plan (SPVEA - *Superintendência do Plano de Valorização Econômica da Amazônia*), aiming to assess the biological feasibility considering the climate characteristics of the Amazon.

Several significant events marked the establishment of the experimental phase, including the partnership between IAN and SPVEA for the production of palm oil seedlings in 1955 and the pilot project between the Amazon Development Superintendency (SUDAM) - a public government agency that replaced SPVEA in 1966 - and IRHO. A notable outcome of this context was the collaboration between SUDAM and the company Ovídio Miranda Brito (currently Denpasa) to cultivate 3,000 hectares of palm oil in the municipality of Benevides, Pará, which subsequently paved the way for partnerships between companies and the state (SOUSA; MACEDO, 2019). During this period, there was a noticeable trend towards establishing a productive model based on privatization, culminating in the complete transfer of SUDAM's crops to private initiative years later.

The initial conditions for cultivating palm oil crops in the Amazon were established in a context where concerns about environmental damages and impacts were not majorly prioritized by society or politicians. The prevailing concept of the agricultural frontier fueled the representation of the Amazon as a "world's barn". During this period, only a few outdated laws addressed environmental protection initiatives. It was not until 1965, with the enactment of Law Number 4,771, establishing the

New Forest Code, that a significant legal framework began to take shape regarding environmental matters related to land use as private property (SPAROVEK et al., 2011).

The New Forest Code was introduced as a guiding instrument to preserve forests, particularly through the incorporation of Permanent Preservation Areas (PPA) and Legal Reserve Areas (LRA) (the latter was included only in 2001 through a provisional measure). However, this new mechanism faced criticism and rejection from farmers and rural companies. The irregularity of several properties in complying with the established conditions, especially in the initial years of the law, may be attributed to the stringent requirements, ambiguous definitions, and/or a lack of supervision (SPAROVEK et al., 2011).

This rejection is also linked to the obligation to restore and maintain PPA's and LRA's. The latter was required to adhere to a minimum percentage of 80% for properties located within the Amazon. From the producers' perspective, these conditions served as barriers to agricultural development as they restricted land use to preserve native vegetation. On the flip side, this law represented significant progress in environmental protection, especially considering the ongoing expansion of the agricultural frontier in the Amazon. The legislation recognized forests as "goods of common interest to all inhabitants of the country exercising the right of property" (BRASIL, 1965).

However, the interests in attracting capital reveals an ambiguity in the principles behind Brazilian environmental law. Initially, it appeared that the country was aligning itself with international sustainability trends, especially after the enactment of the National Environmental Policy Act (NEPA) in 1969, in the United States of America. This act mirrored the first large-scale American law addressing the assessment of environmental impacts caused by federal agencies (SÁNCHEZ, 2020). In Brazil, the economic-political domain often adjusts itself at various levels, legalizing practices and creating exceptions that, in different circumstances, would be forbidden, aiming to preserve its hegemony, as evident in the following section of the Forest Code.

> "Total or partial suppression of forest from permanent preservation will be admitted only with previous authorization of the Federal Executive Power when necessary to the execution of construction, plans, activities or projects of public utility or social interest" (BRASIL, 1965).

These artifices are frequently categorized, in a one-sided manner, as "public utility" or "social interest". It is considered one-sided because there is minimal meaningful social participation in the decision-making processes, revealing the unequal power dynamic between the state and society (CASTRO, 2017). In the context under discussion, society is represented by local communities, including indigenous and riverside people, who generally possess less economic and political influence. This mechanism serves the purpose of garnering population acceptance for the measures taken by the state to materialize its interests.

From the year 2000, various examples of this scenario emerge in the dynamic of the Amazon. In the context of the palm oil culture stands out the cases of the quilombo Jambuaçu, settlement Arauai, community of Forquilha (NAHUM; SANTOS; SANTOS, 2020) and indigenous territory of Turé-Mariquita (DAMIANI et al., 2020). Castro (2017) provides an interesting observation about how the construction of infrastructures attests to the materialization of the development narrative regarding the advancement of the agricultural frontier and the establishment of agri-business under the State's influence. All these mechanisms occur simultaneously, forming an interdependent relationship.

> Considering this perspective, the constructions of transport engineering were relevant to the advance of the agricultural and economic frontier […]. Colonization, roads and big projects formed pillars of the national integration policies. Anyway, the advance under big spaces demands the construction of infrastructure. Within colonization, also was made effective the expansion of agriculture. (CASTRO, 2017, p. 24)

This process is intensified during the cycle of progressive governments in the early 21st century, explicitly marking neoextractivism as a State productive orientation—a period we will delve into further in the following topics. However, during this initial phase, the relationship between the agricultural frontier and the palm oil culture was still considered embryonic. Apart from the technical cooperation between SPVEA and IRHO mentioned earlier—a substantial project covering 1,500 hectares of crop and a power plant for processing fresh fruit bunches—another noteworthy example from this early period was the project initiated by the Pará agricultural secretariat, aiming to establish 1,500 hectares of small plantations in the state (MÜLLER; JÚNIOR; FILHO, 2006).

These projects, as described by Alier (2000) and Castro (2017), signify a manifestation of power over the territory — a "political conception resulting from the interactions of forces and actors with unequal power capacities and antagonistic objectives". Consequently, by establishing a space rich in infrastructure, a model heavily reliant on natural resources is developed and perpetuated. In the case of palm oil culture, this is evident through the construction of roads across forests, extensive use of water resources, and the application of pesticides and fertilizers. In the legal domain, this power is manifested in the 136 alterations made to the New Forest Code (Law Number 4,771) from its inception until its revocation in 2012. These changes were made to adapt the law to accommodate the interests of companies and the state.

