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PROFILE AND LOCATION OF RURAL FAMILY AGROINDUSTRIES IN THE PLANNING FUNCTIONAL REGIONS (FRs) OF RIO GRANDE DO SUL

PERFIL E LOCALIZAÇÃO DAS AGROINDÚSTRIAS FAMILIARES RURAIS NAS REGIÕES FUNCIONAIS (RFS) DE PLANEJAMENTO DO RIO GRANDE DO SUL

Cidonea Machado Deponti¹
Jorge Luiz Amaral de Moraes²
Marcos Paulo Dhein Griebeler³
Dilani Silveira Bassan⁴
Amanda Jung⁵

Abstract

For a better understanding of how the family agribusiness sector can contribute to regional development and rural territories, it is essential to know the different ways of integration and the dynamics of *rural family agro-industries*. In this sense, this article aims to analyze the profile and location of these agro-industries in Rio Grande do Sul. The research is defined as qualitative and descriptive-analytical, using secondary data from the Agricultural Census 2017. The theoretical approach used is based on nationally recognized authors who deal with the subject of family agroindustrialization. The main results found highlight the need for mechanisms that enhance competitiveness in local production among the Functional Regions FR7 AND FR9, where there are levels of commercialization below 20% of production and a lack of connection between producing and consuming regions, implying low value addition, productivity, and profitability of these agroindustries. Furthermore, it is essential for the development of these territories (FRs) that there be an articulation between regional development policies and sectoral policies directed at the development of family agro-industries in Rio Grande do Sul.

¹ PhD in Rural Development (UFRGS). Professor and Researcher at the Graduate Program in Regional Development at the University of Santa Cruz do Sul. Santa Cruz do Sul – RS, Brazil.

² PhD in Rural Development (UFRGS). Professor at the Graduate Program in Regional Development of the Integrated Faculties of Taquara. Taquara-RS, Brazil. Email: jmoaes12@gmail.com

³ PhD in Regional Development (UNISC). Professor of the Graduate Program in Regional Development of the Integrated Faculties of Taquara. Taquara-RS, Brazil. Email: marcosdhein@faccat.br

⁴ PhD in Regional Development (UNISC). Professor of the Graduate Program in Regional Development of the Integrated Faculties of Taquara. Taquara-RS, Brazil. Email: bassandilani@gmail.com

⁵ Master's student in Regional Development at the Integrated Faculties of Taquara (Taquara-RS). Nutritionist at the Education Department of the Municipality of Sapiranga. Taquara-RS, Brazil. Email: amandajung@sou.faccat.br

Keywords: Regional Development; Rural Development; Functional Regions; Family agro-industries; Family Agriculture.

Resumo

Para compreender melhor como o setor agroindustrial familiar pode contribuir para o desenvolvimento regional e os territórios rurais é necessário conhecer as diferentes formas de integração e as dinâmicas das agroindústrias familiares rurais. Nesse sentido, o presente artigo tem como objetivo analisar o perfil e a localização dessas agroindústrias no Rio Grande do Sul. A pesquisa caracteriza-se como qualitativa e descritivo-analítica, utilizando dados secundários do Censo Agropecuário 2017. A abordagem teórica utilizada se baseia em autores reconhecidos nacionalmente que tratam da temática da agroindustrialização familiar. Os principais resultados encontrados evidenciam a necessidade de mecanismos que potencializem a competitividade na produção local entre as Regiões Funcionais FR7 E FR9, onde se verificam níveis de comercialização inferiores a 20% da produção e uma falta de conexão entre regiões produtoras e consumidoras, implicando em baixa agregação de valor, produtividade e rentabilidade dessas agroindústrias. Somado a isto, é essencial para o desenvolvimento desses territórios (FRs) que exista uma articulação das políticas de desenvolvimento regional com as políticas setoriais direcionadas ao desenvolvimento das agroindústrias familiares do Rio Grande do Sul.

Palavras-chave: Desenvolvimento regional; Desenvolvimento rural; Regiões Funcionais; Agroindústrias familiares; Agricultura familiar.

Resumen

Para entender mejor cómo el sector agroindustrial familiar puede contribuir al desarrollo regional y de los territorios rurales es necesario conocer las diferentes formas de integración y la dinámica de las agroindustrias familiares rurales. En este sentido, el presente artículo pretende analizar el perfil y la localización de estas agroindustrias en Rio Grande do Sul. La investigación se caracteriza por ser cualitativa y descriptiva-analítica, utilizando datos secundarios del Censo Agropecuario 2017. El enfoque teórico utilizado se basa en autores reconocidos a nivel nacional que tratan el tema de la agroindustrialización familiar. Los principales resultados encontrados destacan la necesidad de mecanismos que mejoren la competitividad de la producción local entre las Regiones Funcionales FR7 Y FR9, donde existen niveles de comercialización por debajo del 20% de la producción y una falta de conexión entre las regiones productoras y consumidoras, lo que implica un bajo valor añadido, productividad y rentabilidad de estas agroindustrias. Además, es esencial para el desarrollo de estos territorios (FR) que haya una articulación de las políticas de desarrollo regional con las políticas sectoriales destinadas al desarrollo de las agroindustrias familiares en Rio Grande do Sul.

