

## 'Cerrado', old and new agricultural frontiers

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The aim of the text is to discuss the occupation of the old and new agricultural frontiers in the 'Cerrado', highlighting the influence of official policies which, guided by a model of agricultural expansion intensive in capital, technology, and the use of natural resources, directed economic exploitation to ever more distant areas. It looks at the region called Matopiba, as a continuation of the movement of the exploitation of frontiers still covered in native vegetation. It shows that as well as having the general characteristics of the model of agricultural expansion adopted in other areas of the 'Cerrado', agriculture in this new frontier had the particularity of being connected to the global phenomenon of rising foreign ownership of land ('land grabbing'), due to the increased presence of transnational companies and investment funds in the acquisition of areas, fruit of the movement resulting from the financialization of environmental assets (land, water, and forests). Finally, it deals with the implications of deforestation in the 'Cerrado', highlights governmental initiatives aimed at confronting it, as well as the political weight of Brazilian agribusiness, which has reduced the margin of action of environmental policies in the biome. It is concluded that the 'Cerrado', since it does not have the social appeal and protected status of forest biomes, seems to form a territory of sacrifice

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**B**razil has the largest megadiversity on the planet (MITTERMEIER et al., 2005). Taking into account just the number of biological species, for example, it is estimated that the country has around two million species, 10% of global biological diversity (LEWINSOHN and PRADO, 2005). This number increases when the infinity of habitats of the five continental biomes, coastal-marine environments, and oceanic islands are considered, as well as the vast genetic heritage. In terms of the diversity of traditional peoples, it houses 305 indigenous ethnicities – speaking more than 278 ancestral languages – around six thousand ‘quilombola’ communities, and numerous other groups, such as ‘geraizeira’, ‘vazanteira’, ‘quebradeira de coco babaçu’, ‘caiçara’, and ‘seringueiro’ communities. Drawing on the resources of biodiversity, these traditional peoples have, over the generations, acquired an incalculable knowledge of fauna and flora.

However, all this socio-environmental wealth continually suffers threats, with deforestation being the principal danger affecting continental biomes (BRASIL, 2020). The Atlantic Rainforest, with an extension of 1.3 million km<sup>2</sup>, only has 12.4% of original coverage left, when fragments above 03 hectares are considered (FUNDAÇÃO SOS MATA ATLÂNTICA, 2019), or 25.5%, taking into account areas greater than 01 hectare (MAPBIOMAS, 2020). 26% of the Pampas are left, which originally measured 176,500 km<sup>2</sup> (JOLY et al., 2019, p. 25). Of the 912,500 km<sup>2</sup> of the original area of the Caatinga, around 43% has been deforested (JOLY et al., 2019, p. 21). The Pantanal, which extends for 150,300 km<sup>2</sup> and whose vegetation is partially flooded, has lost 27% of its coverage (JOLY et al., 2019, p. 26).

However, it is in the Amazonian and Cerrado biomes that predatory deforestation has the most significant rhythm and amplitude. According to the National Institute of Spatial Research (INPE), in 2018 the Amazon, which extends for 4.2 million de km<sup>2</sup>, had lost 708.391 km<sup>2</sup> of forests, equivalent to 17% of the original area (INPE, 2020). In turn, the Cerrado – equivalent in size to around half of the Amazonian biome – has lost more than one million km<sup>2</sup>, i.e., more than 50% of its original area (INPE, 2020). Total deforestation in the two environments is equivalent to the territory of France, Spain, Germany, and the United Kingdom.

While deforestation in the Amazon has received national and international attention, what occurs in the Cerrado does not have the same visibility, despite being

superior in absolute terms. Perhaps because there still prevails the prejudice that it is an environment with a lower value, an idea occasionally reinforced by schoolbooks (OLIVEIRA, 2014), or, assuming the hypothesis of Oliveira and Hecht (2016) that it is a territory to be sacrificed.

Nevertheless, deforestation is an expensive practice, requiring financial resources. It is not done without an expectation of a later benefit, which can be the expansion of agricultural production or a simple increase in land value, since cleared areas are worth more than those with intact native vegetation. The model of the continuous expansion of agriculture in the Cerrado has both these purposes.

The 'TerraClass Cerrado' study carried out jointly by INPE, the Brazilian Agricultural Research Company (Empresa Brasileira de Pesquisa Agropecuária - Embrapa), and other institutions highlights the direct relationship between livestock raising, agriculture, and deforestation. In analyzing the use given to the total size of deforested areas until 2013 (around 885,000 km<sup>2</sup>), this research reveals that 94.7% of these areas have been used for planted pasture or annual/perennial agriculture (BRASIL, 2015). The expansion of agriculture, the basis of Brazilian agribusiness, is considered fundamental for national economic growth. In this aspect, the Cerrado has been important. According Reis et al. (2017), the biome represents around 60% of the country's agricultural production, leading the production of soybean, corn, cotton, and even sugarcane.