However, is challenging to empirically prove the relationship between the advancement of palm oil crops and deforestation in this context, given the lack of technologies available to generate such data at that time. Additionally, weak supervision and monitoring, stemming not only from the absence of technology but also from limited human resources, further facilitated the perpetuation of irregularities in rural properties. This lax oversight contributed to the unchecked expansion of the agricultural frontier, resulting in environmental and social damage onward, especially in the establishment of palm oil culture in the Amazon.

The projects and privatization plans mentioned above, initiated in the early 1970s, such as those involving SUDAM, marked the onset of a period characterized by the Amazon Development Plans (ADP's). These plans, conceived and maintained by SUDAM, introduced political actions with the goal of integrating the Amazon into the economic growth model, promoting its occupation, and reaffirming national sovereignty over this segment of Brazilian territory. Through these plans, a comprehensive territorial, social, and economic reordering was set in motion in the region (NAHUM, 2011).

During this period, data regarding the quantity produced, area allocated for harvesting, and locations of plantations were highly inaccurate. However, by the end of this period, it was estimated that there were 3,000 hectares of palm oil crops in the municipality of Santa Bárbara (formerly known as Benevides) in the state of Pará, along with 35 hectares in the state of Amapá. Additionally, there were thousands of seedlings available for planting and numerous plans for pilot plantations of palm oil (HOMMA, 2016).

3.2. Pre NPPUB (1970 – 2004)

Starting from 1970, environmental concerns gained global attention, particularly after the Stockholm Conference in 1972. Topics such as climate change and sustainability were discussed on a global scale for the first time. Despite the presence of the Brazilian committee at this conference, the developmentalist orientation, driven by large-scale projects in mineral exploration, agriculture, livestock, hydropower plants, and metallurgy, remained prevalent in the ADP's.

Between 1964 and 1985 Brazil was facing a military dictatorship, and during this period persisted the ADP's speech based in "filling the empty spaces".

> It is not surprising, as a geographic ideology, that in the mid-1970s, the Brazilian Amazon was ascribed an almost mythical condition. This attribution was related to an imaginary concept in which Latin America was deemed the most suitable space for the flourishing of a new humanity. This notion harks back to the Brazilian political debates of the early 21st century. (BOMFIM, 2010, p. 15).

The concept of development as unique thought and main goal acquires a more structured profile after the creation of SUDAM, where this new body carries the power of a political device, in which aims to determine and guide the national development and progress. Through this body, the policy of tax breaks for agricultural projects is applied, aiming to attract investments from the private market to the Amazon through public-private partnership model (JOANONI NETO; GUIMARÃES NETO, 2019). SUDAM can be viewed as an institution with specific attributions aimed at satisfying private and restricted interests of exogenous segments. It also embodies symbolisms from capital sectors seeking to exploit the forest, integrate spaces, fill "empties" and economically develop the region (NAHUM, 2011).

Within this context, the State endorses the reprimarization of the economy through deindustrialization. In this process, the state redirects investments toward the conception of low-value-added products, particularly in the export of agricultural commodities—a model deemed excessively predatory in terms of territorial use (CASTRO, 2017). This condition highlights the vulnerability of the market model adopted by the state, forming the foundation of the national economy. This model is strongly dependent on the international market, where prices are controlled externally.

In 1981, Brazil's environmental legislation advanced with the National Policy of Environment (PNMA), establishing environmental protection frameworks like the National System of Environment (SISNAMA) and principles emphasizing ecological balance and rational resource use. Complementing the New Forest Code, PNMA introduced key preservation tools, including environmental easements alongside LRAs and PPAs. However, despite additional mechanisms like the National Policy of Water Resources (1997), Environmental Crimes Law (1998), and National System of Conservation Units (2000), their implementation often faltered as state and capital interests overshadowed environmental principles during the intense Amazon agricultural expansion.

Deforestation rates in the Legal Amazon were alarming during the period of the Amazon Development Plans (ADPs), peaking in 1995 with 29,059 km² of deforested land[3]. During this time, palm oil crops were expanding in northeastern Pará, becoming one of the primary drivers of deforestation in the Moju region in the 1990s (ALMEIDA; VIEIRA; FERRAZ, 2020). This trend reflects the implementation of colonization policies and economic integration plans aimed at accelerating the agricultural frontier, driven by a recurring rhetoric of economic integration in the region.

This process is undertaken to sustain and enhance the production model of various enterprises acting as inducers of the agricultural frontier, spanning segments such as agriculture, livestock, mining, infrastructure or energy. These enterprises require the constant relaxation of environmental laws, and this legal weakening not only impacts the environment itself but also affects social and ethnic rights, leading to land conflicts and the expropriation of marginalized communities. Consequently, society bears the environmental costs of private economic operations (CASTRO, 2017).

In Brazil, there exists what Castro (2017) refers to as the paradox of advanced environmental law. While restrictive legal and institutional frameworks for environmental protection are established, the challenge of preserving standing forests becomes insurmountable due to the relentless expansion of capital into forested areas. This mechanism continually reconfigures and adapts to align with sustainable international trends, creating new dynamics that frustrate and undermine every environmental preservation initiative and the promotion of genuinely sustainable production models.

[3] http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes

This process is often hidden under a "greengrabbing" approach, which Backhouse (2013) defines as the land occupation through seemingly "peaceful" means, presenting interventions as ecologically sustainable projects and promoting the development of already anthropized areas.

From 1988 onwards, the area designated for cultivation of various crops, including palm oil, began to be quantified by the Municipal Agricultural Survey (PAM), affiliated with the Brazilian Institute of Geography and Statistics (IBGE). Thus, the area allocated for palm oil cultivation increased from 43,576 hectares to 87,553 hectares nationwide between 1988 and 2004 (see Fig. 1).

