

Regional Dynamics of the Brazilian Amazon: between Modernization and Land Conflicts

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Abstract

The Brazilian Amazon has undergone intense transformations resulting from geopolitical and ideological valuations in the service of productive-competitive integration of its territory in the national and international economy. State and capital affirm an appropriating rationality of nature projected in two vectors of occupation/modernization: techno-industrial and techno-ecological. The undergone problem is inscribed in spatial injustice as counterpart of capitalist expansion regarding land conflicts. The methodology is based on the theoretical-conceptual division of social injustices versus ideology of capitalist modernization of the Amazonian territory. The empirical treatment of the collected datasets unveils land conflicts through information obtained by the *Comissão Pastoral da Terra (CPT)*, the *DATALUTA* Project, and the *Instituto Brasileiro de Geografia e Estatística (IBGE)*. Thus, theory and empirical practices are unified in a regional dynamic analysis of the Brazilian Amazon in the last 20 years. The study emphasizes that the territorial policies of the State and capitalist forces (multinationals, agribusiness, mining, and logging) promote deforestation, violent conflicts over land and water, slave labor, rural redevelopment, demographic depletion of the affected rural areas, and accelerated precarious urbanization. The expansion of land conflicts and spatial injustices in the Brazilian Amazon results from the modernization of the territory.

Keywords: Amazon, regional productive dynamics, land conflicts, modernization, spatial injustice, spatial justice.

Highlights: Research article that seeks to unveil a scenario of intense modernization of the Amazon territory, in the last 20 years, which has caused the expansion of spatial injustices translated into land and water conflicts. The analysis considers recent information from the CPT, the DATALUTA project, and the IBGE.



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Dinámica regional de la Amazonia brasileña: entre la modernización y conflictos agrarios

Resumen

La Amazonia brasileña ha sufrido intensas transformaciones derivadas de valoraciones geopolíticas e ideológicas al servicio de la integración productivo-competitiva del territorio en la economía internacional y nacional. Estado y capital afirman una racionalidad apropiadora de la naturaleza proyectada en dos vectores de la ocupación/modernización: el tecnoindustrial y el tecnoecológico. El problema planteado se inscribe en la injusticia espacial como contrapartida de la expansión capitalista en lo que se refiere a los conflictos agrarios. La metodología se apoya en la división teórico-conceptual de las injusticias sociales frente a la ideología de la modernización capitalista del territorio amazónico. El tratamiento empírico de los datos recolectados devela conflictos de tierras a través de la información obtenida por la *Comissão Pastoral da Terra (CPT)*, el proyecto DATALUTA y el *Instituto Brasileiro de Geografia e Estatística (IBGE)*. Por lo tanto, se unifican la teoría y las prácticas empíricas en el análisis de la dinámica regional de los últimos 20 años en la Amazonia brasileña. El estudio muestra que las políticas territoriales del Estado y las fuerzas capitalistas (multinacionales, agronegocios, mineras y madereras) fomentan la deforestación, los conflictos violentos por la tierra y la agua, el esclavismo, la reconversión rural, el agotamiento demográfico de las áreas rurales afectadas y la urbanización precaria acelerada. La expansión de los conflictos agrarios y de las injusticias espaciales en la Amazonia brasileña es resultado de la modernización del territorio.

Palabras clave: Amazonia, conflictos agrarios, conflictos por la tierra, dinámica productiva regional, modernización, injusticia espacial, justicia espacial.

Ideas destacadas: artículo de investigación que busca develar un escenario de intensa modernización del territorio amazónico, en los últimos 20 años, que ha provocado la expansión de injusticias espaciales traducidas en conflictos por la tierra y el agua. El análisis considera información reciente del CPT, el proyecto DATALUTA y el IBGE.

Dinâmica regional da Amazônia brasileira: entre a modernização e os conflitos agrários

Resumo

A Amazônia brasileira vem sofrendo intensas transformações derivadas de valorações geopolíticas e ideológicas a serviço da integração produtivo-competitiva do território na economia internacional e nacional. Estado e capital afirmam um raciocínio apropriador da natureza projetada em dois vetores da ocupação-modernização: o tecnoindustrial e o tecnoecológico. O problema apresentado está inscrito na injustiça espacial como contrapartida da expansão capitalista no que se refere aos conflitos agrários. A metodologia está apoiada na divisão teórico-conceitual das injustiças espaciais ante a ideologia da modernização capitalista do território amazônico. O tratamento empírico dos dados coletados por meio da informação obtida pela Comissão Pastoral da Terra (CPT), do projeto DATALUTA e do Instituto Brasileiro de Geografia e Estatística (IBGE) revela conflitos de terras. Portanto, são unificadas a teoria e as práticas empíricas na análise da dinâmica regional dos últimos 20 anos na Amazônia brasileira. Este estudo mostra que as políticas territoriais do Estado e as forças capitalistas (multinacionais, agronegócios, mineradoras e madeiras) fomentam o desflorestamento, os conflitos violentos pela terra e pela água, a escravidão, a reconversão rural, o esgotamento demográfico das áreas rurais afetadas e a urbanização precária acelerada. A expansão dos conflitos agrários e das injustiças espaciais na Amazônia brasileira é resultado da modernização do território.

Palavras-chave: Amazônia, conflitos agrários, conflitos pela terra, dinâmica produtiva regional, modernização, injustiça espacial, justiça espacial.

Ideias destacadas: artigo de pesquisa que pretende revelar o cenário de intensa modernização do território amazônico nos últimos 20 anos, o que provocou a expansão de injustiças espaciais traduzidas em conflitos pela terra e pela água. A análise considera informação recente do CPT, do projeto DATALUTA e do IBGE.

Introduction

The Brazilian Amazon is located in South America (Figure 1). The hydrographic region of the Amazon represents 40% of the Brazilian territory and 60% of the country's water availability, distributed in a drainage network with rivers, lakes and streams fed by rivers that are born in the Cerrados of the Central Plateau, in the Andes, and in the Guiano Plateau. The main watercourse, the Solimões-Amazonas river, is the largest in the world in terms of extension and water volume. In terms of social identities, there is a rich variety of socio-biodiversity.

The complexity of superlatives served as a basis for the spoliation of the labor force and natural resources and the deterritorialization of social groups of the Brazilian territory, as the Amazon was inserted in the international division of labor in 1964, from the colonial era to modern times.

Modernization has been defined as a collective representation of the country's progress and development. Yet, the geographical ideology of national territory modernization regards the opposite or the delay of changes (Moraes 2005). Thus, Amazon modernization evokes a strategic and geopolitical discourse of the State to integrate it to national and international capitalist ventures through urbanization, industrialization, and the implementation of logistic networks.

The modernization of the Amazon has been accompanied by spatial injustices, that is, by extreme socio-spatial inequalities. Harvey (1980) deal with socio-spatial injustice as a result of exclusionary and precarious ways of including places and people in the process of capital reproduction. The uneven valorization of space by capital results in socio-spatial injustices (Moraes and Costa 1987). In the case of the Amazon, socio-environmental injustices arise from the differential modernization of the territory, which affects traditional populations especially (Acsehrad, Campello and Bezerra 2009).

Modernization of the Amazon and spatial injustice are interrelated processes. Thus, the geographical ideology for the former requires the analysis of the latter. Therefore, the socio-spatial impact of the projection of modernization in the differential valuation of social and natural resources and the possibilities of exploring them must be taken into account (Soja 2009). The social injustice result from the territorial policies of the State (Young 1990, 2000). In this article, the spatial injustice approach marks the conflicts between the traditional populations and the capitalist forces in the Amazon.

The geographies of socio-spatial injustices are confirmed by the expansion of land conflicts involving indigenous populations, quilombolas, squatters, and landless people. Politics in the Amazon determining mining investments, agriculture, industry, and wood extractive sectors have significantly promoted spatial injustices in terms of uneven geographical development, and deterritorialization of autochthonous populations. In fact, socio-spatial injustice affects territorialities and shapes geo-graphs of specific resistance of affected social groups (Soja 2010; Pirie 1983; Marcuse 2009).