Palabras clave: Desarrollo regional; Desarrollo rural; Regiones funcionales; Agronegocios familiares; Agricultura familiar.

Introduction

What is expected of a regional development model is its ability to leverage the improvement of conditions, whether socioeconomic and/or environmental, in a sustainable way. At the same time, to raise the quality of life of rural and urban populations, taking into account the reality and diversity of the territories or regions. Knowing these realities is vital for the effectiveness of policies and action instruments for regional development, better adjusted to the territorial profiles, that aim at poverty reduction, the promotion of productive activities, and technological and entrepreneurial modernization. By taking these premises as a starting point, the study that gave rise to this article is part of a search for results that can serve as subsidies for the elaboration of regional development policies that consider the different local dynamics, territorial potentialities, and external opportunities (MORAES, 2016).

The main characteristic of agroindustries is their power to add value or multiply the value of agricultural production, which can represent a great socioeconomic opportunity for Brazil, mainly due to the significant growth in the domestic and global demand for food with different degrees of processing. The agroindustrialization allows for the expansion of the family unit's autonomy, both externally and internally, because it does not need to acquire productive resources in the external market, commercialization occurs in local markets, with no need for intermediaries (PLOEG 2008; SCHNEIDER AND NIEDERLE, 2007).

To better understand how the agribusiness sector can contribute to the dynamics of development, it is necessary to identify the different ways in which sectoral policies are integrated with regional development policies. In the specific case of *rural family agro-industries*, a great challenge is to identify ways to promote these agro-industries according to regional aptitudes, policies that contribute to making their production more integrated into the several segments of the regional-local productive chains, and mechanisms that make commercialization more competitive. From this context, then, questions to be answered arise: What is the profile of family agro-industries and how can they articulate with the markets and with the development policies of the Functional Regions (FRs) of Rio Grande do Sul planning?

Therefore, the main objective of this study was to analyze the *rural family agro-industries* of Rio Grande do Sul their production profile, level of commercialization and self-consumption, and forms of distribution in each of the nine *Functional Planning Regions (FRs)* in the state, based on data from the 2017 Agricultural Census (IBGE, 2021). More specifically, we sought to identify the degree of articulation of these agro-industries with some proposals of regional development policies and projects, proposed in the Forum of Coredes (2017), aiming to generate subsidies for regional-rural development policies. The knowledge of these characteristics will allow a better understanding of their contribution to regional and rural development in Rio Grande do Sul.

Besides this introduction and the final considerations, the article is divided into three more intermediate sections. In the following section, the theoretical referential base is presented, highlighting the relation between agro-industries and regional development and the conceptual definition of *rural family agro-industries*. The next section briefly describes the origin and the main characteristics of the *Functional Planning Regions (FRs)* of Rio Grande do Sul, formed from partial groupings of the 28 COREDES. Section 4 presents a summary of the research method used and, in the following section, the results of the study, based on the analysis of data from the 2017 Agricultural Census (IBGE, 2021).

Agro-industries and development

The construction of an autonomous agri-food and agro-industrial system integrated or not to the great national and/or global productive chains, became part of a development strategy that placed as main actors of this development the public power, the institutions, the cooperatives, the associations, and the economic agents. This was the strategy developed by these players to promote the regional development of rural territories, meeting local socioeconomic needs, expanding local democracy in economic decisions, and fostering the expansion of more profitable and job-creating productive activities in these territories.

However, the transformations of local productive processes and their results in different regions, associated with the characteristics of each territory, gave rise to diverse socioeconomic and environmental dynamics of regional development with differentiated and complex trajectories. The lack of knowledge about these dynamics has reduced the effectiveness of instruments and policies, public and private, for development, and the reach of the State's actions as an actor in the development of productive agglomerations and, particularly, of agri-food and agro-industrial systems and chains.

However, there is still a need for more in-depth studies to evaluate the role of rural areas and, in particular, the family agroindustry, in local productive dynamics and recent regional development. This evaluation is important to subsidize actions, by the public power and the other local actors, destined to take advantage of the regional productive factors and add value to the local agricultural and livestock production. What is expected when studying the most dynamic rural territories is that there is an environment where some of the territory's potentialities are used and external opportunities are taken advantage of (MORAES, 2016).

Studies such as those by Mior (2005); Pelegrini and Gazolla (2008); Foguesatto et al (2016), and Albarelo (2020) have shown that family agro-industries contribute to regional development in

terms of product diversification, income for families belonging to the arrangement and the generation of new social interactions, ensuring the socio-economic reproduction of the sector.