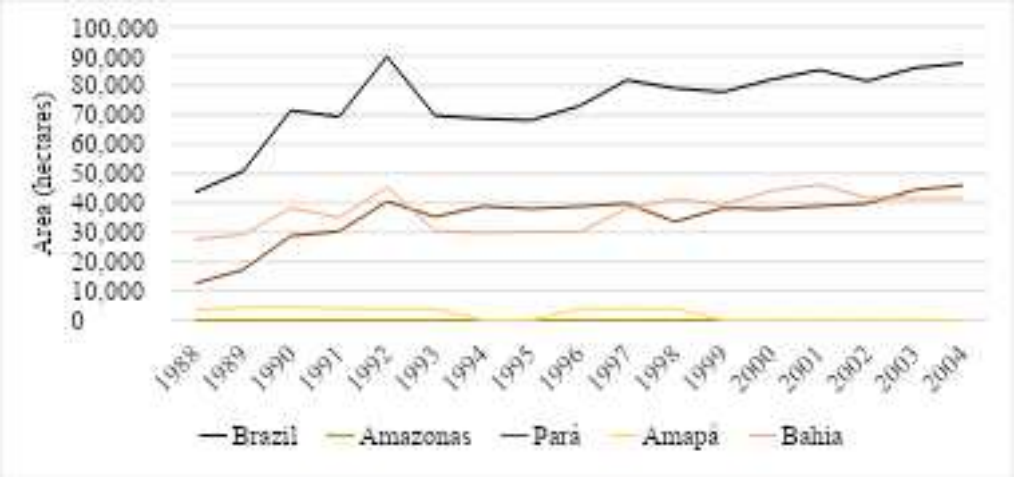

Fig. 1 – Area for harvesting of palm oil fruit bunch (hectares), in the States and in Brazil, between 1988 and 2024. Source: Municipal Agricultural Panorama (MAP)[4]

Between 1988 and 2004, the production of palm oil in the state of Pará underwent an expansion process, while Bahia led in terms of area under cultivation. However, from 1996 onwards, Pará began to compete for the position of primary producer with Bahia. This competition persisted until 2012, when Pará definitively secured the position of the largest producer at the national level. Other states also made secondary contributions to palm oil production, such as Amapá, Amazonas, and, from 2014 onwards, Acre and Roraima.

3.3. NPPUB period (2004 – current)

The increase in commodity prices prompted the countries of Latin America, especially Brazil, to spare no effort in accelerating their economic growth. This growth is based on neoextractivism, characterized by its vast infrastructure and the large-scale extraction of primary elements (SVAMP, 2019). The main shift of this period was the production of palm oil for biodiesel, attributing it economic prominence in the country, particularly in the state of Pará, where experienced constant growth in the following years.

[4]https://www.ibge.gov.br/estatisticas/economicas/agricultura-e-pecuaria/9117-producao-agricola-municipal-culturas-temporarias-e-permanentes.html

During the years that comprise the progressist cycle, the annual growth rate of palm oil crops reaches 5.58%[5]. The release of the NPPUB, in 2004, was an important instrument in establishing this scenario, by expanding the political and legal space for the advancement of the palm oil culture towards the development of national biodiesel production. Seeking to promote itself as a sustainable initiative, the NPPUB revived terms used in ADP's, such as "economic development", "income generation", and "productive inclusion" as the foundation of its principles, influencing various rural sectors, from decision-makers to small farmers. The program comprises a set of laws, decrees, resolutions, and normative instructions established sequentially over the years, modifying and readapting it by adding new instruments and strategies, influencing new occupation dynamics over territory.

Law number 11,097 from 2005, a part of NPPUB, introduced the use of biodiesel in the Brazilian energy matrix by mandating the addition of 5% biodiesel to the diesel oil (B5) sold to the final consumer. The government's objective is to reach 15% (B15) by 2026; currently, the percentage used is 14% (B14). In addition to this law, decree number 5,297 from 2004 established the "social biofuel stamp" for producers who include family farmers in the productive chain. This decree was replaced by decree number 10,527 from 2020, currently in force.

Despite the main goal of the NPPUB being the production of vegetable oil to supplement biodiesel production and expand the Brazilian energy matrix, the contribution of palm oil to biodiesel production was minimal. Between 2008 and 2016, the contribution of palm oil to biodiesel never exceeded 1% (NAHUM; SANTOS, 2018). Soybean oil (about 80%) and animal fat (about 20%) remain the primary feedstocks for biodiesel production in Brazil. Despite the strong potential in terms of yield and climatic adaptation, palm oil feedstock is mainly directed to food and cosmetic industry (KUSS et al., 2015).

The rural inclusion through family farmers under sustainable practices was one of the major aims of NPPUB. This aspect is supported by decree number 1,946 from 1996, which establishes the Family Farming Strengthening Program (PRONAF). The inclusion of local communities in the formulation of economic strategies is crucial for achieving genuine environmental justice, especially within the dynamic of the rural Amazon. However, despite the seemingly positive intentions behind such discourse, the reality often reveals a subtle form of territorial and social dominance. Nahum and Santos (2018) characterize the palm oil family farming integration as a "formal subsumption of work and territory to capital", concealed behind the rhetoric of job creation, income generation, and social inclusion. According to the authors, this mechanism leads to the loss of identity for local communities associated with the palm oil production chain, as they cease to be recognized as family farmers,

[5]https://www.ibge.gov.br/estatisticas/economicas/agricultura-e-pecuaria/9117-producao-agricola-municipal-culturas-temporarias-e-permanentes.html

employees, or entrepreneurs. The farmers that align with the palm oil production chain inevitably find themselves subordinated to external interests and the dynamics imposed by companies and the state, leading to a loss of autonomy due to exclusive sales contract.

