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**A ATUAÇÃO DO GOVERNO FEDERAL BRASILEIRO
NO DESENVOLVIMENTO DA AGRICULTURA IRRIGADA
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ABSTRACT

Based on this work, we have chosen as our objective to analyze the scope of public policies implemented by the Brazilian Federal Government aimed at irrigated agriculture in the Midwest, under the sign of regional development. To this end, methodologically, we used bibliographical and documental research to identify the status of official surveys and those of international organizations on the development of irrigated agriculture in the country, as well as the structuring of legal and institutional arrangements that stimulate the segment in the Midwest region, through the use of federal public resources. The data made it possible to verify that the incentive projected for the sector in the region considers the predominant model of agriculture and land structure in the region, aiming at fulfilling Brazil's role in the international division of labor, as an exporter of commodities.

Keywords: Regional development. Irrigation. Federal resources.

RESUMO

A partir deste trabalho, elegemos como objetivo analisar o alcance das políticas públicas implementadas pelo Governo Federal Brasileiro voltadas à agricultura irrigada no Centro-Oeste, sob o signo do desenvolvimento regional. Para tanto, metodologicamente, lançamos mão de pesquisa bibliográfica e documental, para identificarmos o estado dos levantamentos oficiais e de organismos internacionais sobre o desenvolvimento da agricultura irrigada no país, bem como a estruturação dos arranjos legais e institucionais que estimulem o segmento na região Centro-Oeste, mediante a utilização de recursos públicos federais. Os dados permitiram averiguar que o incentivo que se projeta para o setor na região considera o modelo de agricultura e estrutura fundiária predominantes nela, visando ao atendimento da função do Brasil na divisão internacional do trabalho, como exportador de *commodities*.

Palavras-chave: Desenvolvimento regional. Irrigação. Recursos federais.

INTRODUCTION

This research was dedicated to understanding the incentive to irrigation with the use of federal public resources of the Brazilian government in the Midwest, in the name of regional development, in a scenario in which the region is pointed out as an area of great potential for expansion of irrigated agriculture, according to works by the National Water and Sanitation Agency - ANA (*Agência Nacional de Águas e Saneamento Básico*) (2016, 2019 and 2021) and *Food and Agriculture Organization of the United Nations* - FAO, and Food and Agriculture Organization of the United Nations (2017). We have also observed that the legal and institutional arrangements are being elaborated and deployed in the face of this scenario. Thus, we consider the need for reflection on the current situation and the direction that is announced, due to the public policy(ies) adopted.

In Brazil, social inequalities represent a chronic problem, at least in the conformation in which it is historically known from the Portuguese colonization on this country. This problem has been the subject of studies that also connect it to regional inequalities, in parts of the country or in deficit territories with regard to development, according to Diniz (2009), who reports that the works of Simonsen (1944) and Prado Junior (1996) bring the explanatory elements of the territorial occupation in Brazil (sugar, livestock, mining, coffee, rubber, cocoa, mate etc.). However, Furtado



was the first to articulate these foundations with regional development and with the formation of underdeveloped structures. Castro ([1956] 1984) already brought a relationship of equivalence between economic underdevelopment and hunger, as a more dramatic externalization of social inequalities. In an update of this issue, other theorists understand that underdevelopment would cover a range of situations, since development, according to Amartya Sen (2010), would be a process of acquiring substantive and instrumental freedoms that would aim far beyond basic needs.

Regional development, in turn, appears as an expression that, over time, is the target of (re) interpretations, but often indicated as a possibility of overcoming social inequalities, through the regionalized or territorialized approach to the problem. This is where irrigation is also located as an instrument and institutionalized public policy to achieve this goal. An issue of vital importance is also the study of rural territorial development, taking into account the characteristics of rural spaces and the disputes that are established by them: on the one hand, agribusiness, with all the theoretical and political apparatus that supports it; on the other, the peasantry, in resistance for survival and reproduction. Based on the assumptions worked by Fernandes (2004), we highlight the nature of rural development observed in the country and more specifically in the Midwest, as a process linked by conflict around territories, which are in constant movement of destructuring, creation and re-creation.

Gathering all these contributions, this research is inspired by the theorization and practice of Celso Furtado, a recognized Brazilian scholar of regional and social inequalities in the country, on development and modernization that is compatible with autonomy in the choice of values by a given society, as ways to overcome “social heterogeneity” and achieve collective well-being. In the words of the late professor, there was the perception that “the main obstacles to the passage from simple mimetic modernization to development itself were cemented in the social sphere” (Furtado, 2007, p.48).

In view of these theoretical contributions, we find the Midwest, which is considered a region of agribusiness expansion, with increasing use of irrigation by central pivots - which indicates irrigation on large properties (ANA, 2019) - funded essentially by the private sector, with 355,103 ha equipped with this irrigation method, an area that was only smaller than that of the



Southeast, which presented 618,000 ha, considering data from the 2017 IBGE (*Instituto Brasileiro de Geografia e Estatística*, Brazilian Geography and Statistics Institute) Agricultural Census. The states of Goiás and Mato Grosso accounted for 26% of the total national area equipped with central pivots, and it is also noteworthy that the Midwest Region had 53.2% of the area of agricultural establishments occupied by establishments with more than 2,500 ha (IBGE, 2020). Questions arise about this model, inserted in a broader framework of modernization of agriculture financed with federal public resources, such as the question of what kind of development it has brought. Public institutions and international organizations that study irrigation to some extent, such as ANA and FAO, are tracking and consolidating data, as well as making projections for the path of irrigated agriculture in the region.