This article aims to reveal two Amazons: (1) one represented by the socio-productive dynamics through the policies and projects of economic development of the Brazilian State, for the purpose of the macro-region modernization; and (2) another one resulting from spatial injustices regarding land conflicts between public and private actors and traditional populations. Spatial injustices to which the Amazonian traditional populations are subjected, are understood as risks to the diverse ecological-cultural territories in terms of environmental degradation of natural resources, violence, and social poverty. Two complementary parts support this research.

To analyze spatial injustices, a database from a Pastoral Land Commission (PLC), a Catholic Church dedicated human rights and land workers, was used. The database is the Dom Tomás Balduino Documentation Center, which disseminates PLC data regarding the occurrence of conflicts involving public or corporate violence against the Brazilian peasant population. Another source is the DATALUTAS Project, which is a database on the struggle for land in Brazil developed by the Nucleus of Studies, Research and Projects of Agrarian Reform, Department of Geography, Universidade Estadual Paulista. Finally, the Brazilian Institute of Geography and Statistics (IBGE) discloses macroregional social indicators of household income distribution and access to goods and services.

The political dimension of the Amazon's modernization

The Brazilian Amazon is the region where capitalist expansion meets the geographical ideology of territory modernization. Since 1964, the Brazilian State has adopted geopolitical planning and national security ideology in order to integrate the Amazonian sertões (places considered poor and primitive) to national and international capital dynamics.

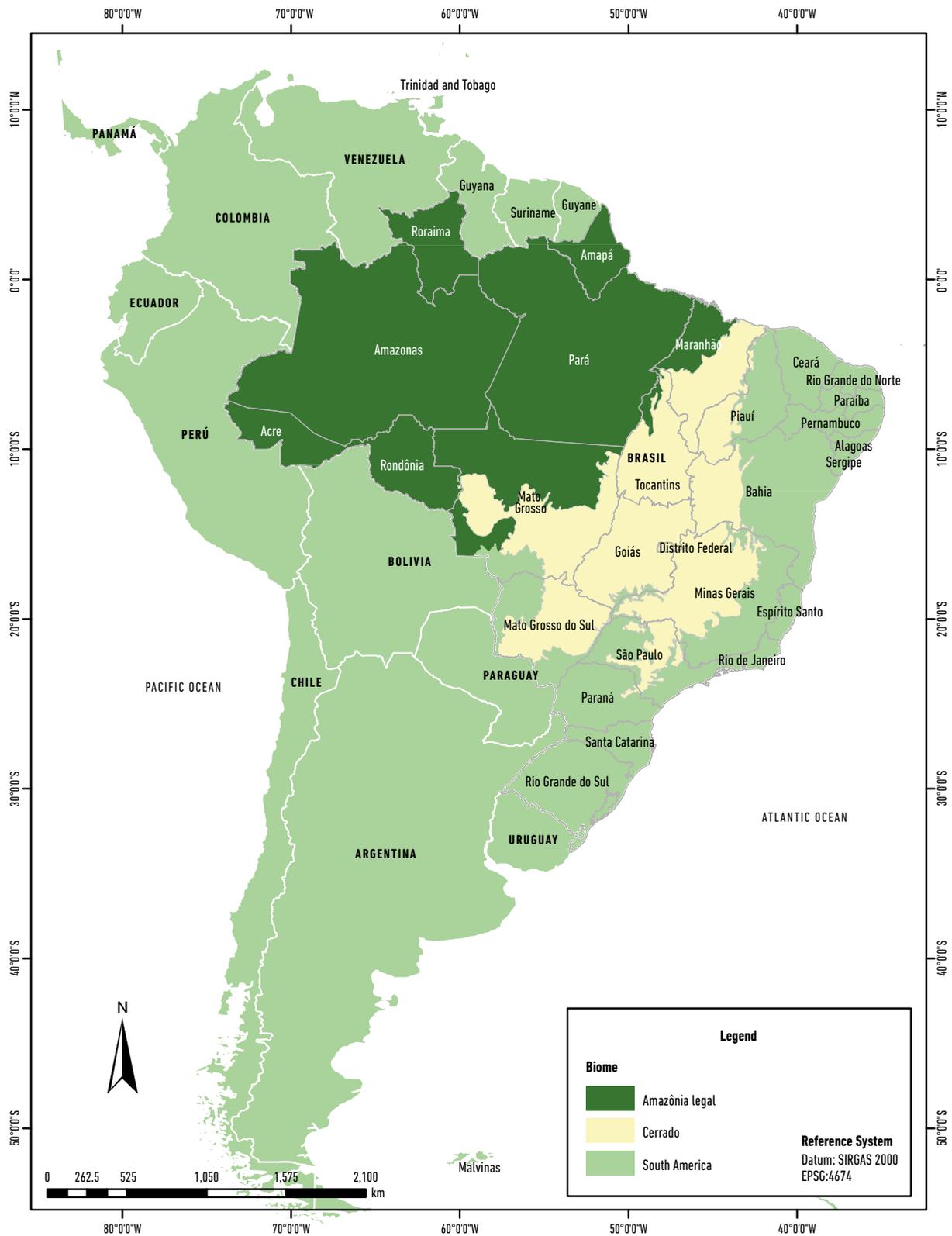


Figure 1. Legal Amazon Map, 2017.
 Dates: Prepared by João Vitor Zebende; IBGE 2018.

As it is capitalists' frontier, away from the core of the Brazilian capital, the Amazon was subject to expansion of agriculture, urbanization-industrialization, and extractive activities, given the low price of land, natural resources, and fiscal and financial incentives available to national integration.

However, according to the geographer Porto-Gonçalves (2005, 96), considering space organization patterns existing in the region, ecological and cultural patterns, the shock of modernization could be violent. Amazon modernization imposed by the military governments affected both the traditional populations and the poor and migrant population that were attracted by State programs and projects, corporations, and landowners.

The ideology of the territory modernization via industrialization and urbanization of the country was incorporated by the capitalist frontier movement for the Amazon. Due to the continental dimensions of the Brazilian Amazon, the scale of productive occupation projected the temporality (urbanity) of capital and clashed with various territorialities associated with the most different lifestyles there yet. The exploration of the Amazon as a resource frontier confirmed one of the dimensions: conflicts resulting from the encounter between distinct temporalities value the man-nature relationship in a differentiated way (Becker 2005).

The Amazon physical integration from a network of longitudinal articulated highways with the Center-South, and horizontal with the Northeast, contributed to the opening of the region to migratory flows, colonization projects, mineral exploration, agricultural and industrial projects, among others.

The ideology of the Amazon modernization signaled a recomposition of the productive occupations of the Amazon and of redefinition of the territorial plots strategies of control. The lowlands, boats and the circulation of capital, goods and people by the rivers were routines excluded or inserted precariously by the new societal pattern in course based on the highway and capitalist urbanization. In this sense, says Júnior (2010), the slow time of organic relations of forest cities has been replaced by another reality, the temporality of the technical-scientific and informational environment and the fluidity of space.

The Amazon integration with the core dynamic area of the Brazilian economy demanded a reordering of communication, energy and transport flows, replacing the river pattern of occupation with a highway pattern, and taking over the river bus for generating electric energy.

Together, highway, hydroelectric and new cities have proved to be indispensable requirements for the advancement of the capitalist forces and the socioecological problematic.

As the capitalist occupation expanded, areas of communities untouched by the civilizing process of so-called modern society were reduced. Thus, the advancement of the Amazon frontier made land reform difficult by strengthening new landowner's groups and by challenging the territoriality of alternative social groups to capitalist accumulation.