Family agroindustrialization: the theoretical debate

The transformations in family agriculture have allowed the development of the concept of family agroindustry. Therefore, it is necessary to characterize family agroindustry to understand the difference between these typologies. The IBGE understands that the rural family agro-industries are:

[...]processing and improvement activities of agricultural products of animal or vegetal origin, which were carried out in their facilities, community or third-party facilities, from raw material produced in the agricultural establishment or acquired from other producers provided that the final destination of the product had been given by the producer (IBGE, 2006, p. 31).

On the other hand, the IBGE's definition of what rural agroindustry are making it clear that there are some conditions and characteristics for the property and production to be considered family. In this sense, Mior (2005) interprets that the emergence of rural agro-industries can be observed as a reconfiguration of the colonial product produced by family agriculture. The "colonial" product processed by the agro-industries started to be seen, by the producers, as a product with higher added value and with the possibility of generating higher income for the families. Besides production techniques, some aspects corroborate to characterize the rural family agro-industry, such as location in the rural environment, machinery, and equipment used on a smaller scale, own raw material or coming from neighbors, handmade production, and work done by the family members themselves. Moreover, this dynamic can also manifest itself through associative ventures, which bring together several producing families (MIOR, 2007).

In another interpretation presented by Prezotto (2002) the Family Agroindustry helps in the resumption of the social knowledge of family production units regarding the processing of food that, over time, has always existed on rural properties and that was gradually deconstructed by the agricultural modernization model. According to Maluf (2004), agro-industries' *raison d'être* is the opportunity to produce their raw materials and use them in the family agro-industrialization process, both individually and collectively, generating greater autonomy and social and economic differentiation for producers.

In this sense, Nierdele and Wesz Junior (2009) understand that family agroindustrialization is associated with the autonomy of the producing families. This is justified by the mastery of resources used as basic supplies for agroindustry production. Thus, with the mastery of their production of raw materials, producers end up not needing to acquire them in the supplier market.

The scale of production of the family agro-industry is directly linked to the production capacity of the agricultural products of the property and the work capacity of the members of the producing family. The family establishes the maintenance or expansion of the activity, as well as compliance with legislation, starting from the family itself. Thus, endogenous alternatives of domination and control of what is produced are established, that is, the peasant logic is maintained, but entrepreneurial aspects are also added, at the moment that management principles and commercialization with the market are assumed (PREZOTTO, 2002).

For Mior (2005), the Family Agroindustry comes from Family Agriculture, submitting part of the vegetable and animal products and processed products aiming at greater commercialization and/or exchange value. He also clarifies that to constitute a Family Agroindustry it has to belong to a family, an association or a network of family associations/cooperatives; it has to produce its raw materials or buy them in small quantities from neighboring farmers; there must be a predominance of family labor, and there must be family and blood ties over generations.

Similar to other medium and small enterprises, the rural agroindustry are enterprises that perform activities of transformation and product processing, in this particular case, of agricultural products of animal or plant origin, in their own, community, or third-party facilities, from raw materials produced in the rural establishment itself or acquired from other agricultural producers, provided that the final destination of the product is given by the producer (SANTOS, 2014).

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Methodological Procedures

The regions that give geographical and functional support to the main object of this study, the *rural family agroindustry*, are the nine Functional Planning Regions (FRs) of the State of Rio Grande do Sul (Table 1). They are the result of compositions of 28 smaller administrative regions, called *Regional Development Councils (COREDES)*⁶.

The COREDES, grouped to form the Functional Planning Regions (FRs), was officially created by Law 10.283 of October 17, 1994, and covers the 497 municipalities of RS. As their original purpose, the COREDES seeks to be a space of democratic and representative discussion for the promotion of policies and actions aimed at regional development. Despite the changes since its creation, the genesis of Coredes still resides in seeking to promote the participation of all segments of regional society in the diagnosis of its needs and potentialities with a focus on the formulation and implementation of integrated development policies for the region they represent. It also has, as additional activities, the elaboration of regional strategic development plans (SDPs), maintaining the spaces for democratic participation, focusing on the state budget, and the evaluation of the performance of the actions of the state and federal governments in each region.

The municipalities and the Regional Development Councils (COREDES) were grouped to form the nine Functional Planning Regions (FRs), which were defined by the RUMOS 2015 Study (<https://planejamento.rs.gov.br/rumos-2015>). The organization of this social construction is based on the priority of several scales: economic, environmental, and social homogeneity. At the same time, the existence of variables related to employment generation, transportation models, and urban structure are also considered (Table 1).