While livestock and agriculture are responsible for the matrix of deforestation in the Cerrado, invariably treated by agribusiness as a frontier, it is important to note this happened in a relatively rapid form. The argument defended here is that the expansion of both economic activities did not occur in a random form, as the exclusive result of the choice of each rural landowner about where, when, and what to cultivate. Behind these preferences was the support of official policies, guided by the model of agriculture intensive in capital, technology, and the use of natural resources. Especially since the 1970s, the construction of infrastructure and fiscal, credit, technological innovation, technical assistance, and colonization policies, etc, induced the establishment of agricultural enterprises in certain regions of the biome, treated as a frontier to be conquered. In continuous occupation over the years, some areas became consolidated, even originating new municipalities.

This reasoning is returned to in the next section, the objective of which is to discuss the role played by official policies in the exploration of the frontier on the Cerrado. Recognizing that these policies as a whole were essential, the role of directed colonization is briefly discussed, carried out under the auspices of the Nipo-Brazilian Program for Cooperation for the Development of the Cerrado (Programa de Cooperação Nipo-brasileira para o Desenvolvimento do Cerrado - Prodecer), due to its demonstrative effect on agricultural development within large and mid-sized properties.

In the second section, the text demonstrates that the advance of the frontier towards the northern Cerrado led to the exploitation of the region currently known as Matopiba, which corresponds to the junction of the municipalities covered almost exclusively by the vegetational mosaics of the biome in the states of Maranhão, Tocantins, Piauí, and Bahia. It is a place in which the agricultural model, as well as the other characteristics marking the agricultural occupation of the Cerrado, gained a new aspect in the last decade, becoming connected to increased foreign ownership of land ('land grabbing'), a global phenomenon which shows the growing presence of transnational companies and investment funds in the acquisition of land and in the financialization of environmental assets. Highlighted, as a consequence of this, are the conflicts of land use resulting from this model.

The third section discusses the socio-environmental implications of deforestation in the Cerrado and highlights governmental initiatives to tackle this. Following this, the final section briefly shows that the economic weight of Brazilian agribusiness, transformed into political hegemony, tends to inhibit the adoption of measures of an environmental nature which can limit the expansion of the agricultural frontier in the Cerrado.

### **Opening the frontier: the role of governmental policies**

Accentuated since the 1970s, the introduction of modern agriculture in the Cerrado, characterized by the intensive use of labor, technology, natural resources, and the low use of labor, is related to national-developmental policies implemented during much of the twentieth century. Starting with the Vargas period (1930-1945), his 'March to the West' established agricultural colonization projects

in Goiás and Mato Grosso do Sul resulting in the emergence of settlements and towns in Central Brazil (BRAGA, 1998, p. 95). In the 1950s, especially during the JK administration (1956-1961), large sections of highways were constructed in the region – such as the Belém-Brasília highway and BR 364 -, as well as, obviously, the building of Brasília, right in the heart of the Cerrado. Public investment led to stronger infrastructure, favoring the connection of the region with the South and Southeast, as well as implying immigration, especially to the new capital.

However, it was the governments of the military dictatorship (1964-1985) which undoubtedly did most for the agricultural exploitation of the frontier, through the combination of more infrastructural works and fiscal, credit, agricultural, research, and colonization policies, all under the baton of national integration (BRAGA, 1998; INOCÊNCIO, 2010; PIRES, 2000). From this time onwards, the so-called ‘conservative modernization of agriculture’ became more evident – an adaptation of the original concept of Barrington Moore Jr (1975) —: an increase in agricultural production through technological renovation without the alteration of the agrarian structure (GUIMARÃES, 1977, p. 03).

Federal planning reflected in the National Development Plans (PAEG 1964-1968, I PND 1972-1974, II PND 1975-1979, III PND 1980-1985) – each with a reasonably distinct focus -, aimed to promote what Becker (2001), analyzing the Amazon, called the technical and political control of the territorial network, inducing economic sectors according to the ‘natural vocation’ of regions. The military and the technocrats concluded that agriculture was the ‘natural vocation’ of all of the Center-West region of Brazil, as well as the mesoregions of the Northwest, West, the ‘Triângulo Mineiro’, and the Alto Paranaíba region of Minas Gerais and Western Bahia. These territories thus came to witness the extensive agricultural exploitation of their land, while the discourse expanded that the new frontier of the Cerrado had the potential to be the breadbasket of the world.