The objective of the research that originated this work was to analyze the scope of public policies implemented by the Federal Government that are focused on irrigated agriculture in the Midwest, under the sign of regional development. In this sense, we seek to answer the following question: how and why is the incentive to irrigated agriculture projected in the Midwest, through public policies with the use of federal public resources? Among the possible answers to this question, we can consider the socioeconomic scenario of the region and the legal and institutional arrangements, embodied in Constitutional Amendment No. 89/2015, which promoted the deadline extension to guarantee the prioritization of federal resources for irrigation in the Northeast and Midwest regions, and law 12,787/2013 (Brazil, 2013), which instituted the most recent National Irrigation Policy. These standards come on the trail the resurgence of Sudeco (*Superintendência do Desenvolvimento do Centro-Oeste*, Midwest Development Superintendence), in 2009, and triggers the accentuation of the institutional presence in the region, through one of the federal state-owned companies, Codevasf (*Companhia de Desenvolvimento dos Vales do São Francisco e do Parnaíba*, Company for the Development of São Francisco and Parnaíba Valleys), by amending, in 2018, the law that authorized the creation of this public company (Law No. 6.088/1974).

The research is directly connected to the field of regional development, since irrigation is the subject of a specific national public policy (Law No. 12.787/2013), which listed, among its objectives, the promotion of local and regional development on a sustainable basis. In addition,



the Ministry of Regional Development, in accordance with Law no. 14.600/2023 (Brazil, 2023), should conduct the National Irrigation Policy, observing Decree No. 11,962/2024 (Brazil, 2024), which instituted the new National Regional Development Policy, and the Midwest, along with the North and Northeast, is indicated as a priority region on the macro-regional scale.

This identification made by the government regarding irrigated agriculture as an instrument of developmentalism, capable of contributing to the reduction of social and regional inequalities, dates back to the first document that sought to systematize clearly elaborated proposals to be adopted under a public policy for the development of a certain Brazilian region, in this case, the Northeast. Although irrigation had previously been considered to reduce the impact of droughts, it was the report of the Working Group for the Development of the Northeast – GTDN (*Grupo de Trabalho para o Desenvolvimento do Nordeste*) (1959) that formalized a set of ideas for the development and improvement of the living conditions of the northeastern population, and one of the measures indicated was the irrigation of certain areas.

As will be detailed below, the Midwest, since the 1990s, has shown consecutive leaps in the use of irrigated agriculture on large rural properties. This movement has aroused scholar's and managers' interest and encouraged them to make projections. In this step, the government, guided by the prevailing theoretical paradigms, formulates public policies that seek to explore the development capacity of the region in the context visualized. From these observations, this work intends to make its contribution to the studies of regional development.

IRRIGATING IN THE NAME OF WHAT DEVELOPMENT?

At this point, a more direct entry into the development interpretation of Amartya Sen is opportune, taking into account that the conflictuality of social relations in the field produces differentiated developments. For Sen (2010), development would not be restricted to economic growth and, as proof, presents a series of evidences, such as the existence of countries with high level of Gross Domestic Product – GDP, and low levels of human development, Brazil being expressly named by him as an example of this case. For the author, there is a kind of confusion between what can be instruments for development, such as income increase, technologies and



industrialization, with the end (objective) of the process. Also according to Sen (2010), development would be achieved by a progressive increase in substantive and instrumental freedoms, which would mutually contribute to this increase. Thus, economic freedoms that provide good nutrition for individuals and opportunities for education and Health (which may require public action) can influence the acquisition of political freedoms (opportunities to participate in political debates and decisions), which in turn can enhance those economic freedoms.

The differentiation between economic growth and development was also directly faced by Celso Furtado, and growth would be limited to the preservation of privileges of the materially wealthier sectors of society and their insular demands for modernization. In turn, development would have as its substrate a social project, prioritizing the effective improvement of the population's living conditions, when then "growth metamorphoses into development" (Furtado, 2004, p.4). He sought to understand the formation of the national economy from the historical perspective. Later, when he joined the Economic Commission for Latin America and the Caribbean – ECLAC, a thematic and regional division of the UN, he received fundamental influence from Raúl Prebisch, who had worked to formulate the ECLAC theory of the center-periphery relationship, to explain underdevelopment. According to this theory, in the capitalist world, countries would fulfill defined roles, in which those in the center, developed and industrialized, would carry out activities that brought them more foreign exchange, while the countries of the periphery, usually producers of foodstuffs, accumulated economic losses in exchanges with the countries of the center, which prevented the development of those. The solution pointed out by ECLAC was the industrialization of the underdeveloped countries.

Celso Furtado realized, in his theoretical and practical evolution, that mere industrialization would not be enough to overcome underdevelopment. On this journey, he elaborated his theory of underdevelopment, understanding that such a condition would be an autonomous historical process, that is, countries would not necessarily have to comply with orderly and mandatory steps to achieve a higher degree of development. To capture the essence of the problem of current underdeveloped economies, it would be necessary to take into account this peculiarity (Furtado, 2009). Other elements were incorporated into Furtado's studies, with the cultural dimension being



the most prominent, since, according to him, the adoption by the ruling classes of consumption patterns in countries with levels of accumulation much higher than ours would be the cause of high concentration of income, the persistence of social heterogeneity and the form of insertion in international trade (Furtado, 2007).