Territory modernization, reflected in the construction of a technical network (highway, energy and communications) and the technological apparatus applied to productive activities, contributed to the aggravation of land conflicts. Land occupation with extensive livestock left the land less propitious to agriculture for smallholders. In this way, the capitalist frontier in Amazon roads has until now, been predatory, socially unequal, fast and authoritarian, and determines a socio-environmental problem in the face of biome devastation and urbanization without citizenship. Modernization, and social and spatial injustices are an integrant part of frontier advancement in Amazon.

The differentiated valuation of land ownership among social groups in a territorial dispute redefine relations to the right of tenure and, in several cases, causes the expulsion of squatters and indigenous groups, increasing land conflicts and holding the land (Aparecida de Mello 2006, 26). The occupation of the Amazonian territory should be the solution to the social pressures in the Brazilian countryside, according to the official discourse of the military. However, it has become a most problematic stretch of land (Porto-Gonçalves 2005). The spaces to be occupied by indigenous populations, extracted communities and family agriculture, and the potential spaces for capitalist appropriation, were demarcated in an authoritarian way.

If the military state was the most important actor in the definition of the Amazon as a border, it is worth remembering that geopolitics was the central element of region redefinition in the integration project and its insertion in the national and international economy. Land occupation would solve various impasses (social, economic, frontier), and would produce wealth. State geopolitics were based on the technical standard of Fordist industrialization, which included an energy, transport and communications matrix, in order to shape a given industrial structure marked by the dominance of large manufacturing plants in search of productivity gains

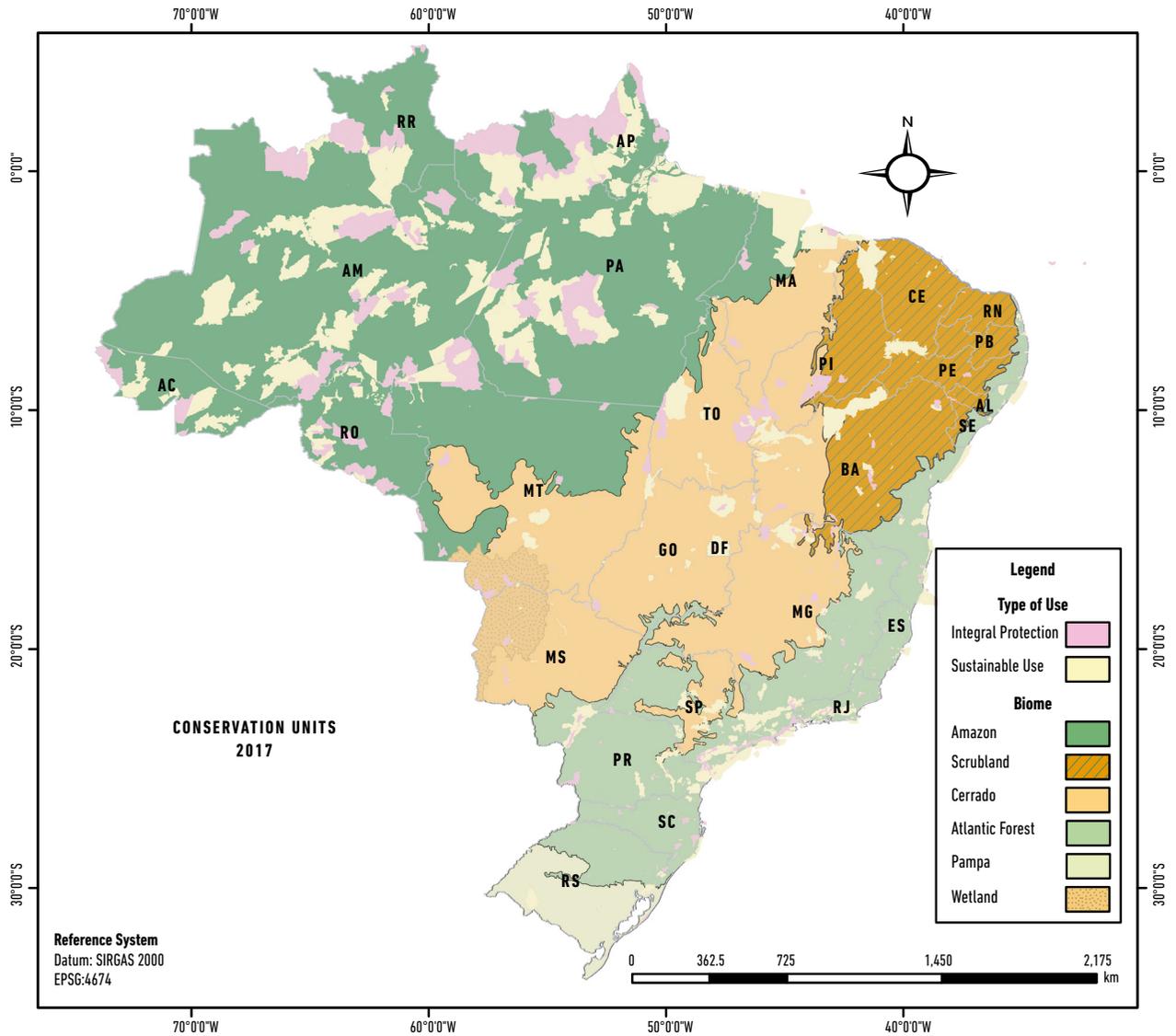


Figure 2. Conservation Units in Brazil, 2017.
Source: Ministério do Meio Ambiente 2017.

and scale economies. Inserting the Amazon in the urban-industrial-financial economy, between 1960 and 1990, introduced an ideological matrix transforming the territory by imposing a dynamic subordinated to the technoindustrial vector without major social-ecological-cultural concerns.

The technoindustrial vector must be here defined. Becker (2005) synthesizes the notion as the modernization projection in the Amazon through the urbanization and industrialization as geopolitical matrices of economic integration of the Brazilian territory. The Amazon rapidly urbanized itself and ensured an important role in the Brazilian industry with the creation of the Manaus Free Trade Zone. The technoindustrial

vector, finally, translated the constitution of technical networks of urbanization and city expansion infrastructure, and Amazon industrialization. Deforestation and displacement is also credited to the technoindustrial vector. According to Becker (2005), the technoindustrial vector is representative of the Keynesian Fordist pattern of accumulation with immense socioenvironmental liabilities.

Since 1990, the Amazon has been affected by the projection of the techno-ecological vector based on sustainable development. In the Amazon, the historical heritage of the technoindustrial vector projection ensures specific roles of Amazonian parcels in the territorial division of labor on national and international scales.

Nowadays, the productive and demographic occupation of the Amazon as a natural and resource frontier marks the debate between two hegemonic capitalist forces: (1) the belief, forged by the techno-industrial vector, that it is a place of infinite natural and worry-free resources, and (2) the re-signification of the Amazon as a natural border through the constitution of the techno-ecological vector based on sustainable development projects and the defense of socioecological territories, Conservation Units, Extractive Reserves, etc. Although the techno-industrial vector has expanded under State monopoly, it still shapes itself as a contradictory force to the interests of preservation or socioenvironmental conservation of the Amazon (Becker 2005). The growth of Conservation Units and Indigenous Territories has reduced the advance of the capitalist frontier in the Amazon (Figure 2).

If we think of numbers, the Pilot Program for the Protection of Brazilian Rainforests (1994), financed by the Brazilian State, the World Bank, the G7 (the group with the richest countries in the world), the Netherlands, civil societies, and NGOs, has gathered data after 17 years, regarding the demarcation and regularization of 149 Indigenous Lands, identifying 93 others; and established 2.1 million hectares of Extractive Reserves. Most of the country's Conservation Units were placed in the Amazon, as shown in Figure 2. Thus, the projection of the techno-ecological vector contributes to the reduction of deforestation and to the maintenance of ecological-cultural and ancestral territories in the Amazon.