Based on the concept of the irradiation of growth from poles — from the French economist François Perreoux (1903-1987) —, using international loans the military established between 1974 and 1975 programs aimed at the development of agricultural and mineral poles in various places, including: the ‘Polocentro’, for the cerrado of the Center-West and in part of Minas Gerais and

Bahia; 'Poloamazônia', for the states of the North; 'Polonordeste', for the northeast region; as well as special programs, such as Promat for Mato Grosso and Mato Grosso do Sul and 'Goeconômica de Brasília' for the Federal District. Of these, 'Polocentro' (1975-1981) had an important role in Central Brazil, since, given the objective of incorporating three million hectares of native area into agricultural activities, making investments in 202 municipalities worth around US\$ 750 million, at the values of the time, with priority being given to the opening of roads, rural electrification, and the storage and sale of agricultural products (BRAGA, 1998, p. 98). The intention was to supply internal demand and the international market, which became interested in the potential of the new agricultural frontier.

However, it was clear that to achieve the desired irradiating effect, it was necessary for state action not to be limited to providing credit and fiscal subsidies, building roads, electricity, constructing silos, facilitating commercialization, etc. It was also necessary to demonstrate how production within the mid-sized and large 'fazendas' (large farms or plantations), seen as having potential, had to be converted to modern agriculture (FRANÇA, 1984). Taking advantage of the experience of Minas Gerais in directed colonization, the federal government intended to expand it to strategically selected areas. Negotiations that began in the middle of the 1970s between the Brazilian and Japanese governments gave rise to the Nipo-Brazilian Program for Cooperation for the Development of the Cerrado (Prodecer), whose first colonization pilot-projects began to be implemented in the 1980s, in the Minas municipalities of Coromandel, Iraí de Minas, and Paracatu, with a total area of 63,000 hectares (PIRES, 1996).

Prodecer's pilot-projects, benefitting from previous experience and investment, combined actions within landholdings with more general ones: in the selection of areas and colonists – most coming from the South and Southeast –, the supervision of credit, the productive structure (types of crops, technologies, etc), the formation of production cooperatives, the creation of agricultural settlements, as well as linking governmental bodies and creating infrastructure, energy, communication, etc (PIRES, 2000, p. 123). All of this symbolized the combination of interests of the two countries. For Brazil the expansion of modern agriculture met its internal and export objectives. For Japan,

under the impact of the crisis caused by drought in the United States which reduced soybean production, on which Japan was dependent, the diversification of suppliers was strategic (PIRES, 1996).

The success of the first phase of Prodecer led to a second phase, which began in 1985, covering an area of 205,000 hectares in Minas Gerais, Goiás, Mato Grosso, Mato Grosso do Sul, and Formosa do Rio Preto, a municipality in the West of Bahia. The third phase occurred between 1995 and 2001, implemented in the municipalities of Pedro Afonso in Tocantins, and Balsas, in the South of Maranhão, with a total area of 80,000 hectares for grain production, especially soybean (INOCÊNCIO 2010; PIRES, 1996). As will be discussed in the following section, the introduction of Prodecer in the municipalities which compose what is now called the Matopiba region explained governmental interest in the widespread exploitation of the Northern Cerrado, then the best preserved part of the biome.

In total the program invested US\$ 684 million in the form of a loan<sup>1</sup>, directly benefitting 758 producers organized in 17 cooperatives, covering an area of 350,000 hectares (CAMPO, 2020) – an average of 461 hectares per landholder (AGUIAR and PACHECO, 2016, p. 62), a size considered large for regional patterns.

Although the scope of the demonstrative effects of Prodecer can be discussed, its participation in the opening and consolidation of the Cerrado frontier is undeniable, based on the production of commodities in highly technified properties, intensive in capital and dependent on chemical fertilization and pesticides. In the areas around the projects, agribusiness expanded visibly.

Nevertheless, the expansion of agriculture in the Cerrado was the result of a wide set of official policies, as highlighted in the introduction. With promising geographic and physical characteristics – such as climate, defined rainfall, hydric availability, and land favorable to mechanization (PIRES, 2000, p. 112) -, the biome also counted on technological and agronomical innovations, notably those developed by Embrapa – created in 1973 – and diffused by public technical assistance companies -, which made possible the production of crops until then non-

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<sup>1</sup>According to JICA information, available at <<https://www.jica.go.jp/brazil/portuguese/office/publications/c8h0vm000001w9k8-att/prodecer.pdf>>. Accessed on June, 20, 2020.



existent in the soils of Central Brazil, with soybean being the most notable case (MUELLER, 1993).

In the opening of the Cerrado frontier, even if it is intended to glorify the role of private enterprise, above all those called pioneers and embodied in the figure of the 'gaúcho', it is not possible to ignore state action in this expressive enterprise. The financial and economic costs of this had an impact on the foreign indebtedness observed during the final decades of the twentieth century, in addition to losses resulting from the routine rescheduling, and even the pardoning, of the debts of producers.