Despite distortions, the theory provided political practice, resulting in that, among the objectives of the Brazilian Federal Constitution (Brazil, 1988), are the guarantee of national development and the reduction of social and regional inequalities, which first occur on the scale of the territory, inserted in a globalized world. Santos (2002) dealt with the territory in the context of globalization on multiple occasions and pointed out that there are social inequalities that are, first of all, territorial inequalities, because they are related to the place where each person is. He demarcates that territory, in a strict sense, are physical spaces, but used territory are objects and actions that identify with human space, inhabited space (Santos, 1998). Then, he goes on to expose a new functioning of the territory, based on configurations called horizontalities and verticalities. The former would refer to neighboring places united by a territorial contiguity; the latter would be formed by points distant from each other. Horizontalities and verticalities would coexist in the territory, but with different functions, and could even be opponents. This simultaneity of functions would generate “solidarities” in three forms in the current territory: homologous, complementary and hierarchical. In homologous and complementary solidarities, locally centripetal forces, forms and techniques would dominate, while hierarchical solidarity would be governed by centrifugal forces, norms and politics. In this dialectical configuration of the territory, there would be a local control of the technical portion of production and a remote control of the political portion of production.

This way, Milton Santos’ thought gets significantly close to Celso Furtado’s theorization. This had already been realized by Goulart (2006). According to this author, the points of contact between the aforementioned thinkers are especially in which the categories of homologous and complementary solidarities, coined by Milton, can allow the social homogenization demanded by Furtado, in his expanded concept of development, which gives a fundamental position to culture. But, at the same time, a warning was already made by Goulart, when she stressed that the



strengthening of local vocations should not retrace the path of comparative advantages, which would lead to the perpetuation of the center-periphery structure. The theory of comparative advantage is a formulation of classical economics, elaborated by David Ricardo, revisited more recently by Paul Krugman. For Krugman, Obstfeld and Melitz (2015), the increase in production stimulated by international trade is due to the specialization of countries in producing the goods in which they have a comparative advantage. This would occur when the opportunity cost in the production of a good, in relation to other goods, is lower in a country compared to others. This is the secular theoretical framework that supports the segregation of functions of countries in international trade or the international division of labor and, simply put, puts countries in “boxes”, with the labels of exporters of technology and industrialized products or exporters of raw materials. It will be subject of further analysis in the next step.

For now, we use Santos’ understanding, seen earlier, about the territory and the dialectical action between the forces that act in it. In this aspect, it is necessary to deal a little more about rural territorial development, through which relations in the countryside succeed each other, where irrigated agriculture is established. This development is characterized by a process driven by conflict around territories, and it is essential to understand how territorialization, deterritorialization and re-territorialization (TDR) occur in the environment in which agribusiness and the peasantry dispute space. Firstly, as Fernandes (2004) clarifies, conflict is a constant process fed by the contradictions and inequalities of capitalism. The movement of conflictuality is paradoxical in promoting, concomitantly, territorialization - deterritorialization -re-territorialization of different social relations and developments. The territorialization of agribusiness materializes with the increase of land concentration by the expansion of land acquisition (legally or even illegally), causing the deterritorialization of the peasantry, through the precariousness of labor relations, land expropriation and migration of rural workers.

In addition to this information, according to IBGE (2020), with data from the 2017 Agricultural Census, the Midwest Region had the lowest number of agricultural establishments (347,263), but the largest area of them (112 million hectares), resulting in an average area of 322 hectares. Still, in the same region, 10% of the total establishments had more than 500 hectares, while in



the Northeast region, this situation occurred in only 0.7% of cases. Land concentration was most intensified in the Midwest Region, where 53.2% of the area of agricultural establishments occupied properties with more than 2,500 hectares. Thus, only 2.4% of the total number of establishments in the region represented more than half of the total area occupied by establishments in the region. On the other hand, 57% of its establishments had up to 50 hectares and occupied only 3.3% of the area.

The Pastoral Land Commission – CPT (*Comissão Pastoral da Terra*) (2023) states that, in 2022, there were 1,107 conflicts in the countryside, in the region of Legal Amazon, corresponding to more than half of all conflicts in the country (54.86%). The institution also records that, in 2022, the division between those responsible for land conflict incidents was as follows: farmers (23%); federal government (16%); entrepreneurs (13%) and land grabbers (11%). Comparing with the year 2021, the participation of the federal government in land conflicts draws attention, going from 10% to 16%.

On the other hand, the peasantry tries to recover their territories (re-territorialization), using various resistance strategies, such as occupations and settlements, organized or stimulated by social movements linked to rural workers. The settlements represent an institutionalized policy, implemented by the National Institute of colonization and Agrarian Reform – INCRA (Instituto Nacional de Colonização e Reforma Agrária), at the federal level.

In addition to settlements, other public policies have been developed and implemented, according to paradigms that are imposed on the subject of rural development. Grisa and Schneider (2015) identified three generations of public policies for family farming and forms of interaction between society and the state in Brazil. The first generation was represented by constructive measures of agricultural reference (rural credit, production and price insurance) and agrarian (agrarian reform), when the re-democratization and cooldown of the military regime established in 1964. The second generation came already at the height of neoliberal policies, when, from 1997/1998, it was understood that the state should act to correct market failures, especially in the fight against rural poverty. The third generation, starting in 2003, was marked by a framework guided by the construction of markets for food security and environmental sustainability, examples



of which are the Program of Acquisition of Food - PAA (*Programa de Aquisição de Alimentos*) and the National School Feeding Program - PNAE (*Programa Nacional de Alimentação Escolar*). In turn, Fernandes (2004) understands that theoretical paradigms can intensify or reduce conflicts, as they influence society and the formulation of public policies. The détente of the agrarian question would be fostered by a development model that would reduce conflict, de-concentrate land and wealth, using the struggle for land, agrarian reform and the formation of peasant agriculture, which would reduce inequalities, while strengthening regional development and democracy.

