

Contracts of the Sugarcane Sector with the BNDES in the Period 2000 To 2015: Analysis of the Profile of Non-Automatic Operations

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Abstract: *The main objective of this study is to analyze the profile of the non - automatic financing operations contracted by the sugar - energy sector with the National Bank for Economic and Social Development (BNDES) in the period 2000 - 2015. The exploratory study analyzes 1,254 non - automatic BNDES operations, obtained through the Law of Access to Information (LAI), directly from the financial institution 's database, in a cross - sectional type with a longitudinal perspective in the period from 2000 to 2015. The set of operations was systematized into 20 predominant categories with the respective amounts allocated to each of them. The total amount recorded for all operations was R \$ 25,059,850,454, with an average value of R \$ 1,232,402,293. Category 19 ("Planting") was the category with the highest value of investments representing 16.28% of the total value. There was no record of non-automatic financing operations for the sector in 2000. There is a higher concentration of investments from 2007 onwards, growing by the year 2009. Only these four years (2007-2010) Represent 55.54% of the total resources made available in the period, equivalent to R \$ 13,918,857,244. For the same period, the number of operations was 706, representing 56.30% of total operations in the period surveyed. It is possible that this highlight in the value of investments and in the number of operations reflects the crisis of 2008 that strongly impacted the Brazilian economy in general and the sector in particular.*

Keywords: *BNDES, Investments, Law of Access to Information (LAI), Mills, Sugar-Energy Sector.*

I. Introduction

It is a fact that the sugar-energy sector still presents itself with reluctance regarding the effects of the financial crisis, more precisely of the end of the first decade of this century. Factors such as high indebtedness, structural cost increase, climatic adversity, poor public and sector policies, among others, led to an inevitable fall in the profitability of companies in this sector.

In this scenario of instability, uncertainty and sudden changes, investments in expansion of the productive capacity of the sector remain. In a timely way, some financially more structured groups invest in factors that can leverage productivity gains, especially in technological innovations, in product (new varieties with better adaptation to the soil, climate, etc.) or in processes which contribute to cost reduction, increased productivity, improved quality, increased operational efficiency). Investments that, in some way, apply to the agricultural, industrial and / or logistics area.

From the beginning of this millennium, the segment undergoes a restructuring, with some peculiar characteristics: i) rapid geographic expansion with new areas of cultivation and processing of sugarcane; ii) concentration of greater volume of capital in the sector and; iii) learning from a new knowledge base, biochemistry and genetic engineering [1], highlighting the development of new species of cultivars capable of withstanding greater water deficit. Added to these actions, the use of nanotechnology directly or indirectly in agriculture [2]. The energy cogeneration from biomass resurfaces on the horizon as an important source of revenue. Considering the climatic variability, especially the prolonged drought period and, consequently, the reduction of the generation capacity of hydroelectric plants in Brazil, cogeneration became of crucial importance in the sector [3]. Despite this, the appropriation of potential gains by companies in the sector remains uncertain, characterized by a great heterogeneity among the most diverse economic groups operating in the sugarcane sector. Differences vary depending on the nature and size of these groups.

Currently, companies in the oil, energy, tradings, and family-owned businesses coexist [3]. Many of them have high levels of indebtedness, aggravated by the consistent growth of production costs and ethanol, since sales prices have not sufficiently compensated the factors of production. BNDES investments in the sugar and ethanol sector have been accompanied by "a manifest way of expansion and sectoral crisis over the last 15 years", which led the financial institution in 2007 to create a department dedicated exclusively to the sector, the Department Of Biofuels [DEBIO], linked to the industrial area [4].

In this context, the guiding question of the present study can be written as follows: What is the profile of the non-automatic financing operations contracted by the sugar-energy sector with the National Bank for Economic and Social Development (BNDES) between 2000 and 2015?

The aim of this research is to analyze the profile of the non - automatic financing operations contracted by the sugar - energy sector with the National Bank for Economic and Social Development (BNDES) in the period 2000 - 2015. The paper is organized around five sections including this introduction that addresses the research question and the overall purpose of the study. Section two addresses the theoretical frameworks as research support. Section three presents the most compatible methodological procedures to reach the proposed goal. Section four presents and analyzes the main results. Section five was reserved for the final considerations of the study, containing also the limitations of the research and proposed agenda for future studies.