Socioproductive regional dynamic of the Amazon

The competitive integration of the Amazon in the new international financial-productive institutional arrangements occurred in specific sectors of economy in defined places and under the auspices of the techno-industrial vector. Industrialization, mineral exploration, and the livestock growth were in consonance with the authoritarian and conservative modernization ideology for the integration of Brazilian territory, and the consolidation of the nationalism of the Armed Forces and the Brazil-Power project. Thus, the implantation of industrial poles (Manaus Free Economic Zone), the mining-industrial pole (Carajás and Trombetas), the definition of selective technical networks capable of interconnecting portions of the Amazon to international capital, territorial control of the border with the Calha Norte Project, and the productive diversification of the Amazon contributed to its accelerated and disorderly industrialization and urbanization.

The urban-industrial focus of electronic goods in the Manaus Free Economic Zone, the strong expansion of the tertiary sector of the Legal Amazon capitals and the specialization of the mining-metallurgical sector of Carajás are expressive examples of a productive integration more focused with the core area of the Brazilian economy and with the demand of international capitalism.

The production base modernization of Manaus Free Economic Zone has resulted in the technical-productive base automation of assembly lines of industrial goods, expansion of innovative imports, and structural unemployment, since 1990. The regional effects of the Free Economic Zone until nowadays do not appear in spite of Manaus accounting for about 50% of the Amazon industrial production. The constitution of the industrial pole was not based on a network of local inputs suppliers. Temporary, outsourced and low-wage labor weaken the rambling impact of employment. The concession of tax incentives and the expansion of the productive chain still do not render social return to the regional metropolis. Manaus, under the Free Economic Zone, still has extreme residential segregation between the poor and the rich, and broad deficits in public service quality for poor communities.

Spatial injustice, i.e. urbanization without citizenship and right to the city, is evident in that out of a total of 1.05 million inhabitants in the city of Manaus in 1992, 800 thousand lived in precarious housing conditions. In 2010, out of a total of 1,793 million inhabitants, 295,910 lived in subnormal housing (IBGE 2010). The modernization generated by the Manaus Free Zone resulted in rapid urbanization and socio-spatial injustice (*favelização*³).

Industrial concentration in Manaus redefined its role as the regional metropolis of western Amazonia. Intense migration, urbanization, industrial and service concentration confirmed Manaus's role in the regional urban hierarchy. Intense *favelização* accompanied its urbanization. Furthermore, according to Rosa, Lopes and Buarque (1995, 113), the Manaus Free Economic Zone emphasized the economic and physical-territorial distance between the eastern and western Amazon. Western Amazonia became its own unit given this integration with Acre, Rondônia and Chapada dos Parecis in Mato

3 *Favela* is the name given to slums in Brazil. *Favelização*, therefore, refers to the process by which a place becomes informally populated, with poor housing and basic services.

Grosso, especially because of agriculture, and not by the Manaus Free Economic Zone.

In addition to Manaus, the Amazonian industry is concentrated in the urban centers of Belém, São Luís and Cuiabá. It also includes Porto Velho, Macapá, Santarém, Marabá, Paragominas, Imperatriz, Rondonópolis, and Sinop. The Green Free Economic Zone of Macapá and Santana was created in 2009, but it wasn't until 2015 that the regulation of tax incentives was approved, in order to attract industries linked to the exploitation of regional extractivism.

In Pará, the productive structure was more diversified, focused on mining-metallurgical industry of the Grande Carajás Program (iron, gold, and manganese), and the Albras-Alunorte Complex (bauxite-aluminum) in the Trombetas Valley. Cattle herds grew and caused strong pressure on the deforestation of the Equatorial Forest. In general, the south and northeast of Pará reveal strong agricultural and mining-industrial diversification; and in the lower and middle Amazon, there was a dispersed expansion of cattle farming, strong investments in mineral projects resulted in a displacement of the eastern Amazon from the rest of the region and its articulation, in particular, with Maranhão from Carajás-Porto de Itaquí Pole (São Luís, MA).

In the influence area of the mining-metallurgical complex of Pará, the privatization of multinational state companies, such as Companhia Vale do Rio Doce, mergers and company incorporation, expansion of mineral exploration, export incentives and investments in research and logistics infrastructure (transportation, energy, and communications) are socio-spatial processes still in progress. Several mining exploration projects take place at Pará: Ferro Carajás Project (Parauapebas, Curionópolis and Marabá); Mineração Rio do Norte in Oriximiná; Albrás and Alunorte (Barcarena); Pará Pigmentos (Ipixuna); copper exploration at the Sossego Mine (Belém), and the Alumar Project (Alcoa and Billiton). In all of these ongoing projects, the participation of multinational companies, such as Reynolds, Abaco, Alcoa, Norsk Hydro, Nippon Amazon Aluminum, Japan Alunorte Investment, Mitsubishi Corporation and International Finance Corporation, is a rule (Siqueira 2010, 41).

Vale do Rio Doce, privatized in 1997, still claims to be the largest exporter of ore in the world, especially iron. Currently, the company mines manganese, copper, aluminum and gold. In an area of 560 thousand hectares, trees are planted for the production of paper and cellulose. The steel industry sector is also one of the investments

in Pará and Maranhão, along the Carajás railroad to the port in São Luís.

In Pará, three major mineral regions are identified: Trombetas, Tapajós and Carajás. In the Amazon, besides Pará, large mining projects are located in Rondônia, Amapá and Amazonas; and there is natural gas and oil mining in Urucu (Amazonas). In 2017, the Russian company Rosneft began drilling an oil well in the Solimões river basin in the Amazon. There is also a gas thermoelectric plant in Carauari (Amazonas).

Despite intense investments in mineral exploration, intersectoral chains arising from raw material are still small. Employment generation was not accompanied with income distribution or urban policies in the cities, influenced by installed business projects, despite the royalties destined to the municipalities where the mineral exploration is carried out. The strong migration in search of employment resulted in urbanization without citizenship and precariousness of the workforce. The urban poverty landscape is what dominates in the area of the mining-metallurgical complex of Pará.

Productive dynamics in other Amazonian states show diverse natural resource use. Acre, Amapá and Roraima are traditionally direct producers of rubber, nuts, cocoa, acai, and others.

In Acre, the agribusiness of rapadura, murumuru, buriti, rubber and chestnut are expressive segments of the industry. Investments in industrial forest complexes, such as the Epiteciolândia and the Cruzeiro do Sul industrial Parks in Acre, are promoted for the State's industrial expansion.

In Amapá, the cellulose industry in Santana stands out with Amapá Florestal e Celulose of capital from Nippon Paper Industries and Nippon Yusen Kaisha, and the Macapá-Santana Green Free Economic Zone. In Roraima, the expansion of grain agribusiness (soy and corn) in the cerrado fields distributed in Bonfim, Cantá, Boa Vista and Alto Alegre, Caracaraí, among others, is noteworthy.

In Rondônia, the agricultural production based on family agriculture and agribusiness expansion of soybean, coffee, corn, fruits etc. is emphasized. The industry focuses on beverage, food, wood and construction.

Tocantins proved to be an important grains producer (soy, corn), especially in Pedro Afonso and Campos Lindos, and in cattle. Agribusiness is the central record of Tocantins' industrial production.

In Mato Grosso, especially in the north, the expansion of logging and mineral exploitation and the advancement of soybean and livestock agribusiness are

significant reasons for the transformations in the socio-environmental landscapes.

In the Amazonian area of Maranhão, there has been an expansion of the mining-metallurgical sector along the Carajás Railroad, the creation of the Industrial District of São Luís and the consolidation of the agribusiness of soy and agroindustrialization in the areas of Cerrado, especially in Balsas and its immediate surroundings. The highlight of the industry is the ALUMAR Project, which benefits bauxite from the Trombetas and Juriti mines in western Pará. Refinery opening and alumina production are project highlights, after the reduction of aluminum production in 2015.