At that point, we return to Brazilian State, which, according to the adopted theoretical paradigm, can be an agent in the distension of relations in the agrarian space. We found that the Federal Government chooses the promotion of regional development as a way to overcome social and regional inequalities. This commitment has its foundation in the Federal Constitution itself (Brazil, 1988), which, in addition to having established the reduction of social and regional inequalities as one of the fundamental objectives of the Republic, detailed the regional approach to the problem. And, in the transitional Constitutional Provisions Act (Brazil, 1988), in its Article 42, amended by Constitutional Amendment No. 89/2015, the priority of the Northeast and Midwest regions in receiving resources destined to irrigation for 40 years was determined. This means that, from such resources, 20% must be used in the Midwest. Of this percentage, 50% should be allocated to irrigation projects that benefit family farmers who meet legal requirements.

Sorj (2008) explains the regionalized way of acting as a practice of the Federal Government, which, in addition to national policies, elaborates particular policies for certain regions that have a lower level of development of productive forces, considering the tendency to identify physical spaces as legal spaces, even if this implies treating them in an a-historical way and as permanent realities. He also states that regional policies should be based on the features of the process of formation and transformation of regions, from the transformations in the class structure and the patterns of accumulation that shape social relations in the whole of social formation. In addition, he recalls that there are intraregional differences that reflect non-uniform developments in the regionalized space. Alongside these considerations, it must be said that regional development is a concept that allows other theoretical interpretations, and, according to Cargnin and Bandeira



(2015), there is a tendency to consider the need for a regional policy capable of operating at multiple territorial scales, including adjusting to the new dominant paradigm in the international scenario. Apparently, this trend would have been welcomed, in normative terms, with the updating of the National Regional Development Policy by Decree No. 9.810/2019, succeeded by decree 11.962/2024 (Brazil, 2024).

It is possible to see that, in the new PNDR (*Política Nacional de Desenvolvimento Regional*, National Regional Development Policy) are elected as principles, to reduce economic and intra and interregional social inequalities, multiscale action in the national territory and sustainable development, among others. The territorial approach includes the macroregional scale, with priority for the Legal Amazon, Northeast and Midwest, to reduce interregional inequalities, and the subregional scale, represented by priority territories defined according to criteria based on the PNDR, in order to reduce intraregional inequalities. Specifically in relation to the subject of irrigation, the Ministry of Integration and Regional Development - MIDR (*Ministério da Integração e do Desenvolvimento Regional*), successor of the Ministry of Regional Development - MDR (*Ministério do Desenvolvimento Regional*), has, according to Law No. 14.600/2023, the competence to conduct the National Policy of Irrigation, whose objectives are the promotion of local and regional development on a sustainable basis, as listed in Law No. 12.787/2013 (Brazil, 2013). Based on data from ANA (2021), we clarify that, in the Midwest, the implementation of public irrigation perimeter, the flagship of the previous National Policy of Irrigation, fell to the state of Goiás, with only Luiz Alves do Araguaia, in the municipality of São Miguel do Araguaia. At the same time, in the region, there were other specific initiatives in the execution of public policies for irrigation, with emphasis on Prodecerr (Programa de Cooperação Nipo-Brasileira para o Desenvolvimento dos Cerrados, Japanese-Brazilian Cooperation Program for the development of the Cerrado), signed in 1974 and implemented since 1979. The scenario, however, has been changing, as we will see in the analysis and discussion of data e results discussed below.



METHODOLOGY

The research hereby, as to its nature, is classified as strategic basic, as it aims to contribute with knowledge about an instrument of regional development, namely, irrigated agriculture, in the Midwest region. From the point of view of the approach to the problem, it is qualitative, with support in the perception of experts, in addition to the collection of official data on public policies already implemented. According to its objectives, it is exploratory, since it is relatively recent the structuring of a federal state system for the induction of development, focusing on irrigated agriculture in the Midwest. The method of approach is dialectical, which, according to Lakatos (2003, p. 106), “penetrates the world of phenomena through their reciprocal action, the contradiction inherent in the phenomenon and the dialectical change that occurs in nature and society.” As procedural methods, the historical and comparative methods are combined, rescuing the history of public policies aimed at irrigation in the Midwest and comparing what was implemented with what is projected. Regarding technical procedures, we have bibliographic and documental research. The texts focus on institutional collections, books and other scientific works. The documents are found in State institutions, particularly on their official websites.

At the beginning of the research, the data collection started from the gathering of the main laws and other norms around the subject, in addition to publications, in which state institutions and international organizations were focusing on the topic, such as ANA (2016, 2019, 2021), FAO (2017) and IBGE (2020), when we note that the referred material was systematized and such institutions were seeking to compile these data in a more objective manner.

Then, we carried out a systematic review, having been searched from May 09 to 17, 2021, in the CAPES (*Fundação Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, Coordination of Higher Education Personnel Improvement Foundation) database. We opted for the advanced search by subject, ordered by relevance, fields any/contains, in any language and year, in all items of the material type. The keywords and combinations were used with prominence of the use of expressions such as “*desenvolvimento regional*”/“regional development” along with the spatial clipping, in an attempt to better conduct the direction of the search and because it is an essential concept in the study.