II. Theoretical Foundation

In this section a theoretical platform will be presented, which is necessary and sufficient to support the research.

2.1 The Sucrenergic Sector: A Recent History?

The production of sugarcane is one of the oldest economic activities in the country. It has been cultivated in Brazil since the 16th century, and is currently the third most important crop in terms of area, after soy and corn. The largest sugarcane production area is the Center-South region, which represents more than 90% of Brazilian production [5]. In spite of the contingencies that occurred in the history of the Brazilian economy, the activity related to the sugar industry subsisted for centuries, being the large and, in most cases, the only source of income of the producers until the last quarter of the last century [6].

Ethanol made from sugarcane makes up the Brazilian energy matrix for more than eight decades. The use of ethanol as an additive to gasoline was introduced in the country in 1931[6]. Since then, the sector has gone through several phases of greater and lesser state intervention, period of greater regulation and, more recently , The insertion of foreign capital in the production of sugar, ethanol and, above all, in cogeneration of electric energy.

Characteristically, there is no significant differentiation of product or brand by the industries of this sector, which play the role of price takers. The cost factor ends up becoming the main competitiveness vector, allocated mainly in the agricultural sector of the production chain. As a result, competition is mainly driven by the pursuit of high-quality, low-cost raw materials. Situations such as this have led companies to adopt regional cluster formation strategies as a form of territorial demarcation, as well as creating barriers to new entrants [3].

Added to this, mergers and acquisitions as a hallmark of this sector, more markedly in recent years [7]. The Brazilian Center for Infrastructure (CBIE) estimates that this year the participation of foreign capital can reach 60% in the Brazilian sugar and ethanol sector. Points out that "large foreign companies with international operations are investing in this area in Brazil" [8].

Notoriously, the Brazilian government sees as an additional competitive advantage of this internationalization process, the emergence of new opportunities for the national productive sector, with the main beneficiaries being machine and equipment manufacturers, engineering companies, consultants, miscellaneous services contractors (e.g. maintenance), suppliers of industrial and agricultural process technologies [9].

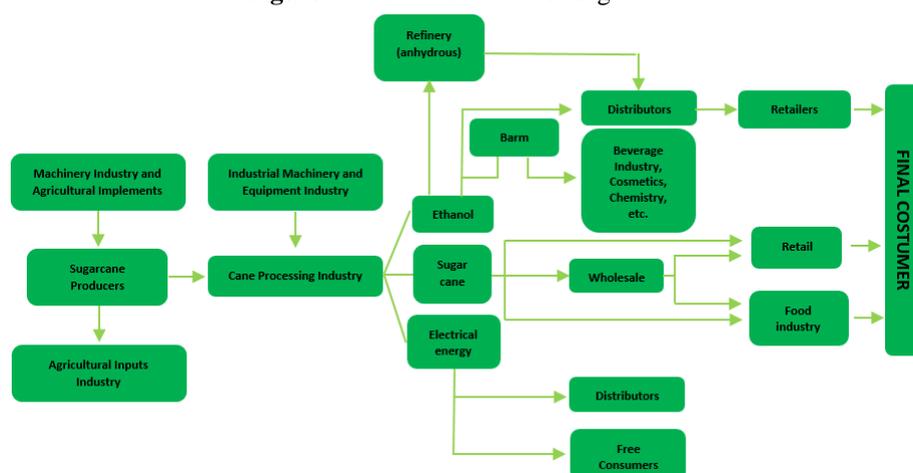
2.2 The Sector and its Positive Aspects: The Ethanol of Sugar Cane

The shock of oil and, more recently, the appearance of flex-fuel engines are the main determinants of Brazilian ethanol production. The increase in oil consumption, the stabilization or even the drop in supply, in addition to its finitude characteristic [10]. The constant growth of the fleet of vehicles with biofuel engines [11] opens up quite significant opportunities for Brazilian ethanol and its positive impact on the global economy, especially since it is a more sustainable production system both economically and mainly environmental.

In addition to greater economic sustainability, ethanol produced from sugarcane also offers better environmental gains when compared to other biofuels options, mainly because of its significant capacity to reduce emissions Of greenhouse gases (GHG), especially CO₂ [6]. The decision of the US Environmental Protection Agency (EPA) to qualify ethanol as "advanced fuel" [12], notably by recognizing ethanol as the "only biofuel capable of reducing, at least 50% of greenhouse gas emissions ... "[6] gave international visibility to Brazilian energy.