In 2022, the price of a ton of fresh harvested fruit was ten times less than that of the refined oil (Fig. 2), a process exclusively controlled by the companies. Throughout the existence of the family farmer program in the palm oil production chain, neither the state nor the companies have undertaken any initiatives for the verticalization of the families' production, leading to income concentration for the company: 'We discussed once for the possibility to implement a micro power plant. The idea did not go forward, but it should happen. The association did not agree with it because they are afraid and care only about their own pocket' (Interviewee – 9). This excerpt also reveals how the introduction of capital splits rural communities, generating internal conflicts. All these social impacts are often overlooked, raising questions about the true limits of the sustainability and environmental justice promoted in programs of rural inclusion.

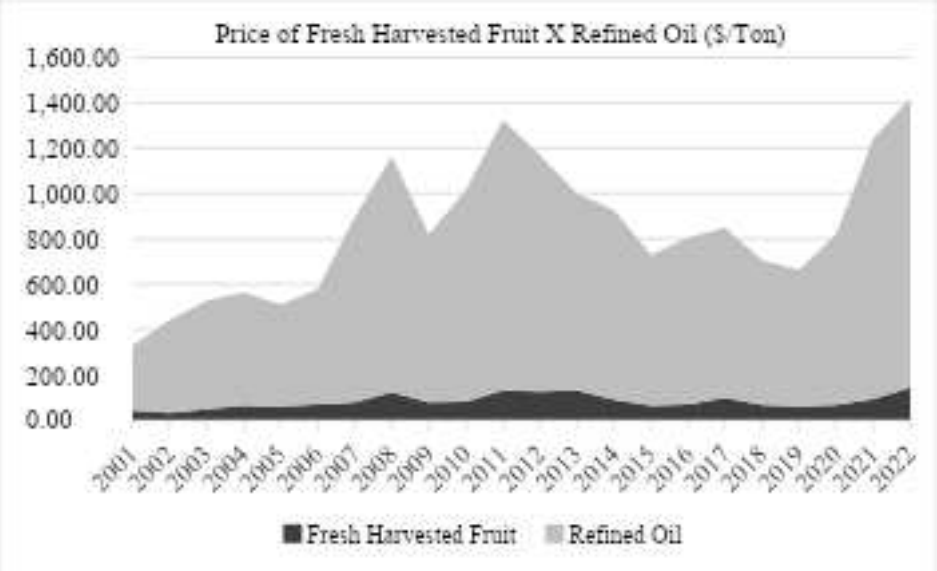

Fig. 2 - Comparison between the price of fresh harvested fruit and the refined oil, between 2001 and 2022, in US dollars ($). Source: INDEXMUNDI (2023)[6], SEAGRI (2023)[7].

Currently, Agropalma supports approximately 200 family farmers across seven projects, covering 1,864.49 hectares of palm oil crops. In 2021, productivity within this area reached 26.31 tons per hectare, resulting in a total production of 45,965 tons. That year, the average price paid to family farmers for fresh fruit bunches—equivalent to 10% of the crude palm oil price—was R$754.85 per ton, leading to an average monthly income of R$16,550.00 per family, particularly in projects where each family cultivated 10 hectares (e.g., Arauai I and Arauai II) (AGROPALMA, 2021). These figures

[6] https://www.indexmundi.com/commodities/?commodity=palm-oil&months=360

[7] http://www.seagri.ba.gov.br/cotacao?produto=487&praca=286416&tipo=374&data_inicio=01%2F01%2F2000&data_final=31%2F12%2F2023

underscore the families' strong commitment to continuing their involvement in the project and illustrate the significant impact on the village of Arauai, not only in terms of infrastructure development but also in transforming social dynamics.

The trend to integrate family farming to the productive chain and to expand only over degraded areas comes from the increase of certification tendency, where companies aimed to aligned to global sustainable production patterns, especially after the creation of the Roundtable on Sustainable Palm Oil (RSPO) in 2004 (CÓRDOBA; ABRAMS; SELFA, 2022). The impetus to certify the palm oil production chain arose from the evident environmental impacts witnessed in major palm oil-producing countries in Southeast Asia, being Malaysia, Thailand, and Indonesia, which still dominate the industry. In these regions, the expansion of palm oil cultivation led to extensive forest conversion, resulting in the loss of significant biodiversity (MEIJAARD et al., 2020). The concern regarding the environmental risks posed by oil palm cultivation has extended to the Amazon, as highlighted in the pioneer publications by Butler and Laurance (2009) and Becker (2010). These studies have delved into the potential environmental risks associated with the expanding and continuous production of oil palm in the Amazon over the years.

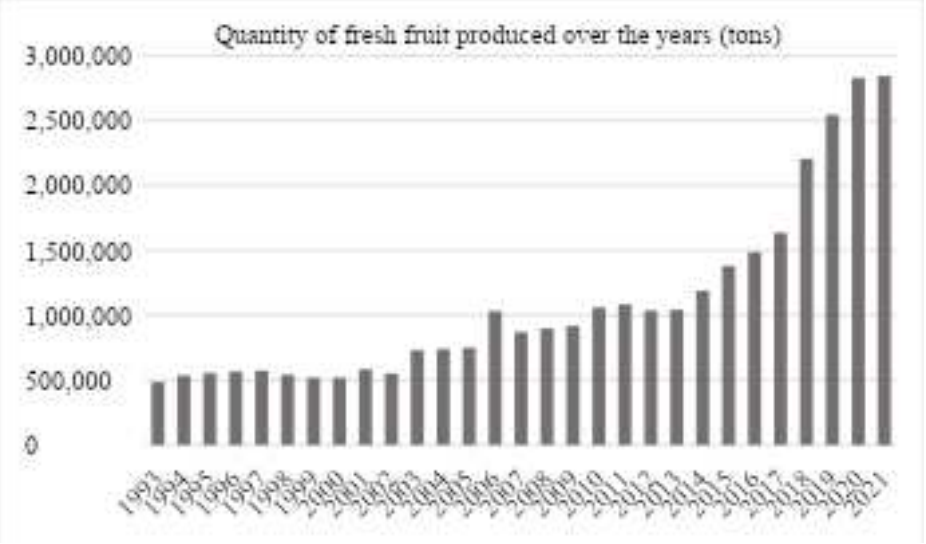

Fig. 3 - Quantity of fresh fruit of palm oil produced in the State of Pará (main producing State, holding 98% of the national production), from 1993 to 2021. Source: (IBGE, 2022).