From these first documents/references accessed, we extracted that, especially since the 1990s, according to data from ANA (2021), irrigated agriculture had been progressively advancing in the Midwest Region of Brazil, in the wake of the expansion of agribusiness, in which the export of grains, such as soybeans, stands out, according to IBGE (2020). This advance, which materialized predominantly in areas of private property, according to the same data from ANA (2021), drew the attention of the public power, which began to organize a legal and institutional apparatus to act more systematically and intensively in this sector of the Brazilian region in the current century. Thus, we were able to delimit that the time frame of the research would orbit the legal and institutional frameworks created to face this reality of the Midwest in this century.

Data collection continued with other contributions, such as data from the Pastoral Land Commission, and bibliographic references from people and institutions with recognized dedication to the study of the theme.

In the analysis of the research data, we had the theoretical contributions of Cellard (2008), making the preliminary analysis of the documents with observance of the historical and social context, the authors of the documents, the authenticity and reliability of the texts, the nature of these and the key concepts and their internal logic. Then, in the analysis itself, we tried to gather all the parts of the preliminary analysis to which we add the elements of the problematic and the theoretical framework.

At the same time, we analyzed the references based on the discourse analysis of the French school of thought of Pêcheux, specifically using the contributions of Orlandi (2012), through which we apprehended that the analysis procedure starts from the linguistic surface, passing through the object (configuration of the *corpus* - limits, cutouts, in a go-and-coming between theory, consultation with the *corpus* and analysis, and throughout the work) and outlining the discursive forms observed, to finally reach the discursive process, where we see the relationship of discursive formations with ideological formations, to understand the meanings of saying.



ANALYSIS AND DISCUSSION OF RESULTS

According to a study by ANA (2021, p. 18), named Atlas Irrigação and “[...] prepared between 2018 and 2020 from a planning of stages and execution strategies drawn up in 2017, shortly after the launch of the first edition”, the process of increasing production by agribusiness in the Midwest, in the part that is specifically held in irrigated agriculture, was classified as accelerated from the 1970s, becoming more expressive from the 1990s. In the past 20 years, it has been noted as the region with the greatest expansion, led by Goiás and, more recently, also by Mato Grosso, mainly due to the spread of central pivots for grain production and sprinkler cannons in the management of sugarcane. ANA (2021) reports that Brazil has 8.2 million hectares equipped for irrigation - 35.5% with fertigation with reuse water (2.9 Mha) and 64.5% with irrigation with spring water (5.3 Mha). The private sector occupies 96.2% of the irrigated area. The area under production which originates from public projects is 3.8% (200 thousand hectares). The agency details the current scenario of federal investments in the region, which has as a current axis for sector planning the so-called Poles of Irrigated Agriculture, identifying 28 National Poles, special areas of water resources management for irrigated agriculture on a national scale, which concentrate 50% of the irrigated area and 60% of the current water demand. Among these poles, 15 have as predominant pattern irrigation with central pivots, in which there is a prevalence of grain production (soy, corn, beans, cotton, etc.), concentrated mostly unclosed.

The same study by ANA (2021) also goes on to state that pivot poles are the main drivers of irrigation expansion in Brazil and this trend should continue. Of the 1.55 million hectares planted under central pivot in Brazil, 73% (1.14 Mha) are in the Cerrado biome, including 12 of the 15 National poles of central pivots, concentrating 64% (735 thousand ha) of area equipped by this irrigation system. The initiative of the MDR Irrigated Agriculture Poles was formalized in MDR Ordinance No. 1.082/2019, replaced by MDR Ordinance No. 2.154/2020 (Brazil, 2020). It constitutes part of the implementation of the National Policy of Irrigation and the encouragement of regional development. It is considered an important strategy to boost the activity, through coordination between the organizations of irrigating rural producers and the various spheres of government. These poles are characterized by ANA (2021, p. 112), as “aggregations of municipalities within the



same state, facilitating the implementation of irrigation policy actions; and these municipalities are defined in the installation workshop with local actors”.

Currently, the MIDR website (Brazil, 2023a) records that there are the following Poles in the Midwest: sustainable irrigation pole of the Araguaia Valley, located in the state of Goiás, recognized by MDR SDRU Ordinance No. 4, of 24 May 2019; Irrigation pole of the Central Plateau of Goiás, located in the state of Goiás, recognized by MDR SDRU Ordinance No. 2.025, of August 23, 2019; Sustainable irrigation pole of Southern Mato Grosso, recognized by Ordinance No. 1232, of April 29, 2020; and Araguaia-Xingu Irrigated Agriculture pole, recognized by MDR/SMDRU Ordinance No. 3.014/2022. And there is news of the recent signing of an ordinance to create the sustainable Irrigation Pole Centro de Mato Grosso (Codevasf, 2023). According to MDR Ordinance No. 2.154/2020 (Brazil, 2020), places where irrigators are already associated and in dialogue with public and private institutions are prioritized; there must be a prominent position in irrigated state production or potential for this; potential is also required in terms of the reception of new technologies, the use of clean energy and, preferably, in terms of maintaining proximity to teaching, research and professional qualification centers, in the name of stimulating innovation.