According to Frederico and Almeida (2016), the Agricultural Censuses of IBGE demonstrate that between 1970 and 1985, the planted area in the Center-West region increased from 2.4 million hectares to 7.1 million. The expansion was not limited to crops. Beef and dairy cattle productivity was improved, both by the introduction of Zebu or European breeding stock, artificial insemination, and other genetic improvements, and by the planting of exotic varieties of grass for the formation of pasture (CEPF, 2017, p. 93). Even so the current stocking rate of animal per hectare allows for further increases in productivity, which in theory can free areas for crops.

The Cerrado has become one of the principal agricultural regions of the planet. Its contribution to agribusiness – which represents 23% of Brazilian gross domestic product (GDP) –, is central: with 88 million hectares used for agriculture, it accounts for 44% of the Brazilian agricultural area (SPAROVEK et al., 2011). According to the biome ecosystem profile prepared by the 'Critical Ecosystem Partnership Fund' in 2017, the region produces 40% of Brazilian beef (CEPF, 2017, p. 93), while the INPUT Brasil survey, with data from 2015, shows that 52% of the annual planted area of soybean in the country is in the Cerrado, around half of cotton, and 25% of corn (CARNEIRO FILHO and COSTA, 2016, p. 08).

It would have been more difficult to deal with the economic crises, such as those of 1999 and 2008, without the participation of the state, due to the exponential importance of agricultural importance given the demands for positive balances in foreign trade and an equilibrium in the balance of payments. This process was called by the geographer Milton Santos (1999) the 'imperative of exports', in which



agribusiness is treated, according to Frederico and Almeida (2016, p. 85), as the 'salvation' for Brazilian macroeconomic policy.

It should be highlighted that the economic weight of the expansion of agriculture, in particular in the Cerrado, has had an impact on the growing predominance of the 'ruralista' sector in the design of national policy. It is for no other reason that all governments since the military regime have invariably insisted on not only praising the 'success of the conquest of the agricultural frontier in the Cerrado', but have also made decisions in favor of the continuity and expansion of the highly technified agricultural model, intensive in capital and the use of natural resources, with a low demand for labor, and aimed at the production of commodities.

However, 'commoditization' and monoculture have implied strong alterations in the organization and use of territory, and in the way of life of the social groups affected. This is the reality of the areas of the biome under intense agricultural use. It is also what is seen in Matopiba, as will be dealt with below.

### **The invention of Matopiba**

Territory is a socio-political construction about space, and its shape results from the actions and even disputes among human groups. It was no different with Matopiba, whose birth certificate emerged with the publication of Decree Nº 8447, dated 06 May 2015, signed by President Dilma Rousseff and subscribed by her Minister of Agriculture, the senator from Tocantins Kátia Abreu, former president of the National Confederation of Agriculture (*Confederação Nacional da Agricultura - CNA*). This decree created the Agricultural Development Plan (*Plano de Desenvolvimento Agropecuário - PDA*)<sup>2</sup> for the region, whose purpose is to "promote and coordinate public policies aimed at sustainable economic development based on 'agricultural and livestock activities' which result in the improvement of the quality of life of the population" (BRASIL, 2015, p. 01). The emphasis added above underlines the intention of the governmental narrative to mold the new

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<sup>2</sup>To coordinate the PDA, the Plan Administrative Committee was created, composed of representatives of five ministries and four state governments. As happened with various other collegiate institutions in the federal government, this committee was ended by a decision of President Bolsonaro, through the publication of Decree 10.087, dated 05 November 2019.

territoriality, from the founding document, in function of agricultural production, despite any other socio-economic possibilities the region possessed.

Embrapa's Territorial Intelligence Group (*Grupo de Inteligência Territorial* - GITE) demarcated Matopiba, with an area covering 73 million hectares, of which 90% represent the phyto-physiognomies of the Cerrado biome, distributed among 337 municipalities, and with a population estimated at six million people.

Although the formal establishment of Matopiba occurred in 2015, interest in expanding modern agriculture on this remote frontier goes back to final decades of the twentieth century, when public and private plans already contained diagnoses of the agricultural potential, thanks in particular to the presence of the extensive 'chapadas' (mountain plateaus) which favored mechanization. As mentioned in the previous section, since its second phase which began in 1985, Prodecer began to implement colonization projects in this area. Also illustrative is that the third phase of this program was exclusively concerned with the exploitation of 'chapadas' in Tocantins and Maranhão, even without the concretization of the aspiration of the political elites from Piauí to expand it to their state.

In addition to Prodecer, other public interventions favored the exploitation of the northern 'cerrados', such as the example of the making different modes of transport feasible: repairs and improvements of federal and state highways, the opening of local roads, the construction of sections of the North-South railroad, and the Tocantins-Araguaia waterway, etc; as well as rural electrification programs and the exemption of taxes for the installation of agri-industry and the exporting of commodities (in this case, through the Kandir Law). Project funding by regional development agencies (Sudam, Sudeco, Sudene, and even Codevasf) and public banks also converged and signaled the official interest in the expansion of agriculture on this frontier.