In 2010, the PSOP and the ZAE-palm oil came to the forefront, escalating the palm oil cultivation in the Amazon (Fig. 3). The PSOP aimed to “discipline the expansion of palm oil production and propose instruments to guarantee its execution based on environmental and social sustainability”. Although the PSOP was eventually discontinued, its impact persisted through the consolidation of the idea that palm oil cultivation was an exclusive avenue for the economic integration of rural communities in the State of Pará, synergizing with other ongoing programs like NPPUB and PRONAF (MOTA; RIBEIRO; SCHMITZ, 2019; NAHUM; SANTOS, 2022).

The ZAE- Palm oil played a pivotal role by providing a planned territorial basis for the promotion of palm oil culture in the Amazon. This initiative meticulously mapped the territorial and climatic characteristics, outlining the agricultural potential of deforested lands for palm oil cultivation. It contributed to the narrative that surrounded palm oil as a sustainable, profitable, and inclusive venture. At this juncture, there appeared to be little reason to oppose this wave of expansion. The zoning, functioning as an endorsement, substantiated the initiative and offered evidence of its feasibility

> "The expansion of the areas planted with palm oil over deforested areas in the Amazon is recognized as an excellent alternative to oil production for food and energetic purposes, constituting support either to the government project of expansion and diversification of the Brazilian energetic matrix, as to the creation of job and income increase of the population involved in this activity. To the other side, provides a better use of deforested areas and, as consequence, decreases the pressure under the native forested areas." (RAMALHO FILHO et al., 2010, p. 19).

Among its significant findings, the AEZ-Palm oil identified approximately 159,000 km² of preferred areas and 440,000 km² of regular areas suitable for palm oil cultivation in deforested regions within the Legal Amazon, placing the region as the greatest potential in the world (RAMALHO FILHO et al., 2010). The publication of these figures subtly revives the "El Dorado" imagination associated with the Amazon, now framed within a new political, social, and economic context. The previous notion of an "empty space" to be conquered has seamlessly transformed into the discourse of "sustainability", since it stills ignored the existence of communities already leaving in the area.

In 2012, the enactment of Law Number 12,651 - Law of the native vegetation protection (LPVN) - marked a pivotal moment for agroindustry and livestock, ushering in new regulations, particularly concerning PPAs and LRAs. This revised version of the New Forest Code, from 1964, brought both advancements and setbacks, exerting a lasting influence on the expansion and consolidation of palm oil culture in the Amazon (BRASIL, 2012).

The pivotal aspect of LPVN favoring the establishment of crops lies in the introduction of consolidated areas - rural properties with human occupation predating July 22nd, 2008, featuring structures, improvements, or agricultural/livestock/silviculture activities, with the option of adopting a fallow regime in the latter case (BRASIL, 2012). In these consolidated rural areas, the required recovery of portions of PPAs along riverbanks is significantly reduced. Moreover, the remaining native vegetation on properties up to four tax modules (unit of area in rural properties) that failed to meet the stipulated goal before July 22nd, 2008, is now considered as LRA without the obligation of recovery. In essence, the demand for the restoration of areas with native vegetation has decreased by nearly 58% compared to Law Number 4,771 (BRANCALION et al., 2016).

This mechanism results in the perpetuation of environmental degradation caused by properties that violated the law. By granting them amnesty, the law economically favors those responsible for

environmental crimes. According to Brancalion et al. (2016), this favoritism occurs when the law "allows them not to legally respond to the damage they caused and enables them to continue profiting from areas irregularly occupied, while law-abiding owners do not benefit." This constructed scenario facilitates the continued cultivation of palm oil in areas that were once prohibited, such as PPAs and LRAs, particularly during projects and programs initiated before 2008. During this period, the involvement of family farmers in the palm oil production chain had already commenced with three projects in the Arauai settlement (NAHUM; SANTOS, 2022), where, during fieldwork conducted in June of 2023, we witness the occupation of palm oil crops over PPA's (Fig. 4).

Fig. 4 – Palm oil trees over PPA's in the family farming project Arauai I (2002). Photo taken in May of 2023.

The initial requirement of 80% of LRA for rural properties in the Amazon could be reduced to 50% for reforestation purposes after the LPVN. This mechanism favored the palm oil expansion when it became considered as an exotic species for reforestation despite being, at the same time, an agri-industrial palm tree. Under the NPPUB period, multiple cumulative development agents – NPPUB, PSOP, ZAE, LPVN, PRONAF – accelerated the expansion of palm oil crops in the state of Pará (Table 1, Fig. 5).

Table 1 – Area (hectares) of palm oil crops in the microrregion of Tomé-Açu, between 2004 and 2020, according to TerraClass.