Table 1: COREDESEs that form the Functional Regions (FRs)

FRs	COREDES
FR1	Metropolitano-Delta do Jacuí, Centro Sul, Paranhana-Encosta da Serra, Caí e Sinos
FR2	Taquari e Rio Pardo
FR3	Serra, Hortênsias e Campos de Cima da Serra
FR4	Litoral
FR5	Sul
FR6	Campanha e Fronteira Oeste
FR7	Celeiro, Missões, Fronteira Noroeste e Nordeste Colonial
FR8	Alto Jacuí, Central, Jacuí Centro e Vale do Jaguarí
FR9	Alto da Serra do Botucaraí, Médio Alto Uruguai, Nordeste, Norte, Produção e Rio da Várzea

Source: Forum of Coredes (2017)

As a reference point for this division, it was also considered in the referred study the organization of the health and higher education services network, due to the proximity between the municipalities that form these Functional Regions. Even though this territorial division is organized and the dynamics of the State are considered to be complex and heterogeneous in several aspects, one of them consists in the representativeness of the agro-industries in the territory of Rio Grande do Sul, with some FRs being highlighted.

⁶The *Regional Development Councils (COREDES)* were created in 1994, to be a discussion forum for the promotion of policies and actions aimed at regional development. Its objectives are the promotion of harmonious and sustainable regional development; the improvement of efficiency in the application of public resources and in the actions of the governments to improve the quality of life of the population and the equitable distribution of the wealth produced; the encouragement for people to remain in their region and the preservation and recovery of the environment.

To identify the production structures and the potentialities of *rural family agroindustry*, as well as to measure the degree of specialization in the FRs, the Locational Quotient (LQ) was used, a measure of regional specialization often used in studies on productive agglomerations in Brazil (IPARDES, 2003; DINIZ, SANTOS E CROCCO, 2004).

In this study, an adapted method for calculating the LQs was used, substituting the number of formal jobs in each sector of activity, traditionally used as an indicator of the degree of sectoral specialization, for the value of production of family agroindustry. The formula for calculating these LQs adapted for measuring the degree of specialization and identifying the different types of products of the rural family agroindustry is as follows:

$$QL = \frac{\frac{\text{Value of the production of rural family agroindustry "X" in FR "Y"}}{\text{The total value of production of rural family agribusinesses in FR "Y"}}}{\frac{\text{Production value of rural family agribusiness "X" in the State (RS)}}{\text{The total value of production of rural family agribusinesses in the State (RS)}}$$

The value of production was estimated by IBGE (2020) for each of the products of the family agroindustrial activities in the Agricultural Census of 2017, for all the municipalities of the State of Rio Grande do Sul (IBGE, 2021). This production value was used as an indicator of the degree of regional specialization of the 9 FRs of the state, considering the main types of products produced by rural family agroindustry (Table 2). This seems to be a way to demonstrate the potentiality and the degree of specialization of the productive activities within territories or regions, as is the case of the FRs in this study, according to the results presented in the following section.

Analysis of the family agrobusinesses in the functional regions (FRs) of Rio Grande do Sul

In this section, the main characteristics and production profile of the *rural family agroindustry* of the functional regions (FRs) of Rio Grande do Sul will be presented, including the degree of productive specialization (QLs) in each of them. The nine Functional Planning Regions (FRs) of the State of Rio Grande do Sul, formed from partial groupings of the 28 COREDES, were described in table 1, above.

As a result of the analysis carried out, it was verified that in Functional Region 1 (FR1) the main or outstanding agro-industrial activity is the production of "bread, cakes, cookies" and, perhaps, could also be included in this group, which could be called "bakery products", the production of *cucas*. This activity can be considered a specialty of this region, indicated by the QL of 1.5, which means that its relative participation is well above the average of the other regions and has a significant highlight in domestic production (Table 2, below). According to the Agricultural Census 2017 data, this activity stands out in the region basically because of the specialization of the production of these products in the municipality of Camaquã, with 91% of the FR1 production.

This region has the exclusivity in charcoal production, with a very high specialization (QL=13.9), producing 90% of the total value of rural family production in RS, highlighting the municipalities of Salvador do Sul (27% of production), Taquara, Cerro Grande do Sul and Barão do Triunfo. It should be highlighted that in FR1, as also happens in FR4 (40.8%) and FR5 (29%), there is a high percentage (42.7%) of the value of family agroindustrial production concentrated (QLs between 1.8 and 2.6) of "other products", gathered in this group, for a better analysis of the results of the present research, those products with percentages lower than 1% of the total value of production, but not all these products were specified in the 2017 Agricultural Census.

Just as a comparative example, as can be seen in table 3, the total production of "other products" in the Rio Grande do Sul participates for R\$156.4 million (16.5%) of the total value of production in the state. As a result of this high relative participation of these "other products" and, at the same time, the relatively low total production of each of these three regions, they are characterized as quite diversified. For the same reason, they present a very high degree of

concentration of this group of "other products", with QLs equal to 1.8, 2.5, and 2.6, respectively, in RF5, RF6, and RF1, although individually they are products with low representativeness because small quantities of each product are produced (Table 2).