According to these premises, the Midwest is presented as a region in superior success conditions in the implementation of such Poles, in the view of the Federal Government, conclusion drawn from the studies of ANA and, in practice, from the relationship of the location of the poles already installed and to be installed. However, there are other forefronts in which the injection of federal public resources into irrigation is applied, such as public irrigation projects. In addition to these broader initiatives and/or focused on planning, other more punctual and instrumental ones can be reported, such as the Regime for Infrastructure Development - REIDI (*Regime Especial de Incentivos para o Desenvolvimento da Infraestrutura*) Irrigação, which is a tax incentive instrument for private investments in irrigation infrastructure, currently regulated in Ordinance No. 2.508/2021 (Brazil, 2021), of MDR. As for rural credit, also an instrument of the National Irrigation Policy, in the announcement of the 2023/2024 crop plan (Brazil, 2023b), the news was of a 30% increase in the amounts allocated to the Financing Program for irrigated agriculture and protected cultivation (Proirriga), which finances investments related to irrigation systems, including electrical

infrastructure and construction of the water reservoir. It can also finance equipment and facilities for crop protection, such as olericulture, fruit growing, floriculture, coffee growing and seedling production of forest species.

There are still other smaller-scale initiatives, illustrated by the distribution of irrigation kits, as listed in the March/2022 edition of the catalog prepared by Codevasf, which contains the list of machines, implements, vehicles, materials and services which are essential to the integration and development processes of the main lines of business supported by the company, among which is irrigated agriculture (Codevasf, 2022). With regard to the presence of this federal public company in the region, its area of operation was progressively increasing, until, with the enactment of Law No. 13.702/2018, there was a greater insertion in the Midwest, which had a new increase with Law No. 14.053/2020, through amendments to the law that authorized the creation of the state-owned company (Brazil, 1974). Thus, all 246 municipalities in the state of Goiás are included in the area of operation of the federal public company, in addition to the Federal District and part of Mato Grosso, leaving out only the state of Mato Grosso do Sul. Therefore, the state-owned company arrived in the Midwest as a carrier of the mission to promote regional development, in which is included the sharing of the implementation of the National Policy of Irrigation with other entities involved.

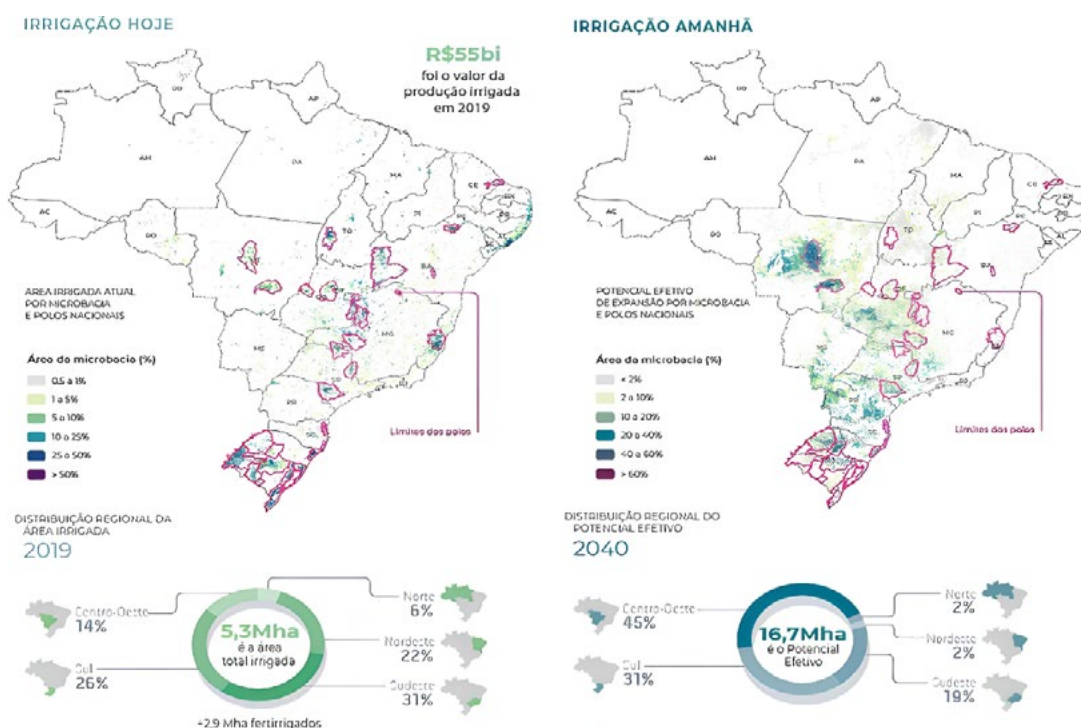
This is the context in which the most extensive and systematic surveys of data on irrigation in Brazilian regions are developed and the projections that we will comment on below are made.

FAO (2017) has selected areas which are potentially high priority for fostering sustainable irrigated agriculture in Brazil. After calculating the area actually available, not considering the areas of legal reserve, permanent preservation areas, urbanized areas and areas already irrigated, we arrived at 12,387,518 ha of areas that would be available for fostering sustainable irrigated agriculture. FAO (2017) then concluded that, of the areas classified as effectively available for irrigation, 4,537,964 ha are in municipalities that have good infrastructure and water availability for irrigated agriculture, recommending the prioritization of public policies to promote sustainable irrigated agriculture in the shorter term in these areas. In the selection of areas effectively available for irrigation, in the Midwest, with the exception of the Federal District, all states had significant areas selected. ANA (2021), on the other hand, updated the surveys of irrigated areas and the estimates of water use in



the national territory and explained the difference between total potential and effective potential, in which the latter would explain, more precisely, the short-and medium-term potentialities in the Brazilian territory. Based on this, it was estimated that the effective potential of expansion of irrigated areas in Brazil is 16.7 Mha and is concentrated in the Midwest (45%), South (31%) and Southeast (19%). Among the states, Goiás, Mato Grosso and Mato Grosso do Sul are included in the list of those who present the highest potential. In Figure 1, both current and projected scenarios regarding the advancement of irrigated agriculture in the country can be compared:

Figure 1 | Brazilian area watershed-irrigated and national poles and their regional distribution in 2019 and 2040



Source: ANA (2021)

From the data shown in Figure 1, we see that the Midwest region presents a growing increase in the area destined to the practice of irrigated agriculture and the greatest effective potential for its expansion, in the short and medium term. It is also in the focus of the most reverberated public initiative currently for the sector, embodied in the recognition of the poles of Irrigated Agriculture, for

being exactly in the portion of the country where there would be more favorable conditions for the development of these poles. ANA (2021) classifies the poles of irrigated agriculture as fundamental territorial units for the planning of the sector and the implementation of the instruments of irrigation and water resource policies. The delimitation of these areas and the detailing of their attributes would guide management and function as showcases for the development of other initiatives.

That said, it is up to us to interpret that this development model with the use of irrigated agriculture in the prevalent configuration refers to the way Brazil has been inserted in international trade since Portuguese rule, meeting a demand that subordinates the country's interests to those of other nations that exercise economic hegemony (Galeano, [1978] 2012). Since then, the condition of the country is predominantly that of exporter of raw materials or, more modernly, commodities, with adaptations triggered by the introduction of the technological package brought by the green revolution and the current stage of capitalism, under the command of large transnational corporations, which manipulate the entire production chain (Alentejano, 2012).

Based on the lessons of Furtado ([1990] 2016), however, we must record a modernization process that began in the country on the demand side, that is, at certain times in history, there were crises in meeting the consumption of the wealthiest classes, which reproduced the lifestyle of the populations of richer nations. This entailed an internal industrialization to, at first, supply the needs of those classes, in addition to meeting the demand for primary products of a wasteful society established, in particular, in Europe and, later, in North America. Although there have been efforts by the Brazilian state to industrialize the country, in times of governments known as more developmentalist or nationalist, these periods did not result in a profound geopolitical modification, but only in the use of technologies and the manufacture of various items, as part of a poorly structured industrialization movement. In this step, the acquisition of these new nuances of the national economy, although it provided growth, did not generate development, especially since the increase in productivity was not reflected in social homogenization.

On the other hand, Brazilian agriculture focused on exports, although it has gone through moments of retraction during history, has regained its place of prominence in the economy precisely because of Brazil's conformation in international trade. Its current configuration is associated with



agribusiness, which, according to Delgado (2012), in the Brazilian sense of the term, is an association of large agro-industrial capital with large land ownership, which carries out an economic strategy of financial capital, pursuing profit and land income, under state sponsorship. Its predecessor was the term *agribusiness*, used in the 1990s, in the case of Brazil, as narrated by Alentejo and Egger (2021). The confinement of the term to the 1990s is related to an atrophy of the sector by the neoliberal policies of a good part of the decade, marked by the cutting of financing and other stimuli, in the logic that the state would have a minimal function in the organization of the market. But this thought took a turn with the East Asian currency crises of the end of said decade, which impacted Brazilian exchange rate, causing a maximum devaluation of the currency. From then on, it was necessary to generate positive balances in the trade balance, which, also under the impulse of the growing demand for commodities for China, it set the stage for the rehabilitation of the agricultural sector. As expressed by Delgado (2012), there was a reprimarization of foreign trade practiced by the country, which, in the words of the same author (2012, p. 111), corresponded to the “primary-exporter insertion in the external plan, which corresponds in the internal plan to the restructuring of what we characterize as the political economy pact of agribusiness.”

The reprimarization of foreign trade, therefore, serves Brazil’s function as a supplier of primary products, in an order imposed by the capitalist system. Svampa (2013) *apud* Alentejano and Egger (2021) raise awareness that in Latin America we are living the so-called “consensus of the commodities”, a kind of political and ideological consensus that the only legitimate or possible alternative for development occurs by the intensive and large-scale exploitation of natural resources for the production of primary products, as has already occurred in other periods, such as the cycles of coffee, cotton, rubber, among other products demanded by the avid international market (Furtado, [1959] 2005). Alentejano and Egger (2021) also state that, in Brazilian territory, the expansion of agribusiness is materialized in the advancement of the agricultural frontier, especially in Cerrado. This biome is the main Brazilian grain producing area, presenting the highest productivity rates in several crops, such as soybeans, herbaceous cotton, corn, coffee and sugarcane, in which agribusiness is consolidated in the states of the Midwest Region and expanding in the states of Maranhão, Tocantins, Piauí and Bahia, a region known by the acronym MATOPIBA, which results from the first syllables of these states.



IBGE (2020), with data from the 2017 agricultural census, corroborates the robustness of the agricultural sector in the Midwest and its focus on the global market, in which soy and corn production is evident, with off-season throughout the year, especially in the northern portion of the state of Mato Grosso. The commodities from agriculture require large areas for cultivation, which IBGE (2020) confirms, exposing that corn and soybeans had about 40% of their total produced among establishments with more than 2,500 hectares. In the Midwest, the same data indicate that 70.2% of production was carried out by establishments with more than 2,500 hectares, with the state of Mato Grosso producing 55.4% of all soybeans in the country, in relation to the same area group.