Years	Area (hectares)
2004	40,117
2008	63,992
2010	73,788
2012	65,314
2014	92,686
2020	166,043.39

These figures manifest in the landscape, where we observe the rapid proliferation of palm oil crops originating from the center of the region (between the cities of Acará, Tomé-Açu and Tailândia),

particularly after 2004, the year of the launch of the NPPUB (Fig. 5). Within its 23,715 km², in 2020, palm oil crops accounted for 7% of the total area of the MRTA. During the NPPUB period , new companies entered the palm oil market alongside established players like Agropalma and Marborges. Notable among these newcomers were Brasil BioFuels and Belém Bioenergia Brasil, the latter being a project initiated by the state-owned company Petrobrás. The accumulation of projects, programs, and laws that incentivized palm oil cultivation is reflected proportionally in the land use changes over time. The period between 2014 and 2020 witnessed the largest increase in areas designated for palm oil cultivation. It is during this period that laws such as number 13,576 from 2017, which provides for the National Policy of Biofuels, and number 13,033 from 2014, which established new mix percentages (B15 until 2026) of biodiesel to diesel oil sold to the final consumer, were enacted.

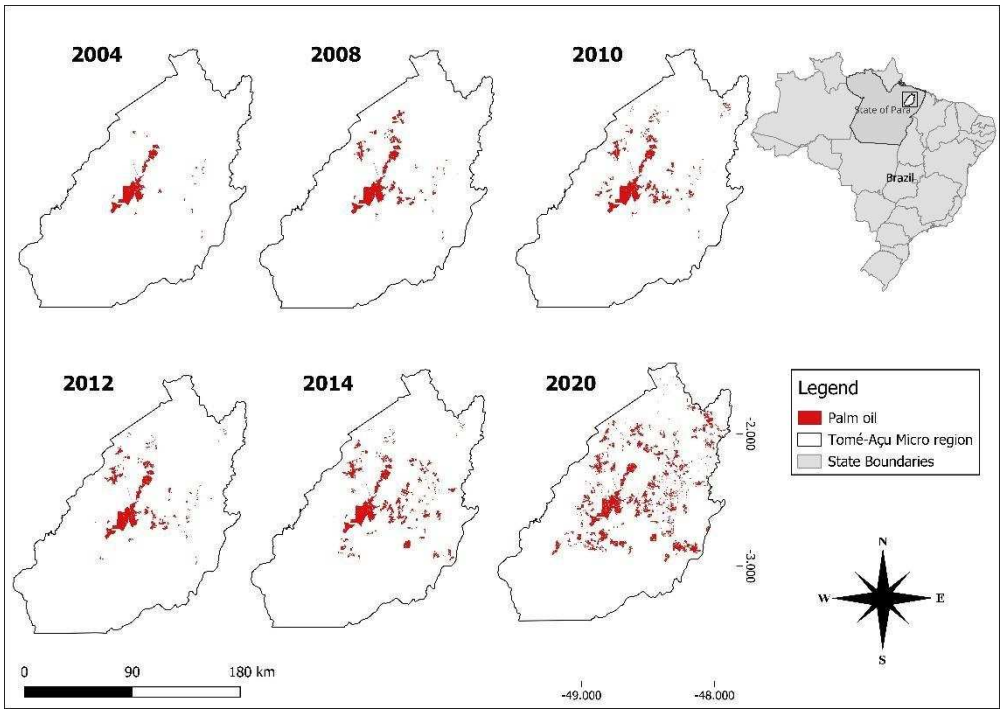

Fig. 5 – The expansion of palm oil crops over the micro region of Tomé-Açu in the NPPUB period, through TerraClass data.

4. Conclusions

Throughout this research, it becomes evident an association between State and expansionist interests that acts in the perpetuation of a neoextractivist model focused on capital reproduction. The State's role is to legitimize development actions for the expansion of the palm oil culture, while companies materialize these programs and projects in the territory, catalyzing and generating latent and emerging conflicts.

The integration of family farming into the palm oil production chain in the Amazon exemplifies a situation where an inflated speech emphasizes income generation, autonomy, and improved livelihoods for farmers. However, in practice, it often subverts the workforce and land,

reflecting the adaptation of concepts to serve the market interests of the State and companies. This dynamic reveals a complex interplay between sustainable initiatives, economic interests, and environmental protection, highlighting the challenges of achieving a balance between development and sustainability. The integration of family farmers into the palm oil production chain has indeed resulted in increased income and financial security, providing autonomy where it was previously lacking. However, this model also creates a strong dependency, which poses economic risks and could potentially threaten cultural aspects in the long term, such as the cultivation of traditional crops and the preservation of local customs and behaviors. This dependency raises concerns about the sustainability of the current practices promoted by companies and questions their reliability in fostering true long-term sustainability.

Considering the comprehensive context of conception, the principal instruments within the political structure that facilitated the establishment of palm oil in the Amazon were the Agroecological Zoning of Palm Oil (ZAE-Palm Oil) and the National Program of Biodiesel Production and Use (NPPUB). The ZAE-Palm Oil designated the Amazon as the region with the highest potential for palm oil expansion globally, in a context of increasing global demand for oil. The NPPUB provided the rationale for sustainability and the mandate (through blending biodiesel with regular diesel oil sold to consumers) to expand oil crops, including palm oil, to meet the national demand for bioenergy. Also, EMBRAPA played a central role on developing researches to enhance the production of palm oil crops, especially genetic improvements of seeds.

The absence of a unique environmental code, as happens in Brazilian penal and civil codes, contributes on the constant marginalization of the legal instruments of environmental protection in face of the expansion of agri-industry, in general. Currently, Brazil has, in the legal domain, fragmented environmental laws, where the lack of integration gives space for diffused interpretations, inconsistences and complexities in processes structuring.

The persistence of the same rhetoric and production model from the Vargas period through the military dictatorship until the present day is evident. The essence of the speech remains unchanged, adapting only to the current circumstances and trends. The absence of space for discussion on alternative purposes of rural economic integration highlights the continued dominance of production models that have been applied for decades, presenting themselves as "the only solution for the Amazon." This lack of openness to alternative approaches raises concerns about the long-term sustainability and environmental impact of the chosen development path.