FR2 is relatively diversified, with a slight highlight on pork production (LQ = 1.4), but the LQ values of other activities, in general, reflect the characteristic pattern of Rio Grande do Sul, that is, predominating values close to or below 1.0 (Table 2). The FR3 region comprises the Coredes Serra and Hortênsias, regions known for their tradition of being large industrial producers of wines, juices, cheeses, jams, and jellies, especially in the Serra, and for the national prominence in the production of tourism services in the region of Gramado and Canela. As can be seen in table 2, the rural family agroindustry in the FR3 also reflects some of this industrial tradition in the region. Based on the locational quotient indicator (LQ), in the FR3 region, there is a high productive specialization in the segment of family agro-industries that produce grape wines (LQ=5.7), jams and jellies (LQ=3.4), as well as, although with a lower degree of specialization, in cheese and curd (LQ=1.6), bakery products and fruit juices (LQ=1.4).

Table 2: Degree of specialization (QLs) of family agroindustrial activities in the FRs

Rural family agro-industrial activity	Specialization Degree (QLs)								
	FR1	FR2	FR3	FR4	FR5	FR6	FR7	FR8	FR9
Beef meat	0.3	1.2	0.4	-	0.8	0.4	1.5	1.1	0.9
Pork meat (green)	0.4	1.4	0.3	-	1.0	0.2	1.2	1.1	1.0
Bread, cakes, and cookies	1.5	1.2	1.4	-	0.9	0.2	0.9	0.7	0.8
Cheese and curd	0.6	0.6	1.6	5.2	0.3	4.5	0.5	0.8	1.5
Meat other animals	0.4	0.7	0.3	-	1.5	1.8	1.6	0.8	1.1
Cold cuts (sausages,)	0.3	1.0	0.9	-	0.8	0.1	0.9	1.2	1.3
Grape wines	0.3	0.3	5.7	-	0.1	-	0.3	0.3	0.5
Fruit juices	1.2	1.0	1.4	-	1.1	0.1	0.9	0.8	0.9
Jams and jellies	0.9	0.7	3.4	1.6	2.0	2.0	0.6	0.7	0.5
Molasses	0.8	1.1	0.0	1.8	-	-	2.4	0.3	0.4
Charcoal	13.9	0.2	0.1	-	-	-	0.0	-	0.2
Other products	2.6	0.8	0.8	2.5	1.8	1.3	0.4	1.5	1.1

Source: Prepared by the authors, based on data from the 2017 Agricultural Census (IBGE, 2021).

The FR4, due to the few productive activities of the rural family agro-industry and, consequently, the low production of this segment, presents relatively high numbers of the locational quotient (LQ). But these must be put into perspective because these high LQ values are due to the very low participation of local production in the total production of the state's family agroindustries, almost non-existent in the region, barely 0.49% of the total (Table 3). Besides this total percentage being very low, there is still the fact that the region is not diversified, since it is limited to the participation of practically only 2 groups of products, "cheese and curd" and "other products". This results in an exaggeratedly high LQ for these two activities, respectively, 5.2 and 2.5 (Table 2), because the method for calculating this indicator is deficient in these specific situations, where the percentage of the region's production in the total state is small (0.49%) and, at the same time, domestic participation is concentrated in two products.

On the other hand, since the FR4 has a large urban population, especially in the summer, it has a high potential for the consumption of agro-industrialized foods, which could be supplied by family farming. Since most of these foods are processed, they could be stored for a longer period between production and marketing in summer. This potential is not exploited by regional-local family farming, verified by the low number of family farmers who produce some type of processed food (Table 3, below).

The economic growth and population of the FR5 are highly concentrated in the municipalities of Pelotas and the Rio Grande and the productive specialization of the region's family agro-industry, according to Table 2, is in the production of sweets and jellies (QL=2.0) and a diversified production of "other products" (QL=1.8), not specified in the 2017 Agricultural Census, however, it is a relatively very small production. Therefore, among the priority projects indicated within the strategic

development plan of the FR5 is the project to implement legalizing more than 70 family agro-industries in the region and the expansion of marketing infrastructure and participation in regional fairs.

The FR6, similarly to FR4, also has a very small number of rural family units that had some agro-industrial production in 2017, mainly in Caçapava do Sul, Rosário do Sul, Hulha Negra, and Santana do Livramento, where there are some agrarian reform settlements and a few thousand settlers. In the FR6, the production of cheese and curd cheese (QL=4.5), the meat of other animals (QL=1.8), and jams and jellies (QL=2.0) appear with relative prominence. However, as can be seen in Table 3, these values are more a function of the low total production of agro-industrialised products in this region and the methodology for calculating the LQs, a situation similar to that of FR4, described above.

Because its production is relatively well-diversified and has a production profile very similar to the pattern of the rest of the state, FR7 does not present activity with a high value of specialization in a specific product. Although the pork production of the FR7 is greater than that of the other regions individually, specialization in this activity does not stand out, although it is slightly above the state average, because the FR7 is very diversified and has the highest production among all the regions, producing 25.1% of the annual R\$948.6 million generated by the production of family agro-industries in Rio Grande do Sul.