In general, the simple expectation of the establishment of public works was the motive for the engagement of private investment. Infrastructure, subsidized funding, and favorable environmental conditions were added to the low price of land and this attracted the interest of private agents, especially landowners from the South and Southeast, all called 'gaúchos', who would later come to form the regional economic elite (FAVARETO et al., 2019) and who molded the geography since the

beginning of the 1980s – a phenomenon that is much analyzed in the literature (e.g. HAESBAERT, 1997).

Much of the land had dubious or fraudulent titles and numerous families of small landholders ended up being expelled to make way for the formation of new 'fazendas'. Representative of this is the case of the Prodecir colonization project in Balsas, covering land that until the 1970s at least had been vacant state land (PIRES, 1996). This area was transformed into a 'latifúndio' – Fazenda Data Caracol, with 60,000 hectares – which at the time of the project was sold to the cooperative linked to the colonists, Batavo, by the alleged owner, the businessman Euclides de Carli, whose life trajectory followed the opening of the agricultural frontier in the Center-West. He was also interviewed by the author of this paper. Originally from Santa Catarina, in the 1970s and 1980s he lived in Mato Grosso and Mato Grosso do Sul, "helping to found towns linked to soybean, such as Chapadão do Céu, Parecis..." After the decline of fiscal incentives, he migrated to the south of Maranhão in 1985: "Since we did not want to lose money, we left Mato Grosso and went to where there was an opportunity to make money and produce. We found this region which is similar to Mato Grosso in terms of climate, topography, and soil; though with a better geographic position. We came stimulated by the [North-South] Railroad, the low price of land, and soybean" (PIRES, 1996, in an interview with EUCLIDES DE CARLI).

At that moment (1996), he was already preparing plans to migrate to the south of Piauí: "Well, we are now preparing to go to Piauí, to set up a bigger project which is in a really inhospitable region. However, it will only be worth it if they have Prodecir there. These programs are irradiators of progress" (PIRES, 1996). Actually, years later he would expand his landholding to the south of Piauí, becoming active in the land market. His company, Colonizadora De Carli, had business with agri-industrial complexes and large companies, such as Bunge, Cargill, SLC Agrícola, SLC LandCo, and even international funds. A report from the New York Times, published on 16 November 2015, stated that even the Teachers Insurance and Annuity Association (TIAA), a pension fund responsible for the investments of five million US teachers, had had land transactions with Euclides de Carli, one of the founders and the president of the Federation of Agricultural Aviation Companies, the position with which he presented himself in Brasília (according to his own

statement), where he obtained details about public investment in the region. Against him were accusations of murders of 'posseiros' (squatters) and legal cases accusing him of 'grilagem' (illegal land appropriation) in a scheme with notary offices for the registration of land, involving one of his 'fazendas', with 125,000 hectares in the south of Piauí (CAMARGOS, 2018).

Land conflict is present in Matopiba, which has 46 conservation units with a total of 8.3 million hectares, 35 demarcated indigenous lands, with a total of 4.1 million hectares, 36 'quilombola' territories (260,000 hectares), and 781 agrarian reform settlements, with a total of three million hectares. Some states have public lands in the region, and over time have enacted legislation, in general aimed at regularizing previous conflicts, when it does not intensify conflict. The principal conflicts involved small 'posseiros' expelled from the most valuable areas, in general the 'chapadas' – used for their 'roçados' (small scale planting) or small scale livestock rearing, at times practiced in a communal manner. The arrival of modern agriculture in the 'chapadões' reduced the presence of 'posseiros' to the so-called 'baixões', depressions formed by valleys or along which watercourses run. With their traditional way of life reduced, some temporarily became 'boias frias' (migrant rural laborers) or abandoned rural life.

What differentiates land conflicts on this frontier in comparison with other realities in the country, is that it progressively involved transnational companies, even though Brazilian legislation limits the purchase of land by foreigners<sup>3</sup>. It is thus linked to the global phenomenon of increased foreign ownership of land ('land grabbing'), intensified from 2008 onwards by investment funds and companies from the agri-industrial sectors interested in this asset in developing countries. Authors such as Sauer and Leite (2012) and Pitta et al. (2017) have shown that in the region the phenomenon even provoked a certain dislocation of the price of property in relation to the value of commodities, a signal that the financialization of environmental assets (land, water, forests) is increasingly evident.

The arrival of international investments was desired by the formulators of Matopiba. In one of the events announcing Matopiba, held in Palmas in 2015, the

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<sup>3</sup>Currently before the National Congress is Bill N° 2963, proposed in 2019 by Senator Irajá Abreu (PSD/TO), son of Senator Kátia Abreu, aimed at making even easier the purchase of land by foreigners. It is considered one of the principal demands of the 'ruralista' caucus.

then Minister of Agriculture Katia Abreu commented that: “The master plan [for Matopiba] will be decisive to attract investors and businessmen from all over the world to invest in our region. This project is supported by investment funds and by private enterprise, entities that are increasingly interested in Matopiba. Everywhere in the world I have been, they all want to know about the new Brazilian agricultural frontier, due to the great potential for the production of food that we have” (BRASIL, 2016b, p. 01).