This discussion aimed to bring to light complex issues embedded in the process of establishing palm oil over the years in the Amazon, particularly in the State of Pará, a central hub for palm oil production in Brazil. The intention was to highlight that the palm oil culture can be approached

differently, avoiding the tendency to view it as either the root cause of environmental and social problems or the sole solution for the challenges faced in the Amazon.

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References

AGROPALMA. *Relatório de Sustentabilidade*. 2021. Available at: https://www.agropalma.com.br/sustentabilidade/#relatorios. Accessed in: jan.2024.

ALMEIDA, A. S. de; VIEIRA, I. C. G.; FERRAZ, S. F. B. Long-term assessment of oil palm expansion and landscape change in the eastern Brazilian Amazon. *Land Use Policy*, vol. 90, 1 Jan. 2020. https://doi.org/10.1016/j.landusepol.2019.104321.

ANDRADE, R. de P. "Conquistar a terra, dominar a água, sujeitar a floresta: Getúlio Vargas e a revista "Cultura Política" redescobrem a Amazônia (1940-1941). *Boletim do Museu Paraense Emílio Goeldi. Ciências Humanas*, vol. 5, no. 2, p. 453–468, 2010. Available at: https://www.scielo.br/j/bgoeldi/a/CSBRwGrXhdL6DKjG5bGQWwG/?format=pdf&lang=pt

BACKHOUSE, M. A desapropriação sustentável da Amazônia O caso dos investimentos em dendê no Pará. *Working Paper*, vol. 6, 2013. Available at: www.die-gdi.de.

BECKER, B. K. Recuperação de áreas desflorestadas da Amazônia: será pertinente o cultivo da palma de óleo (Dendê)? *Confins*, no. 10, 17 Nov. 2010. https://doi.org/10.4000/confins.6609.

BENAMI, E.; CURRAN, L. M.; COCHRANE, M.; VENTURIERI, A.; FRANCO, R.; KNEIPP, J.; SWARTOS, A. Oil palm land conversion in Pará, Brazil, from 2006-2014: Evaluating the 2010 Brazilian Sustainable Palm Oil Production Program. *Environmental Research Letters*, vol. 13, no. 3, 1 Mar. 2018. https://doi.org/10.1088/1748-9326/aaa270.

BOMFIM, P. R. D. A. FRONTEIRA AMAZÔNICA E PLANEJAMENTO NA ÉPOCA DA DITADURA MILITAR NO BRASIL: INUNDAR A HILEIA DE CIVILIZAÇÃO. *Boletim Goiano de Geografia*, vol. 30, no. 1, 31 Aug. 2010. https://doi.org/10.5216/bgg.v30i1.11191.

BRANCALION, P. H. S.; GARCIA, L. C.; LOYOLA, R.; RODRIGUES, R. R.; PILLAR, V. D.; LEWINSOHN, T. M. Análise crítica da Lei de Proteção da Vegetação Nativa (2012), que substituiu o antigo Código Florestal: atualizações e ações em curso. *Natureza & Conservação*, vol. 14, p. e1–e16, Apr. 2016. https://doi.org/10.1016/j.ncon.2016.03.004.

BRASIL. *Lei Nº 4.771, de 15 de setembro. Institui o Novo Código Florestal. Brasília, DF: Diário Oficial da União.* [*S. l.*: *s. n.*], 1965. Available at: www.planalto.gov.br/ccivil_03/leis/l4771.htm.

BRASIL. *Lei Nº 12.651, de 25 de maio de 2012. Dispõe sobre a proteção da vegetação nativa. Brasília, DF: Diário Oficial da União.* [*S. l.*: *s. n.*], 2012. Available at: https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/lei/l12651.htm?itid=lk_inline_enhanced-template#:~:text=Esta%20Lei%20estabelece%20normas%20gerais,n%C2%BA%20571%2C%20de%202012).

BUTLER, R. A.; LAURANCE, W. F. Is oil palm the next emerging threat to the Amazon? *Tropical Conservation Science*, vol. 2, no. 1, p. 1–10, 2009. Available at: https://journals.sagepub.com/doi/10.1177/194008290900200102.

CASTRO, E. M. R. de. *Territórios em transformação na Amazônia: saberes, rupturas e resistências*. 1st ed. Belém: NAEA, vol.1, p.408, 2017. Available at: https://www.naea.ufpa.br/index.php/livros-publicacoes/307-territorios-em-transformacao-na-amazonia-saberes-rupturas-e-resistencias

CÓRDOBA, D.; ABRAMS, J.; SELFA, T. Achieving Palm Oil Sustainability Under Contract: Roundtable on Sustainable Palm Oil and Family Farmers in the Brazilian Amazon. *Current Research in Environmental Sustainability*, vol. 4, 1 Jan. 2022. https://doi.org/10.1016/j.crsust.2022.100160.

DAMIANI, S.; GUIMARÃES, S. M. F.; MONTALVÃO, M. T. L.; PASSOS, C. J. S. "All That's Left is Bare Land and Sky": Palm Oil Culture and Socioenvironmental Impacts on a Tembé Indigenous Territory in the Brazilian Amazon. *Ambiente e Sociedade*, vol. 23, p. 1–25, 2020. https://doi.org/10.1590/1809-4422ASOC20190049R2VU2020L6AO.

HOMMA, A. K. O. Cronologia do Cultivo do Dendezeiro na Amazônia. 2016. Available at: www.embrapa.br/fale-conosco/sac.

HOMMA, A. K. O.; VIEIRA, I. C. G. *Colóquio sobre dendezeiro: prioridades de pesquisas econômicas, sociais e ambientais na Amazônia*. Belém: [*s. n.*], 2012. Available at: https://www.embrapa.br/busca-de-publicacoes/-/publicacao/968530/coloquio-sobre-dendezeiro-prioridades-de-pesquisas-economicas-sociais-e-ambientais-na-amazonia.