The FR9, like the FR7, has a very significant relative family agroindustrial production (26.25 of the production in the state of Rio Grande do Sul) and diversified and a very similar product portfolio of rural family agroindustries to the FR7. The projects suggested as strategic for this region also include the strengthening of agri-food production chains and marketing structures for family agro-industries products. According to the 2017 Agricultural Census (IBGE, 2021), this region concentrates almost 25% of all personnel employed in agricultural activities in Rio Grande do Sul.

The profile of family agro-industries in Rio Grande Sul and their distribution in the Functional Regions (FRs)

According to the 2017 Agricultural Census (IBGE, 2021), *rural family agroindustries* in Rio Grande do Sul produced a gross value (GVA) of R\$948.6 million, in 121,603 family farmer establishments, and only 25.2% of this total gross value produced was marketed (Table 3). From the 2017 Agricultural Census data, it was found that 74.8% of these rural family establishments with agro-industries and 70.1% of their total production, were located in only three Functional Regions, FR2, FR7, and FR9. And further, almost 52% of these establishments and 51.5% (over R\$ 488.4 million) of the gross value of the production of family agroindustries were concentrated in the FR7 and FR9 regions (IBGE, 2021).

It was found in the study that FR1 and FR4, with approximately 40% of the state's population, are two of the three regions with the lowest family agroindustrial production values (GVP), indicating a disconnect between production and consumption. In contrast, the only two regions with family agroindustrial productions above R\$200 million in 2017 are FR7, located in the northwest of Rio Grande do Sul, and FR9, located further north (Table 3). These two regions have 50.7% of the units with family agroindustries, which produce 51.5% of the state's total, but have only 17% of the state's total population.

Table 3: Number of production units, the gross value of production (VBP), and percentage of sales by Functional Region (FR)

FR's	Family units (no.)	Family units (%)	Value (B) of production (in R\$1,000)	Value (B) of sales (in R\$1,000)	sales/production %
FR1	6,057	5.0%	60,940	34,851	56.5%
FR2	27,886	22.9%	176,985	30,988	17.5%
FR3	8,932	7.3%	116,415	42,713	36.7%
FR4	257	0.2%	4,707	2,475	52.4 %
FR5	3,503	2.9%	15,214	3,221	21.0 %
FR6	1,557	1.3%	11,428	7,128	62.2 %
FR7	33,741	27.7%	238,373	30,741	12.9 %
FR8	10,294	8.5%	74,563	24,006	32.2%
FR9	29,376	24.2%	250,018	64,552	25.8%
TOTAL	121,603	100.0%	948,643	240,675	25.2%

Source: Prepared by the authors, based on data from the 2017 Agricultural Census (IBGE, 2021)

Initially, the FR1, formed predominantly by the Metropolitan Region of Porto Alegre, with approximately 4.33 million inhabitants (41% of the population of the state), and the FR4 in the northern coast of the state, receiving in the summer more than 1 million tourists, are among the regions that have the greatest potential for food consumption in the state. The territory formed by Coredes Metropolitan Delta do Jacuí and Vale do Rio dos Sinos, both belonging to FR1, represent approximately 40% of the production and jobs in the transformation industry and 39.2% of the GDP of Rio Grande do Sul (FÓRUM DOS COREDES, 2017). These figures may be an important indicator of the high consumption potential of these two regions, but on the other hand, as can be seen in Table 1, the sum of the production values of the family agro-industries of FR1 and FR4 represents no more than 6.9% of the total production of Rio Grande do Sul.

Next, the FR2 produces 18.7% of the nearly R\$ 950 million produced by family agro-industries in the state, second only to Functional Regions 7 (25.1%) and 9 (26.4%), being the region where family agro-industries are the largest producer of pork and the second-largest of beef (Table 4). Among the priority projects indicated within the strategic development planning of FR 2, and the Coredes that comprise it, the project that seeks to consolidate the current Local Productive Arrangements (APLs) of this region stands out. It focuses on the strengthening and expansion of actions for the production, industrialization, and marketing of food produced and processed by family agriculture, seeking to take advantage of the regional land structure.

Functional Region 3 (FR3), with over 1 million inhabitants and 87% of these residing in urban areas of medium-sized cities, represents an important food consumer market; however, food production by family agro-industries in the region represents only 12.3% of the total produced by these family farms in the State (Table 4). A large part of this region is located in the *Eixo Porto Alegre-Caxias do Sul*, considered the territory with the most dynamic economic development in the Rio Grande do Sul. This functional region, which generates 14% of the Gross Domestic Product - GDP of the state, includes two Coredes which are among those with the highest economic development in the state, the Serra and Hortênsias regions.

The Corede of the Serra region, which comprises the so-called Metropolitan Region of Serra Gaúcha, anchored in the municipality of Caxias do Sul, has as its main characteristic the great development of the industrial sector, with about 20% of the production of the State's transformation industry. The Corede of Hortênsias region is one of the most important poles of development of the service sector in southern Brazil, with tourism as a generator of income and jobs, especially in the pole formed by the cities of Gramado and Canela. FR3 had a relatively high percentage of its production sold, selling around 36.7% (R\$42.2 million) of its production of just over R\$116 million (Table 3).