In Pará and Amozanas, main engines in Amazon economy, the *Brazil in Action* (1996-1999) and *Advance Brazil* (2000-2003) programs have contributed to the intra-regional differences and announced the incorporation of new areas to productive integration of the Brazilian territory, the policy of regional integration in South America, and the labor international division. The projects linked to *Brazil in Action* were aimed at recovering the BR-364 (Brasília-Acre) and BR-163 (Cuiabá-Santarém) highways; paving the BR-174 (Manaus-Boa Vista); the implementation of the Madeira Waterway under the management of the Amaggi Group; the construction of the Urucu gas pipeline; and the investments in hydroelectric connection lines of Tucuruí with Altamira and Itaituba. The *Advance Brazil* program concentrated such investments in multimodal transportation corridors connecting waterways and highways in socio-environmental fragility areas, such as the opening of the Tocantins-Araguaia waterway and the Teles Pires-Tapajós waterway.

The aforementioned logistical investments were part of the strategies of *Integration and Development Axes* (IDA) included in the *Brazil in Action* government program by Fernando Henrique Cardoso. In the Amazon, the IDA proposal meant the definition of privileged space cuts in terms of logistic systems and productive potential capable of stimulating regional connections in the labor international division, in spite of the socioenvironmental problematic and land conflicts foreseen by on-going investments in the selected exportation corridors. Regional cuts of the Arco-Norte, Madeira-Amazonas, Araguaia-Tocantins and Oeste axes in the Amazon were defined. The first axis included Roraima and Amapá, the Amapá's BR-156 highway influence area, and the road interconnection with the three Guianas. The second axis related to the Madeira waterway and to the Urucu-Porto Velho and Coari-Manaus gas pipelines, as well as the paving of BR-364

and improvement in air and port transport in Manaus, Porto Velho, and Santarém. The third axis was associated to the intermodal corridor (waterway-railroad-highway-port) of grain production articulation of the Central-West Cerrado and mineral exploration of Pará towards the port of Itaqui in Maranhão. The fourth axis integrated grain production from the Chapada dos Parecis to the Madeira waterway through highway BR-364 in direction to Itacoatiara (Amazonas) port or via the Paraguay-Paraná waterway to the logistics system in the South and Southeast regions (Egler 1999). Once Lula settled in power, the IDA strategy saw its end.

Regardless of environmental activism, the governments of Luís Inácio Lula da Silva and Dilma Rousseff, through the Pluriannual Program (2004-2007), *Initiative for Integration of Regional Infrastructure in South America* (IIRSA), *Ecological-Economic Zoning of the Amazon and Growth Acceleration Program* (GAP), pursued capitalist investment projects rejected by several NGOs and left-wing intellectuals, mainly because of the flexibilization of the exploitation of environmental resources by capitalist interests. There was also a flexibilization of the remittance of profits abroad, the Forest Code and Labor Legislation, as well as, based on pressure from the agrarian oligarchy, proposals emerged for revising areas already demarcated, and for legislation regarding environmental protection and indigenous territories, in order to reduce obstacles to international investments in the Amazon, according to the Michel Temer Government's controversy in the 2017 media case of the National Reserve of Copper and Associates, which involved Conservation Units and Indigenous Lands and interests of mining corporations.

Lula and Rousseff's management reinforced hydroelectric investments as a priority. Territorial strategies for the construction of a logistic system, articulating energy, transport and communication to support the agribusiness frontier's mineral, industrial exploration, and advancement are priorities for according to the IIRSA and GAP programs.

Regarding energy, Belo Monte Power Plant in southwestern Pará (Altamira) and the Jirau and Santo Antônio Hydroelectric Power Plant on the Madeira River in Rondônia were constructed, accompanied by intense mobilization. These projects were rejected by civil society, since roads and dams for hydroelectric projects ended up in an intense ecological-cultural passive, in spite of environmental impacts presented by Brazilian Institute of Environment called IBAMA. Conflicts between income

and plant construction brought clashes with quilombolas, riverine, indigenous nations and family farmers, attracted labor force, and accelerated uncontrolled migration.

Of a total of 82 highways and waterways planned by the GAP for Amazonia (projects concentrated in Amazonas, Pará and Rondônia), 43 impacted one or more indigenous lands, according to a report by Verдум (2012). His study also warns that 90% of indigenous lands close to GAP hydroelectric projects are at risk in face of logging, mining and resettlement of communities to be affected.

Cardoso and Lula's governments directed significant investments in the physical-economic integration of agribusiness in Cerrado areas, opening of the road connecting Brazil to Guyana (Highway-156), Venezuela (Highway-174), and others. The pavement of the Pará part of 163 highway (Cuiabá-Santarém), via private concession, is in the final phase and will promote the advance of the capitalist agricultural frontier in the north of Mato Grosso and the south of Pará. The return of development projects linked to the techno-industrial vector of the 1970s does not take into account the susceptibility of environmentalists. The strategies for the Amazon in the last 21 years have a contradictory character: sometimes, the environmental conservation is valued, and sometimes the socio-ecological impacts of the competitive integration projects of Amazon in South America and the Pacific Ocean are neglected.

Under Rousseff's management, the report of the *Regional Development Plan for the Amazon (RDPLA)* was elaborated, and approved in 2014 by the Sudam (Superintendence of regional development of Amazon) deliberative council. The *Plan* was oriented by global guidelines derived from territorial policies of productive and competitive integration of the Amazon in national and international markets and, highlights strategies for agriculture, energy and added value expansion in productive chains, in order to strengthen national leadership in the international biofuel market. The GPA's inherent intermodal investment logistics was focused on energy infrastructure. The implementation of Local Productive Arrangements and the incentive to industry through fiscal and credit benefits and simplification of regulatory requirements and dissemination of information are central objectives of the RDPLA. There are also calls for poverty reduction and environmental sustainability in the Legal Amazon. The attempt to reconcile the actors' interests of the dynamics of the techno-industrial and the tecno-ecological vector is remarkable in the

Plan, and even more in the *Ecological-Economic Zoning of the Amazon*.

The general strategies of the *Amazon Ecological-Economic Macrozonning: strategies for transition to sustainability*, a document available on the Ministry of Environment's website, approved in 2010, takes note of some socio-environmental dilemmas underway: The Law for Land Regularization in the Legal Amazon (Law n° 11.952/2009) opens space for the sale of real estate after three years of its titling and for real estate speculation and consequent concentration of land. The strategies of "other agrarian policy", based on the recognition of quilombos, extractive reserves and indigenous territories, are followed by the challenge of land regularization and the insertion of the social groups into sustainable productive chains in terms of capitalist accumulation.

Despite the creation of Conservation Units (CUs), the EEZ-Amazon (*Ecological-Economic Zoning of the Amazon*) highlights the difficulty of land regularization, and insufficient human resources for the inspection and consolidation of ecological management plans. There are still problems of deforestation in Indigenous Territories and CUs for logging purposes, and intense political pressure from the ruralist group in the Brazilian National Congress for the reduction of protected areas. Another hindrance is the strong concentration of some indigenous populations and extractive reserves in urban areas, especially on the upper Rio Negro and in the Alto Juruá Extractive Reserve. The solution proposed by the EEZ goes towards the productive organization of the socio-biodiversity product chain in Local Productive Arrangements, Food Acquisition Program and National School Feeding Program.

In already consolidated networked productive territories, the EEZ announced the articulation of GAP with IIRSA, in order to strengthen already established logistics and propose new projects. The strategies indicate the agribusiness potential in the grain and meat chain in the Cerrado and its integration in the logistic circuits of Bolivia and Peru, logging in the public forests, and organization of the chain of socio-biodiversity for the production of cosmetics, pharmaceuticals and fruit growing. In fact, the EEZ calls attention to the implementation of agricultural complexes aiming to achieve results similar to those obtained with the Industrial Pole of Manaus, and to consolidate the mining-metallurgical pole on the Amazon coast. Both strategies are based on logistics and processing of regional production. According to the EEZ,

the sanitary and fiscal regulatory framework for productive chains must be reviewed.

The EEZ strategies are, in fact, part of the inductive projects of the techno-ecological and strategic reevaluation of Amazonia since the 1990s. According to Becker (1999), the scientific-technological revolution, neoliberalism, the environmental crisis, international agreements in support of the ideology of sustainable development announce new ways of insertion of the Amazon into the territorial division of labor on an international and national scale and a new geopolitics.