IBGE. Produção Agrícola Municipal. 2022. *Instituto Brasileiro de Geografia e Estatística*. Available at: https://www.ibge.gov.br/estatisticas/economicas/agricultura-e-pecuaria/9117-producao-agricola-municipal-culturas-temporarias-e-permanentes.html?utm_source=landing&utm_medium=explica&utm_campaign=producao_agropecuaria&t=resultados. Accessed on: 7 Jan. 2024.

JOANONI NETO, V.; GUIMARÃES NETO, R. B. Amazônia: políticas governamentais, práticas de "colonização" e controle do território na ditadura militar (1964-85). *Anuario IEHS*, vol. 34, n. 1, 2019. Available at: https://ojs2.fch.unicen.edu.ar/ojs-3.1.0/index.php/anuario-iehs/article/view/373.

KUSS, V. V.; KUSS, A. V.; DA ROSA, R. G.; ARANDA, D. A. G.; CRUZ, Y. R. Potential of biodiesel production from palm oil at Brazilian Amazon. *Renewable and Sustainable Energy Reviews*, vol. 50, p. 1013–1020, 9 Jun. 2015. https://doi.org/10.1016/j.rser.2015.05.055.

ALIER, Joan Martínez; JUSMET, Jordi Roca. *Economía ecológica y política ambiental*. [S.l.]: Fondo de Cultura económica, 2000.

MEIJAARD, E.; BROOKS, T. M.; CARLSON, K. M.; SLADE, E. M.; GARCIA-ULLOA, J.; GAVEAU, D. L. A.; LEE, J. S. H.; SANTIKA, T.; JUFFE-BIGNOLI, D.; STRUEBIG, M. J.; WICH, S. A.; ANCRENAZ, M.; KOH, L. P.; ZAMIRA, N.; ABRAMS, J. F.; PRINS, H. H. T.; SENDASHONGA, C. N.; MURDIYARSO, D.; FURUMO, P. R.; … SHEIL, D. The environmental impacts of palm oil in context. *Nature Plants*, vol. 6, no. 12, p. 1418–1426, 1 Dec. 2020. https://doi.org/10.1038/s41477-020-00813-w.

MOTA, D. M. da; RIBEIRO, L.; SCHMITZ, H. A organização do trabalho familiar sob a influência da produção de dendê em Tomé-Açu, Pará. *Boletim do Museu Paraense Emilio Goeldi:Ciencias Humanas*, vol. 14, no. 2, p. 531–551, 2019. https://doi.org/10.1590/1981.81222019000200014.

MÜLLER, A. A.; JÚNIOR, J. F.; FILHO, P. C. *A Embrapa Amazônia Oriental e o Agronegócio do Dendê no Pará*. [*S. l.*: *s. n.*], 2006. Available at: https://www.infoteca.cnptia.embrapa.br/infoteca/bitstream/doc/394940/1/Doc257.pdf

NAHUM, J. S. Região, discurso e representação: a Amazônia nos planos de desenvolvimento. *Boletim de Geografia*, vol. 29, no. 2, 20 Apr. 2011. https://doi.org/10.4025/bolgeogr.v29i2.11001.

NAHUM, J. S.; SANTOS, C. B. dos. Dendê para quê? Dendê para quem?A ideologia da fronteira na Amazônia paraense. *Revista NERA*, vol. 42, p. 113–134, 2018. Available at: http://www.mme.gov.br/programas/biodiesel/menu/programa/objetivos_diretrizes.htm.

NAHUM, J. S.; SANTOS, C. B. dos. Formação dos projetos de agricultura familiar com dendezeiro na Amazônia paraense. *Revista Campo-Território*, vol. 17, no. 46 Ago., p. 201–222, 6 Sep. 2022. https://doi.org/10.14393/rct174609.

NAHUM, J. S.; SANTOS, L. de S.; SANTOS, C. B. dos. Formação da dendeicultura na Amazônia Paraense. *Mercator*, vol. 19, no. 3, p. 1–14, 15 Mar. 2020. https://doi.org/10.4215/rm2020.e19007.

RAMALHO FILHO, A.; MOTTA, P. E. F. da; FREITAS, P. L. de; TEIXEIRA, W. G. *Zoneamento agroecológico, produção e manejo da cultura de palma de óleo na Amazônia*. [*S. l.*]: Embrapa Solos, 2010. Available at: https://www.abrapalma.org/pt/wp-content/uploads/2015/01/ABRAPALMA-Tudo-Sobre-Palma.pdf.

SÁNCHEZ, L. E. *Avaliação de impactos ambientais: conceitos e métodos*. 3rd ed. São Paulo: Oficina de Textos, vol. 1, 2020.

SECRETO, M. V. A ocupação dos "espaços vazios" no governo Vargas: do discurso do "Rio Amazonas" à saga dos soldados da borracha. *Estudos Históricos*, no. 40, p. 115–135, 2007. Available at: https://periodicos.fgv.br/reh/article/view/1288.

SOUSA, R. B. de; MACEDO, C. O. Agronegócio do dendê e campesinato no Pará. *Geosul*, vol. 34, no. 71, p. 525–549, 7 May 2019. https://doi.org/10.5007/1982-5153.2019v34n71p525.

SPAROVEK, Gerd et al. A revisão do Código Florestal brasileiro. *Novos estudos CEBRAP*, p. 111-135, 2011. Available at: https://www.scielo.br/j/nec/a/QSskmQH9b4cfSYkJrwCWKbb/.

SVAMP, M. *As fronteiras do neoextrativismo na América Latina: Conflitos sociombientais, giro ecoterritorial e novas dependências*. 1st ed. [*S. l.*: *s. n.*], 2019.

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