Delgado (2012) highlights the incensing of the theory of comparative advantages as an ideological component of this reprimarization of Brazilian foreign trade, in which the old theory seems to have become the great bet of Brazilian insertion in the international division of labor, with the risks immanent to it, especially those related to the traditional insecurity that involves the employment of foreign capital in this sector of trade and its remuneration. We have already talked about the theory of comparative advantages, which classical economics elaborated to base the specialization of the production of countries, based on the availability of one or more factors of production (land, capital and labor) or, in revisiting the theory, on the opportunity cost and the economy of scale of this production. Thus, the countries would occupy positions in the international division of labor, according to their respective specializations.

Recalled more recently by Chang (2004), List ([1855] 1989) refuted this construction of classical economics, still in the nineteenth century, by understanding that essentially agricultural nations would tend to stagnation and even economic, social, cultural regression, as well as in the correlation of forces with other nations. Prebisch (1968) also identified, in the work of ECLAC, the existence of deterioration in the terms of trade between central and peripheral countries. The ECLAC scholar showed that world trade would be in imbalance and hindering the development of Latin American countries. Prebisch believed that the industrialization of peripheral countries would be the antidote to economic backwardness. As we have seen, Celso Furtado shared this understanding, having added later that mere industrialization would not be enough to overcome the asymmetries with respect to the central countries. To do so, it would be necessary to disassociate from the cultural pattern of the rich nations, since its reproduction in the poor ones would determine the continuity of underdevelopment. Delgado (2012) associates the comparative



advantages to the land structure, adapted to external economic conditions, which result in conjunctural success of the various “sectors” – agriculture, mining, hydroelectricity and oil exploration – which grow ahead of the others and provide capital accumulation in the Brazilian economic system. However, he raises awareness that this line of economic growth contains traps, not only for the agrarian and land sector side, but mainly for the limits to development, social equality and environmental sustainability.

With this contribution of data and knowledge, we can say that Brazil, and more specifically the Midwest, have been inserted in international trade, with reprimarized function, a phrase by Delgado (2012). Paraphrasing the same scholar, in a previous quote, the country apparently bets on the “comparative advantage” of producing commodities, even if this means neglecting towards other sectors of the economy, mainly by causing food insecurity, by reducing the production of food that should supply the domestic market, to make way for export items. Recent studies show that the production area dedicated to bean and rice crops (the basis of the Brazilian diet) has lost space for soy, which is demanded by the international market (Alentejano, 2019).

Irrigation, in this context, is limited to the development model defended by agribusiness, seeking increasing productivity to enable record harvests of export-oriented products, while part of the national population goes hungry (Theodoro, 2022). Thus, we answer the questions about how and why the incentive to irrigated agriculture in the Midwest with federal resources is projected: the projected model has sought to follow the premises of agribusiness, which require increased productivity in technological bases and in large tracts of land, because, in this way, it is more able to meet the reprimarized function in foreign trade, which is Brazil’s role in the international division of labor.

The findings of this research are a contribution to a much broader and older debate about the specialization of production in the world and its consequences. In a closer view, it can help us to understand the strategies of the Brazilian government in promoting regional development, with special emphasis on the Midwest and its priority position in the macro-regional scale according to the PNDR, through public policies that catalyze or ease tensions between the groups responsible for agricultural production and the technologies used, in which irrigation is inserted, according to the development perspective that is considered.



CONCLUSION

The results of the research indicate that the most recent public policies, as well as legal and institutional arrangements, with regard to the stimulation of irrigated agriculture with federal public subsidy in the Midwest Region, come to meet the already established private structure, with its characteristics as a model of dominant agriculture and land ownership configuration, that is, focused on production in large estates and depending on the foreign market. The establishment of the poles of Irrigated Agriculture looms as the most relevant public initiative, to ensure the continuity of the advancement of agribusiness, in the logic of the insertion of Brazil and the Midwest in international trade as exporters of commodities. Thus, we perceive that the alliance formed by big capital with big rural property seeks to access the state apparatus to act in the radicalization of this model, opposing the role of the developmental and propellant role of the State regarding the reduction of social and regional inequalities, including, at the expense of the food insecurity of a large part of the Brazilian population.

However, as we have seen, public policies can also be used in the opposite direction to this trend, to soften, for the benefit of the population as a whole, as Fernandes (2004) proposes. Thus, events such as the extension of the deadline for the contribution of priority resources in irrigation in the Midwest, by constitutional amendment in 2015, the new legal framework that established the National Irrigation Policy in 2013, the recreation of Sudeco in 2009 and the insertion of Codevasf, from 2018, as executor of said policy in a larger area in the Midwest, must be interpreted in the direction of the realization of a development that is based on a social project, according to Furtado's meaning (2004), but this direction only society itself has the task and responsibility to ensure.

In short, public policies function as drivers of development, but the scope of this term depends on how society understands it. In a country on the periphery of capitalism such as Brazil, for development to mean more than mere growth and to be realized on a sustainable basis, the state must think about initiatives that overcome the imposed condition of supplier of primary products to the international market. Popularizing greater access of peasant agriculture to resources for irrigation that helps diversify production and prioritize the domestic market can be a revolutionary strategy, as were programs such as PAA and PNAE, which gain new momentum in the current government (Brazil, 2023c). In fact, these policies could form a resilient system in which less environmentally impactful irrigation techniques could increase access to markets that those previous programs allowed to be explored.



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