However, all of this foreign acquisition of land not only tones land conflict in itself but also adds more tension to the reality of natural resources, especially in relation to water. Eloy et al. (2016) show that the expansion of grain plantations in the ‘chapadas’, on the one hand, and the obligation for environmental regularization of properties due to the 2012 Forest Code, on the other, have pressurized the performance of small ‘posseiros’ in the areas of the ‘baixões’, in general better conserved than elsewhere. Moreover, the increasing irrigation of crops alters the hydric regime and many downstream communities are impeded from capturing water, when not at the mercy of hydric contamination by pesticides (FAVARETO et al., 2019).

In terms of economic dynamism, Belchior et al. (2017) highlight that according to the 2015 research done by the Brazilian Geographic and Statistics Institute (*Instituto Brasileiro de Geografia e Estatística* - IBGE) the region has become responsible for 10% of national grain production, while Favareto et al. (2019) stated that present there “are ten of the one hundred largely municipal producers of soybean in the country” (FAVARETO et al., 2019, p. 74). Projections from the Ministry of Agriculture and Embrapa show that in the 2021/2022 harvest, Brazil will plant around 71,9 million hectares of crops, of which between 7,7 and 11,0 million will be in Matopiba with a production around of 20 million tons of grain (BRASIL, 2012, p. 51).

However, the wealth coming from agribusiness is concentrated. Of the 33 micro-regions in Matopiba, 13 alone are responsible for 77% of the entire regional GDP, estimated at R\$ 53 billion (2010) (FAVARETO et al., 2019, p. 75). Regional per capita GDP of R\$ 9000 hides the fact that in municipalities such as Luís Eduardo Magalhães (BA), this value reaches R\$46,000, equivalent to the richest city in the country (São Paulo-SP), as these authors show. These numbers put in doubt

the capacity for regional development based on agribusiness to irradiate wealth and 'improve the quality of life of the population', as is expressed in Decree N° 8.447, from 06 May 2015.

In addition to this questioning, there are problems resulting from the concentration of land, commented on above, as well as the environmental implications resulting from the model of agriculture prioritized in the region. According to Carneiro Filho and Costa (2016) 68% of the expansion of soybean in Matopiba, almost 800,000 hectares, was directly on native vegetation. Invariably, the monitoring of the deforestation of the Cerrado shows that the region concentrates the municipalities with the highest deforestation. According to the Land Use Initiative (Input Brasil), in 2010 this region was responsible for 65% of the deforested area in the biome (INPUT BRASIL, 2015). Similarly, the diagnosis prepared by the Ministry of the Environment, based on INPE data, indicates that of the 10 municipalities with the highest deforestation in the Cerrado in 2018, nine were in Matopiba and accounted for almost 71,000 hectares in total (). Between August 2018 and July 2019, 62% of the entire deforested area in this biome, estimated at 648,400 hectares, occurred in the region (GREENPEACE BRASIL, 2019). What happens in Matopiba, therefore, has a direct impact on the situation in the Cerrado biome.

### **Implications of deforestation in the Cerrado and control policies**

According to estimates, the Cerrado has 5% of the biodiversity on the planet, with endemism of around 40% (MITTERMEIER et al., 2005). Taking into account only what has been catalogued, the Cerrado has more than 12,000 species of plants, 251 species of mammals, and numerous fish (800), reptiles (262), and amphibians (204), as well as a rich avifauna (856 species) (CEPF, 2017, p. 26). However, 645 of its species of flora and 307 of its fauna are currently threatened with extinction (JOLY, 2019, p. 22). The principal cause of the loss of biodiversity is deforestation. Since the biome has biological importance and an elevated level of threat, it is considered one of the most critical hotspots for global conservation (MYERS et al., 2000).

In addition to the destruction of flora, fauna, and habitats, deforestation from the practice of the model of intensive agriculture, is the harm resulting from

the unrestrained use of hydric resources, principally for irrigated crops. Although the biome is seen as a large ‘water tank’, which supplies eight of the 12 Brazilian hydrographic basins, and houses the Bambuí, Urucuia, and, principally, the Guarani aquifers, with the latter being the second largest underground hydric reservoir in the world (REIS et al., 2017), the excessive use of water in agriculture is the frequent reason for conflict. An emblematic example of this reality occurred in the Bahian municipality of Correntina, belonging to Matopiba. On 09 November 2017, two thousand ‘ribeirinhos’ who lived alongside the Arrojado River occupied the Igarashi ‘fazenda’ in protest against the irrigation practiced on the property, believed to be contributing to the drying up of the river. Two days later, a new protest was held in the nearby town, this time with the adhesion not only of social movements, but also of the residents of the urban zone.