Among the strategic projects for the development of the FR3, there is a proposal for the development of family farming, to avoid or reduce rural exodus and increase the income of these families (FORUM DOS COREDES, 2017). The justification would be the income benefits brought by the formation of a local agroindustrial production chain. For this, probably, the family agroindustry

could be a viable alternative, given the income multiplier effect of this activity, the large availability of three-phase electricity networks in rural areas of this region, and the great potential for food consumption in the region, given the characteristics of this region presented above.

In table 4 it is possible to see how this participation in the production of the main agroindustrial products that originate the value of production (VBP), presented in aggregate form in table 3, is distributed among the nine Functional Regions (FRs) of Rio Grande do Sul. Beef and pork, which represent almost 39% of the total produced by agro-industries in RS, are prominently represented in FRs 2, 7, and 9, which, coincidentally, are the regions with the largest shares in the overall total production of family agro-industries in the state.

Table 4: Products and production value of the main family agro-industries of the FRs

Production Value - VBP (in BRL 1,000)													
FRs	Jams and jellies	Molasses	Bread, cakes and cookies	Cheese and curd	Fruit juices –	Wine from grape	Beef meat	Pork (green)	Meat other anim.	Cold Cuts (sausages)	Charcoal	Others products	TOTAL
FR1	1,114	629	10,990	3,507	1,951	744	3,888	3,693	1,849	816	5,711	26,048	60,940
FR2	2,564	2,537	24,956	11,040	4,896	2,040	48,208	38,696	9,338	7,860	270	24,580	176,985
FR3	8,251	49	20,076	19,400	4,476	25,042	11,470	5,712	2,582	4,378	75	14,904	116,415
FR4	154	110	0	2,522	0	0	0	0	0	0	0	1,921	4,707
FR5	630	0	1,653	470	464	61	2,814	2,428	1,716	564	0	4,414	15,214
FR6	482	0	264	5,309	17	0	994	385	1,556	30	0	2,391	11,428
FR7	3,139	7,110	25,053	11,268	5,877	2,509	83,886	43,766	30,365	9,151	61	16,188	238,373
FR8	1,137	312	6,455	5,834	1,525	815	18,553	12,687	4,356	4,031	0	18,858	74,563
FR9	2,534	1,243	23,499	38,517	6,074	4,613	51,473	38,161	21,927	14,628	257	47,092	250,018
Total	20,005	11,990	112,946	97,867	25,280	35,824	221,286	145,528	73,689	41,458	6,374	156,396	948,643
%	2.1	1.3	11.9	10.3	2.7	3.8	23.3	15.3	7.8	4.4	0.7	16.5	100

Source: Prepared by the authors, based on data from the 2017 Agricultural Census (IBGE, 2021).

Among the priority projects indicated in the strategic development plan of the Coredes belonging to the FR2, the one that seeks to strengthen Local Productive Arrangements (APLs) stands out. This project focuses on strengthening and expanding actions for the production, industrialization, and marketing of food produced and processed by family farming, seeking to take advantage of the regional land structure. The project's main objectives are to diversify family farming production, increase family income by adding value, create and expand markets, and foster cooperativism, associativism, and the development of Family Agroindustry APLs already existing in the region (COREDES FORUM, 2017).

The FR7, which is the region with the highest production of rural family agroindustry products, with more than 70% of the value of its production coming from slaughtering activities of cattle, pigs, poultry, and "other animals" not specified in the 2017 Agricultural Census (IBGE, 2021). However, the region also has significant production of bread, cakes, cookies, cold cuts, cheese, curd cheese, molasses, and fruit juice.

Because its production is relatively well-diversified and has a production profile very similar to the pattern of the rest of the state, the FR7 does not present activity with a high value of specialization in a specific product. This functional region stands out for having the production value of some products well above the state average, being the functional region of the state with the highest production value generated by the slaughter of cattle (R\$83.9 million), the slaughter of pigs (R\$43.8 million) and the production of meat from other animals (R\$30.4 million), such as poultry, and a highlighted production of molasses (R\$7.1 million), as shown in Table 4, above.

Due to these characteristics of the region, some of the priority projects indicated in the strategic development plan of the FR7 are those that seek to provide the region with logistics, energy,

and communication infrastructure. The main objectives of these projects are to foster investments in innovation and increase the competitiveness and added value of the products in agri-foods production chains and Local Productive Arrangements (APLs), articulated with the family agro-industries already existing in the region.

In the general average of the state, using as an example the meat, resulting from the slaughter of cattle, pigs, and "other animals" (mainly poultry), which represents 46.4% of all family agro-industrial production in the state, the percentage of self-consumption of these products by families in rural establishments varies from 94% to 96% of the total produced. It was estimated as self-consumption was the difference between the value produced and the value of what was reported as sales. Of the main products of the rural family agro-industries in RS, only "molasses", "cheese and curd" and "charcoal" sold more than 60% of production (Table 5).