The speed of material and immaterial flows is verified in the proposals for territorial planning *Brazil in Action, Advance Brazil*, IIRSA, GAP and implementation of the System of Surveillance and Protection of the Amazon. The capitalist appropriation of natural resources begins to value regional biodiversity as a source of technological information and potential for current or future income. The Amazon becomes a place meeting scientific and technological use of nature (Bertha 2005, 33). Keeping the equatorial forest and its socio-biodiversity standing up redefines the relationship of the capitalists with natural resources and signals to cracks in urban-industrial projects forged under the sign of the border economy.

In geopolitical terms, the Amazon has become the ecological heart of the planet, its heartland (Becker 2005, 33), and a frontier of natural capital (34), mainly from the commodification of socio-biodiversity and air (carbon market - planting of forests), forest certification and Eco business. In view of its South American coverage, there were efforts to coordinate projects and use of natural resources, joint action against biopiracy and illegal gold-digging, through the rescue of the Amazon Cooperation Treaty Organization, the Northern Calha Program and IIRSA.

The participation of social and environmental movements in the face of new geopolitical redesign of the Amazon region converges to intense conflicts between distinct and rational logics of appropriation and conservation of nature. In this force field, new political networks of social movements have fought to affirm a new social contract based on the geopolitics of the Amazon's sustainable. At this point, the socio-environmental political networks formed by NGOs (Non-governmental Organization) stand out: the Amazon Working Group, which brought together all the 602 entities, in 2005, with the participation of indigenous representatives, trade unions, teachers and university students.

The geography of land conflicts in Amazon

In general terms, the regional dynamics of the Amazon in the first decades of the 21st century presents a series of socio-spatial processes still underway:

1. The reduction of the advance speed of the capitalist frontier, from the constitution of conservation units (Figure 2) and demarcation of indigenous lands (Figure 3) and quilombolas;
2. The decline of immigration and regional emigration: Between 2004 and 2009, the number of immigrants decreased from 330,660 to 184,634, while emigrants decreased from 266,919 to 219,793, according to the National Survey of Household Sample (IBGE-PNAD 2009);
3. The intensive modernization of livestock and agriculture to reduce demand for more land, despite the extensive character of agribusiness;
4. The consolidation of mining-industrial pole and the Manaus Free Economic Zone and opening of the Acre Exports Processing Zone and Free Trade Zones (Tabatinga, Macapá, Cruzeiro do Sul, Guajará-mirim, Bonfim, Pacaraima, Santana, and Brasileia);
5. The densification of the technical control mesh (multi-modal transport and hydroelectric opening infrastructure) and policy (technical system for the protection and surveillance of the Amazonian territory);
6. The requalification of agrarian reform by incorporating the environmental or ecological-cultural dimension of the struggles for land rights carried out by various social groups;
7. The maintenance deforestation as a strategy for advancing the natural capital frontier: Between 2017 and 2018, there was a 13.7% increase in deforestation in the Amazon. The lost forest area was 7,900 km² against 6,947 in the previous period, according to the PRODES-INPE (Project for monitoring deforestation in the Amazon);
8. The organized resistance of traditional populations to the expropriation of their territories results in conflicts and clashes scattered in the Amazon. For organizational purposes, the GTA Network (Amazon Working Group), created in 1992 and representing 602 traditional entities throughout the Amazon, is highlighted. There is also the COIAB (Coordination of Indigenous Organizations of the Brazilian Amazon), which brings together 77 village networks and indigenous reserves. The Palmares Foundation, an organization dedicated to the preservation of Afro-Brazilian culture, has already

- granted certification to 2,471 remaining communities of quilombos in the country. In Pará, 227 quilombos were certified by the Palmares Foundation in 2016;
9. The insertion of traditional populations in agribusiness requirements, such as the *Base Indigenous Farmers Group* proposal, which congregate 170 indigenous ethnic groups, and fights for the right to integrate agribusiness, and opposes the interests of *Articulation of Indigenous Peoples of Brazil* group, which defends indigenous ancestry in terms of the man-nature relationship and repudiates agribusiness;
 10. The invasion of indigenous territories by family farmers and gold miners, as well as the struggle of traditional

populations, landless and rural workers against landowners, loggers and corporations in which land grabbing is an important instrument of expropriation of social groups oppressed by the actions of capitalist forces;

11. And, finally, territorial conflicts on the borders of the Amazon frontier with neighboring South American countries in terms of biopiracy, illegal mining, migration of Venezuelans, invasion of indigenous lands, etc.

While studying the agrarian dynamics of the Amazon, between 2000 and 2015, Porto-Gonçalves et al. (2015) drew attention to the report of the Pastoral Land Commission, which denounces the occurrence of social

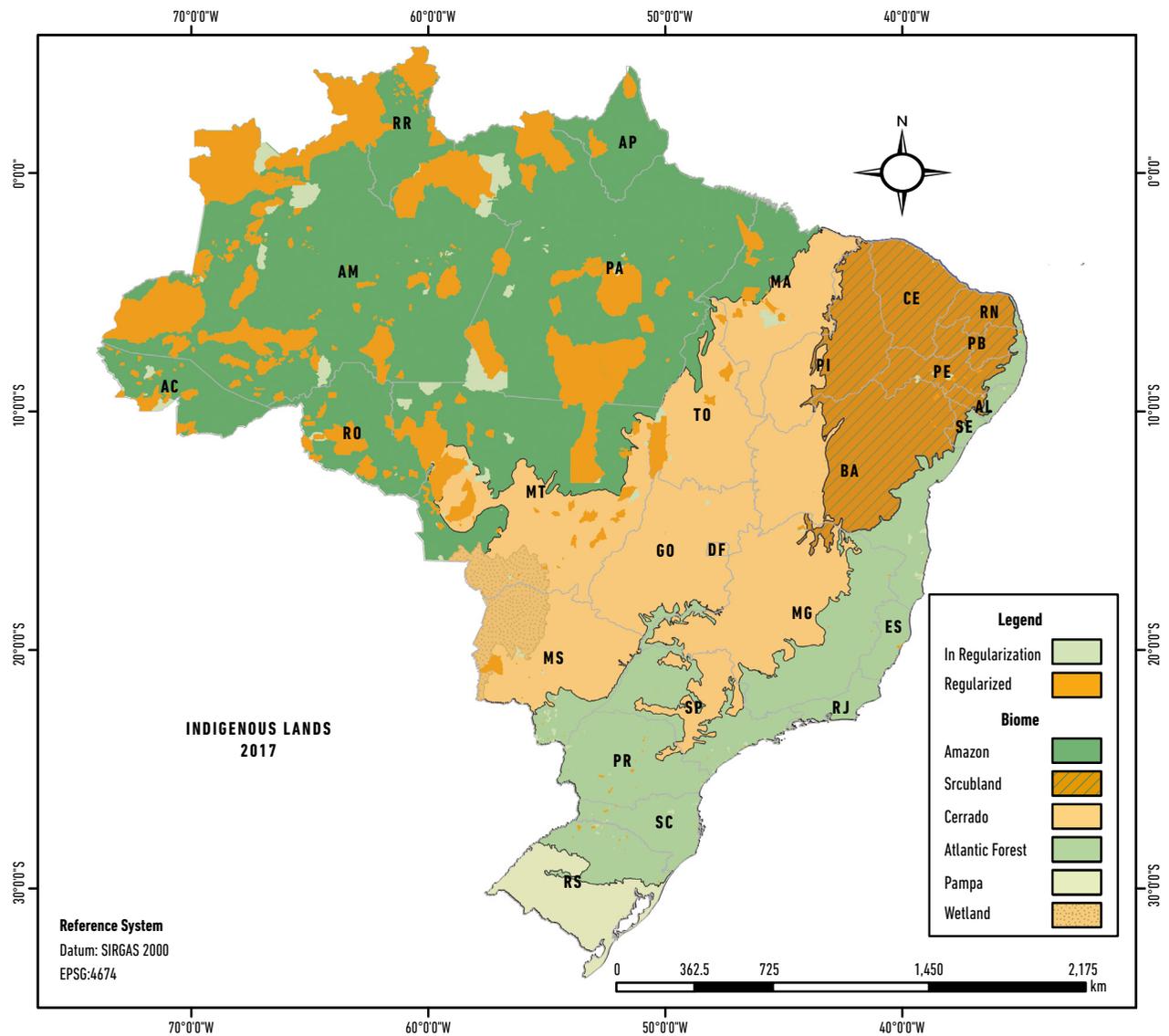


Figure 3. Indigenous Lands in Brazil, 2017.
Source: FUNAI 2017.