Deforestation also caused climatic harm. Due to the characteristics of its vegetation, a large part of which has profound roots, the Cerrado stores impressive quantities of biomass in the subsoil – around 32 Gt CO<sub>2</sub>, according to the Brazilian government (BRASIL, 2016a). The clearing of vegetation implies the release of carbon to the atmosphere, contributing to global warming, whose impacts reverberated in agriculture (REIS et al., 2017). Indirectly it favors the increased emission of greenhouse gases (GHG) resulting from livestock: in 2016, the Brazilian beef herd alone emitted 392 million tons of GHG equivalent, which represented 17% of total emissions in the period, according to the System of Estimated Emissions and Removals of Greenhouse Gases (SEEG) from the Climate Observatory (2018).

In socio-cultural terms, the clearing of native vegetation directly affects the population, above all, in rural areas, formed by a “mosaic of different types of peoples and uses of the land” (ICV et al., 2018, p. 13), amongst whom are hundreds of thousands of family farmers, around 100,000 indigenous peoples (according BARBOSA, 2020), hundreds of ‘quilombola’ communities, and various other traditional communities. The rights of access of these groups to land, water, and other resources essential to their ways of life have been restricted (ICV et al., 2018). Many communities have precious knowledge of the medicinal use of plants, manage fire properly, and practice vegetal extractivism with little impact, because they are aware of natural cycles. Since they do not have the same socio-political



visibility as hegemonic groups, the challenges they face are increasing as the 'correntões' (chains) and bulldozers advance.

In relation to governmental initiatives specifically aimed at dealing with predatory deforestation in the biome, it is worth mentioning the Sustainable Cerrado National Program, created by Decree 5.574 in 2005, which establishes rights and priorities and guides the investments of public and private agents aiming and environmental conservation and sustainable use. Despite its promising results in its early years, its effectiveness later declined, a fact worsened by the abolition of its commission jointly formed by the government and civil society in the wake of Decree 10.087, from 05 November 2019, signed by President Bolsonaro, which eliminated hundreds of public policy collegiate bodies.

Under the auspices of the National Policy on Climate Change (Política Nacional sobre Mudança do Clima - PNMC) – Law N<sup>o</sup> 12.187, from 2009 – another initiative which deserves to be highlighted is the commitment to a 40% reduction in deforestation in the Cerrado by 2020, based on the average between 1998 and 2008, presented by Brazil to the Conference of the Parties (CoP) 15, held in Copenhagen in December 2009. Although it was not an ambitious target<sup>4</sup>, it marked governmental concern with the biome and strengthened the establishment of the Plan for the Prevention and Control of Deforestation and Burning in the Cerrado (PPCerrado), whose design followed the institutional model adopted to halt deforestation in the Amazon (the Plan for the Prevention and Control of Deforestation in the Amazon – PPCDAM). Data from the Ministry of the Environment (BRASIL, 2019, p. 08) suggest that the target may have been reached between 2016 and 2018. If this was the case, it should be investigated if this reduction actually resulted from factors inherent to the dynamic of agriculture (e.g., as a reflux of the commodities boom in the external market). Despite this, monitoring figures indicate that in the reference 10 year interval, clear-cutting in

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<sup>4</sup>The average annual rate of deforestation between 1999 and 2008 was 15,700 km<sup>2</sup>, and the 40% reduction target until 2020 represented 9,400 km<sup>2</sup> (BRASIL, 2019, p. 08), in other words, three times higher than the target for the Amazon (3,900 km<sup>2</sup>), a biome of a larger size and proportionally less deforested than the 'Cerrado', as highlighted in the introduction.

the Cerrado was actually the double of what was found in the Amazonian biome<sup>5</sup>. Although the commitment to the reduction of deforestation in the Cerrado was presented to CoP 15, the same did not occur in CoP 21, held in Paris in 2015. Brazil did not present any reduction target for the biome (BOLSON, 2018; BUSTAMANTE, 2015), weakening the message about the importance of its conservation.

Another public policy to reduce predatory deforestation is the creation of protected areas. According to MMA (BRASIL, 2020), 8.7% of the Cerrado consists of conservation units, compared with 27% in the Amazon. Added to these are the 216 indigenous territories representing 83 ethnicities (ISPN, 2020) and the 44 'quilombola' territories (EMBRAPA, 2020). In general, protected areas have functioned as barriers against deforestation: they represent only 0.3% of the total deforested areas until 2013, while the private/other areas represent 97% and settlements 2.7% (BRASIL, 2019, p. 39). However, these figures need to be better detailed, which is not possible here, since there are protected areas with significant rates of loss of vegetal coverage, suggesting the need to strengthen their management. It also has to be considered that among the reasons for the low proportion of protected areas in the biome is landholder resistance.