In the two functional regions (FRs) where the largest concentrations of family farmers and rural family agro-industries in the state are located, FR7 and FR9, although they have the highest absolute production values, they marketed, in 2017, respectively, 12.9% and 25.8% of their productions, using the gross value of production (GVP) as an indicator. Therefore, these percentages, on the other hand, characterize these two functional regions as those with the highest percentages of self-consumption among all regions (Table 5). In the weighted average of these two regions, there is a high percentage of self-consumption in the rural establishment, since only 19.5% of this production was marketed. However, a common characteristic of the FR7 and FR9 regions is their average distance from the largest producer and population agglomerations and, consequently, the largest food consumer centers in the Rio Grande do Sul, between 400 and 500 km.

Table 5: Products and sales value of family agro-industries of FRs

Sales (VBP in BRL 1,000)													
FRs	Jams and jelly	Molasses	Bread, cakes, and cookies	Cheese and curd	Fruit juice	Wine from grape	Beef Meat	Pork Meat (green)	Meat other animals	Cold cuts (sausages)	Charcoal	Other products	Total
FR1	437	563	296	2,997	404	327	480	142	63	430	5,462	22,661	34,262
FR2	800	1,885	954	6,871	369	583	3,286	1,459	418	1,426	270	11,826	30,147
FR3	4,282	18	1,388	13,788	3,150	9,929	666	235	135	1,732	75	6,810	42,208
FR4	140	110	0	438	0	0	0	0	0	0	0	1,597	2,285
FR5	206	0	180	366	301	7	272	153	24	226	0	1,426	3,161
FR6	380	0	152	4,966	1	0	36	62	78	1	0	1,337	7,013
FR7	333	3,731	2,207	6,337	214	965	4,410	1,296	1,513	1,514	58	7,380	29,958
FR8	535	271	1,301	4,433	69	621	562	395	328	1,167	0	13,540	23,222
FR9	526	654	4,785	26,001	605	2,107	3,602	2,074	640	4,600	257	17,725	63,576
Total	7,639	7,232	11,263	66,197	5,113	14,539	13,314	5,816	3,199	11,096	6,122	84,302	35,832
Sales/Prod	38.2%	60.3%	10.0%	67.6%	20.2%	40.6%	6.0%	4.0%	4.3%	26.8%	96.0%	18.0%	-----

Source: Prepared by the authors, based on data from the 2017 Agricultural Census (IBGE, 2021).

It is expected that the results of this study can contribute to subsidizing actions of public authorities and other local actors, promoting better use of regional production factors, adding value to regional-local agricultural and livestock production, and a system of control and sanitary supervision reliable for consumers and, at the same time, compatible with the needs of quality, agility, and proximity between production and consumption.

In this way, in the most dynamic rural territories, it would be possible to (a) create an environment where some of the territory's potentialities, such as the presence of family agriculture, can be used. At the same time, (b) in a way that takes advantage of external opportunities, such as, for example, (c) the potential of consumer markets for processed foods in nearby regions, inside or outside the state.

Final Considerations

Given the above, it is understood that the subsector of rural family agro-industries can contribute to the dynamics of regional development when they are part of the different forms of integration between sectoral policies and regional development policies. However, in the specific case of Rio Grande do Sul, the main challenge for this contribution to regional development is the need for regional public and private actors, with the support of public policies at state and federal levels, to promote the integration of sectoral policies with regional development policies and the development of these agro-industries according to regional aptitudes.

Based on the information made available in the 2017 Agricultural Census, the need for new marketing mechanisms that increase competitiveness was verified, mainly in the local production of two Functional Regions (FRs) located in the northwest and north of Rio Grande do Sul (FR7 and FR9). These functional regions, which account for over half the production of the state's rural family agroindustries, have a percentage of self-consumption in rural establishments that exceeds 80% of production. Not necessarily that this is a problem since in terms of the level and quality of food consumption of these families this would be positive. However, from the specific point of view of the purpose of agroindustrialization of family farming production about adding value and generating higher income, this level of commercialization of agroindustrial production, below 20% of the total, becomes insufficient for family farmers in these regions.

However, it is important to highlight that in recent years the situation of rural family agroindustries in the Rio Grande do Sul has improved. It observed an expansion of new local markets and the formation and maintenance of some short chains, through local farmers' fairs, cooperatives, and greater participation of the sector in Expointer, the largest international agricultural and livestock fair in Latin America, held annually in the city of Esteio-RS.

Regarding this, it is possible to notice the effort made by regional-local actors and by those who compose the Coredes Forum, in the sense of proposing policies and projects for regional development and family agriculture. However, it is verified that a greater articulation is still needed between regional development policies and those specific to the family agroindustry. At the same time, those that dialogue with production, the segments of regional production chains, and the large consumer markets for food processed by rural family agro-industries in the state.

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