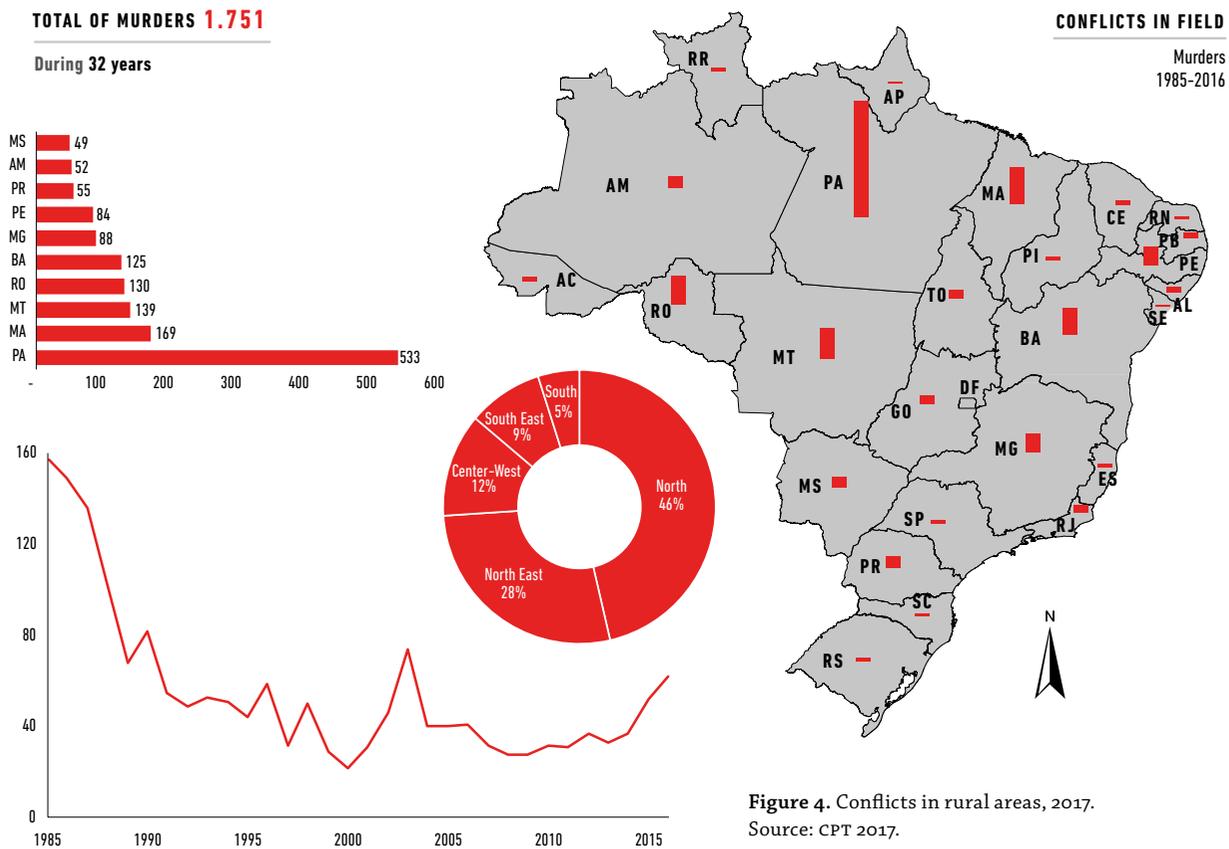


Figure 4. Conflicts in rural areas, 2017.
Source: CPT 2017.

conflicts associated with violence against occupation and possession, and conflicts over water. 44% of national Amazonian localities hosted clashes between 2000 and 2015, especially involving traditional populations. As the situation of oppression and exploitation signals to the conflict, diverse social groups assume a political identity and struggle against the antagonistic capitalist forces.

When the disputes are analyzed in the same study (Porto-Gonçalves et al. 2015), landless, smallholders, tenants and affected by dam are not the majority when compared to traditional populations. The main social actors responsible for violence against traditional populations are: farmers (30%), businessmen (26%), and land invaders (21%), followed by mining, hydroelectric, pistol, logging, State, and others. The confrontations arising from building Jirau, Belo Monte, and Santo Antônio Hydroelectric Power Plants; the conflicts of those affected by the mining of Vale S/A; and the impacts of soybean growth and livestock monoculture are noticeable. In terms of re-existence, in 2015, there were 24 land occupations in 20 counties involving 1,569 families in an area of 180,889 hectares in the Amazon. Several social groups organized the occupations: Landless Movement, League

of Poor Peasants, Union of Rural Workers, Independent Organization, and Rural Workers Association.

Between 1986 and 2016, 171,749 murders occurred in the countryside of Brazil (Figure 4): The Central-West and North Macroregions recorded 64,702 and 46,503 murders each. Both the Cerrado and the Amazon were the two biomes on which territory modernization was intensive. Countryside conflicts (Figure 4) take place due to spatial injustices derived from land grabbing, land concentration, illegal logging, agricultural development, mineral exploitation, and the expropriation of small rural workers, especially in the Eastern Amazon, where the State of Pará has the highest number of murders, according to PLC-2016 Report, due to the intensification of mineral exploration, agriculture and livestock, hydroelectric projects, land fraud, etc.

Land confrontation did not cease in 2016. PLC estimated that 57% of conflicts were registered only in the Amazon. 196 records of threats, murders, arrests, physical aggression and lawsuits against peasant, indigenous, quilombolas and union leaderships were registered in Maranhão. The fiscal crisis and the political conjuncture of Michel Temer's Government boosted land disputes in

view of the extensive character of the frontier of agribusiness and mineral and logging exploration and the execution of investments in energy logistics. Squatters, landless, quilombolas, indigenous people, settlers, tappers, extractivists and riverine people are among the most vulnerable communities (Braga et al. 2016).

In PLC's Annual Report, *Field Conflicts - Brazil-2016*, Amazon distribution is verified:

1. In Acre, 77 occurred by land, with 5,547 families, involving squatters, tappers, extractivists, settlers and riverines, especially in municipalities of Boca do Acre/Rio Branco, Acrelândia, Bujari, Cruzeiro do Sul, Manoel Urbano, Rio Branco, and Sena Madureira.
2. In Amapá, there were 47 land conflicts involving 1,919 families, squatters, riverines, quilombolas, settlers, mainly in the municipalities of Macapá, Ferreira Gomes, Mazagão, Tartarugazinho, Porto Grande, Itaubal do Pírim, and Santana.
3. In Amazonas, especially in the municipalities of Autazes, Manaus, Iranduba and Presidente Figueiredo, there were 32 verified land clashes, involving 8,167 squatter, indigenous, riverine, settled and extractivist families.
4. The state of Maranhão (mainly in Açailândia, Alto Alegre do Maranhão, Caxias, Barra do Corda, Buriticupu, Araiões, Codó, Chapadinha, Itapecuru Mirim, Matinha, Formosa da Serra Negra, Pirapemas, São Luís, São Benedito do Rio Negro, Palmerândia) registered 176 land conflicts, among 18,264 families of quilombolas, squatters, landless, settlers, natives, fishermen, and small proprietors.
5. In Mato Grosso, 50 land disputes were registered, totaling 5,596 families distributed among the indigenous, landless, settled, squatter categories, especially in the municipalities of São Felix do Araguaia/Alto Boa Vista, Brasnorte, Castanheira, Juína, Colniza, Luciara, Nova Guarita/Peixoto de Azevedo, Nova Ubitatã, Novo São Joaquim, Novo Mundo, Colíder and Vila Rica.
6. In Pará, there were 110 land conflicts, 18,109 families involved and distributed among the landless, quilombolas, riverines, settled, indigenous, extractivists, especially in the municipalities of Anapu, Almeirim, Altamira, Chaves, Marabá, Curionópolis/Parauapebas, Conceição do Araguaia, Canaã dos Carajás, São Felix do Xingu, Nova Ipixuna, Oriximiná, Novo Progresso, Santana do Araguaia, São João do Araguaia, Tome-Açú, among others.
7. In Rondônia, 143 land disputes occurred, involving 6,954 squatters, landless, settlers, or indigenous families, affected by dam and quilombolas, mainly in the municipalities of Alto Paraíso/Buritis, Ariquemes, Cujubim, Candeias do Jamari, Costa Marques, Guajará Mirim, Ji-Paraná, Machadinho D'Oeste, Porto Velho, Monte Negro, Seringueiras, Vilhena, among others.
8. In Roraima, PLC registered 10 land clashes, totaling 1,463 families distributed among landless, settled and indigenous people, especially concentrated in Bonfim, Boa Vista, Alto Alegre, and Iracema.
9. Finally, in Tocantins, there were 86 land conflicts in the municipalities of Araguaína, Babaçulândia, Araguatins, Barra do Ouro, Brejinho de Nazaré, Conceição do Tocantins, Mateiros, Palmas, Palmeirante, Paranaíba, São Bento do Tocantins and Wanderland among 4,117 families of varied segments, such as the landless, settlers, quilombolas, and squatters.

DATALUTA-Brasil Report 2017 also gathers data on land issues in the Northern Region. The number of occupations and families involved, between 1988 and 2016, was 936 and 120,101, respectively. Pará, Tocantins and Rondônia were the highlighted states. There were 2,171 recorded settlements between 1979 and 2016, in the North Region involving 505,056 families in an area of 61,269,638, or 74.6% of the total settlement area in the country. Once again, Pará, Rondônia and Tocantins were the highlighted. Finally, between 2000 and 2016, the distribution of the struggle for land among social movements reveals the predominance of the Landless Movement with 130 occupations and 27,680 families; then the National Confederation of Workers in Agriculture, Indigenous Movements, Landless Liberation Movement, Family Farm Workers' Federation, PLC, and others.

In PLC's *Amazon Conflict Atlas*, 980 confrontations were registered in 2017, highlighting the states of Maranhão (20.1%), Rondônia (19.5%), Pará (14.5%), Tocantins (13.8%) and Mato Grosso (9.9%) totaling 98,400 families involved (Ferreira 2017). There were 144 murders between 2015 and 2017, numbers that demonstrate an insufficient policy of agrarian reform and protection of territorialities that are alternative to the advance and consolidation of the agricultural-urban-industrial-mineral frontier in the Amazon. In transition areas in Cerrado and Equatorial Forest, the consolidation of agribusiness in the grain-meat chain, mining and logging are the main fronts of capitalist expansion responsible for land conflicts, occupations, slave labor, and water conflicts.

In Mato Grosso, the main agribusiness area of the Legal Amazon, there were 17 occupations involving 1,480

families, especially in the north (Castanheira, Colniza, Juína, Juruena and Luciara); three camps; 23 denunciations of slave labor; and eight episodes of water conflicts with a threat of expropriation and impediment to access to water for 670 families in New Canaã do Norte, Apicás, Claudia, Gaúcha do Norte and Sinop in 2016. In Taboporã/Sinop/Tapurah, water conflicts involve the Gleba Mercedes Hidroelectric Plant of Sinop/Teles Pires Complex and 212 families, due to dams and weirs. Modernization and urbanization of Mato Grosso's agriculture requalifies the rurality of traditional, landless, squatter and settled populations, as well as enlarge the spatial scale of socio-environmental problems and agrarian reform conflicts.

The *Amazon Bulletin - Environmental Socioeconomic Indicators and Conjuncture Analysis of the Legal Amazon of 2016* shows that family farming is given little relevance in the covenants and terms of execution signed in the Legal Amazon between 2008 and 2013: only 5% of the resources were allocated to family agriculture, while infrastructure accounted for 44%, local development, 17%, and Science and Technology, 13%.

In 1995, the cattle herd in the Legal Amazon was 37 million heads (23% of the national total), and in 2016 this amount rose to 85 million (40% of the Brazilian herd). This substantial increase in eleven years coincides with records of violence and land conflicts in the Amazon. It can be inferred that occupation and soil use for pastures destined to cattle have direct relation with land deforestation and disputes in the Amazon. Soybean production contributes to this issue; it reached 4.5 million hectares in the 2016/2017 harvests, a growth of 300% in the last decade. The numbers help legitimize livestock followed by agriculture, based on the latifundium as the main responsible for the destruction of Amazonian socio-biodiversity.

Between 1988 and 2017, the deforested area of 428,398 square kilometers is almost the size of Sweden's territory (447,435 km²), according to PRODES-National Institute for Space Research. The states of Pará (34%), Mato Grosso (33.3%), Rondônia (13.8%) and Maranhão (5.8%) lead annual deforestation rates in the Legal Amazon. The consolidation of the primary export model of the Amazon should not alter the regional deforestation process.

Alongside the socio-environmental transformations, a large part of the Amazon population is still in poverty. In 2013, only 14.62% of permanent residents had access to the sanitary sewer network (IBGE-PNDA 2015). The IBGE's *Social Indicators Synthesis* (2017) also

shows that Maranhão, Amazonas, Acre, Pará and Amapá have alarming levels of poverty in the total population: 52.4%, 49.2%, 46.6%, 45% 6% and 41.8%, respectively. These states had a daily income for some of less than U\$ 5.5 per capita. In terms of monthly household income per capita, in 2016, 16% of the population in the North Region received $\frac{1}{4}$ of the minimum wage; 22% of residents received $\frac{1}{4}$ to $\frac{1}{2}$ of the minimum wage; 28.4% received from $\frac{1}{2}$ to a minimum wage; only 2.6% received more than five minimum wages, and those with no income totaled 1.7% of households.

Final considerations

Amazon modernization since 1970 reveals ways of appropriating natural resources of several physical and socio-cultural-ecological geo-graphs. Despite the unified projection of the epistemic coloniality of the capitalist social forces rationality, the Amazon's regional dynamics show a diversity of socio-productive geo-graphs aimed at the insertion of regional parcels into the international labor division. The techno-industrial vector is still an important reason for environmental degradation, urbanization without citizenship, and spatial injustices.

In a dispute against the techno-industrial vector, the struggles for demarcation of indigenous, quilombolas, and Conservation Units lands, as well as the preservation of their forests and rivers, emerge. The arrival of the techno-ecological vector indicates, in the context of Amazonian socio-biodiversity, the re-signification of nature as a natural frontier in the service of capitalist interests. In spite of activism for sustainable development, the techno-ecological vector contributes to the expansion of the hegemonic capitalist frontier.

Amidst these antagonistic forces, modernization versus socio-spatial injustices, land conflicts in areas of an already deforested Amazon, and an Amazon that is still in the process of productive and competitive integration are revealed in the upheavals of the attacks on the right to territorial alternatives made by traditional populations, landless, settled, among others. Violence in the field, according to PLC and DATALUTA reports, only confirms the symptom of the historical socio-economic contradictions of the socio-productive occupation of the Amazon. Next to violence in the countryside, urban violence is recorded on the poor population deprived of the right to citizenship and extreme inequality in the distribution of *per capita* income.

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