This type of resistance is also felt in forestry policy, notably in the Forestry Code (Law 12.651, from 2012). While environmental inspections increased at the beginning of the 2000 (CAPOBIANCO, 2017), 'ruralista' leaders began to demand flexibility and even amnesty for those who deforested above the allowed limit. Their pressure led to the revision of the Code and the sector's demands were met, such as differentiated treatment for irregular deforestation before 2008. The deadline for inscription in the Rural Environmental Register (CAR), which was supposed to end in 2014, is continually extended.

Although there are internal disputes within agribusiness about the subject, in general the sector is resistant to assuming obligations, at least in the environmental field. Even the part labelled as more 'modern', linked to the international market, disagrees with measures which limit the use of the natural resources of the Cerrado. An example of this is the case of the soybean

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<sup>5</sup>According to INPE, in 2013, deforestation in the 'Cerrado' reached 13,100 km<sup>2</sup>, in the Amazonia biome 5,100 km<sup>2</sup>, while in 'Amazônia Legal' it was 5,400 km<sup>2</sup>. (See the platform terrabrasilis: <<http://terrabrasilis.dpi.inpe.br/app/dashboard>>)

moratorium. Led by the Brazilian Association of Vegetal Oil Industries (ABIOVE) and the National Association of Cereal Exporters (ANEC), the large traders assumed the commitment to neither purchase nor fund this grain coming from deforested areas in the Amazon before 2008 (originally it was 2006). This voluntary initiative was reported nationally and internationally as evidence of the sustainability of the oil seed chain in Brazil. However, when confronted with the rapid expansion of deforestation in the Cerrado to make way for soybean, the leaders vehemently rejected the idea of extending the moratorium to this biome. Complying with the dispositions of the Forestry Code was said to be sufficient (e.g., LOVATELLI, 2016), even considering that in places such as Matopiba this implies clearing massive areas of native vegetation. At most, part of agri-business is favorable to the controversial idea of 'land sparing' – increasing the productivity of livestock to free pasture areas for the expansion of crops – which has various adepts (e.g. CARNEIRO FILHO and COSTA, 2016; STRASSBURG et al., 2017), even when aware of the risks that an increase in productivity can lead to an increase in the use of fertilizers and pesticides, the contamination of hydric resources, etc.

### **By way of conclusion**

Historically, the agricultural sector has known how to raise public incentives for the expansion of its activities, through both direct and indirect means: the pardoning, reduction, or rescheduling of debts, tax exemptions, subsidized funding, etc. A recent example was Provisional Measure 897, from 2019 (later converted into Law 13.986, from 2020), known as the 'MP do Agro', which established various benefits for agribusiness (TEIXEIRA, 2020, p. 276). While these benefits may have been essential to guarantee the feasibility of agricultural enterprises, as their defenders allege, they could well have been combined with counterparts, for example of an environmental order, pointing to a moratorium on deforestation or the minimum recovery of degraded pasture areas for agricultural use; however, this was not even discussed.

In the National Congress the coordinated action of the 'boi', 'bala', and 'bíblia' (cattle, bullets, and bibles) lobbies can be witnessed, giving greater negotiating power to the rural sector. It is for no other reason that measures which make environmental licensing more flexible, review the categories and limits of

conservation units, weaken environmental bodies, allowing mining in indigenous lands while halting the demarcation of new areas, and approve massive numbers of new pesticides, amongst others, are being allowed. Looked at jointly they reveal the strategy of taking advantage of political weight to increasingly liberate native areas to the expansion of the agricultural model, whose impacts on the Cerrado were commented on above.

This is the fundamental point which explains why deforestation has consumed half of the Cerrado and will tend to continue to do this in coming years. In the Amazon this can also occur. The economic weight of agribusiness translated into political hegemony favors the continuity of the agricultural expansion model in native areas, even when the clearing of vegetation is justified not because of agricultural production but because it increases the value of the land, as happens in Matopiba and also in the Amazon. This political hegemony reduces the margin for environmental conservation policies, even when these seek to combine economic incentives and obligatory counterparts. Perhaps the difference between the situation of the Amazon and the Cerrado in this case is that in relation to the Amazon demonstrations opposed to the deforestation can be seen all over the world, even in the international financial sector, while the Cerrado continues to be treated as a frontier to be exploited.

This reinforces the thesis that basically the biome continues to be treated as a 'territory of sacrifice', assuming that its 'natural vocation' is agriculture, as commented in the first section. It is as if, admitting 'big land sparing' as advantageous, the unchecked deforestation in the Cerrado compensates the conservation of the forest biomes — a mistaken approach, as shown in the previous section, since environmental harm, extrapolates boundaries.

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