It is worth mentioning that ethanol is one of the links of the sugarcane production chain that presents itself with greater amplitude, involving other corporate actors and different stakeholders. The Fig 1 systematizes the productive chain of sugarcane.

Figure 1. Production chain of sugarcane.



Source: Adapted from Neves, Trombin and Conejero (2010).

Brazil currently has an exceptional window of opportunity for the international development and consolidation of the national bioenergy and green chemistry industry, which have a relevant biotechnological component. The joint evolution of these two factors takes place from the inseparable relation with respect to the inputs, productive and technological processes [13].

2.3 BNDES Operational Guidelines in the Sucrenergy Sector

Brazilian public banks have acted in at least four major dimensions: i) fostering economic development, offering credit to sectors in which private banks are not very interested, either because of the higher risks presented or because of the unattractive profitability - popular housing, rural, urban infrastructure, exports, etc. - and / or longer maturation periods and higher volumes - technological innovation, energy, transport and telecommunications matrix etc. ; ii) stimulating regional development; iii) expansion of liquidity at the moment of reversal of the confidence state, characterizing countercyclical action; And iv) promotion of banking inclusion [14]. The National Bank for Economic and Social Development (BNDES) was founded in 1952 with the purpose of contributing to the development of Brazilian infrastructure. Starting in 2003, the BNDES started with a stricter investment policy in the financing of large companies and large infrastructure projects. Specifically, in the case of the sugar-energy sector, it is a fact that it was the fundamental support of the so-called second cycle of expansion and investment [15].

According to the Brazilian Institute of Social and Economic Analyzes [15], the financial institution prioritized investments in processes such as cane renewal, harvest mechanization. In addition, the BNDES also favored the expansion of the scale of electricity cogeneration in the sugarcane industry, giving rise to a new focus of expansion for the sector, which is highly profitable. To stimulate technological catching-up, especially with regard to the international evolution for 2nd and 3rd generation ethanol, with the prospect of inserting Brazil as one of the main poles of development of these technologies, even in an experimental phase; The transition from the complex to high value-added industry, with the creation of alcohol-chemical poles, capable of producing new materials from sugarcane, in addition to transgenics, also became Bank's objectives [15].

In order to accelerate the technological development of the sector, the financial institution started to prioritize the innovation projects, especially after the positive experience of the Support Plan for the Innovation of the Sugarcane and Sucrechemical Sectors (PAISS).

BNDES has focused its activities in the sugar-energy sector by five main directives [6]:

1. Expansion of production capacity;
2. Encouragement of innovation and technological development;
3. Potentialization of positive externalities;
4. Stimulating sustainability;
5. Contribution to the formation of a global bioethanol market.

The Table 1 systematizes the main guidelines adopted by BNDES together with the main actions that characterize each of these guidelines [6].

Table 1. BNDES guidelines and main actions.

N°	Guidelines	Main actions
1	Expansion of production capacity	- Provision of long-term resources to increase the production level of the sugar-energy industry. - Creation of the Department of Biofuels (DEBIO) in 2007.
2	Incentive to innovation and technological development	- Creation of the Joint Support Program for Industrial Technological Innovation of the Sugarcane and Suetrochemical Sectors (PAISS). - Partnership with Finep.
3	Potentialization of positive externalities	- Favor and extension of the deadline for financing high pressure boilers. - Investments in social projects.
4	Stimulating sustainability	- Investment in multimodal logistics structure. - Creation in 2009 of the Environment Area.
5	Contribution to the formation of a global bioethanol market	- Transformation of ethanol into an international commodity. - International dissemination of technical-scientific publications.

Source: Prepared by the author based on Milanez and Nyko (2010).

The BNDES investment efforts in the sugar-energy sector. However, it should be noted that the increase in the production of the raw material, and consequently of ethanol, sugar and, more recently, of bioenergy, will not only originate in the enlargement of the sugar cane and in the construction of new productive capacity (expansion and greenfield). Part of this growth will come from the optimization of idle capacity (industrial and agricultural, with cane renewal), changes in the production mix between sugar and ethanol, investments in Research and Development (R&D), be it in planting (genetic improvement, land use efficiency, efficiency of planting, cultural treatment and harvesting, among others), or in the industrial sector (efficiency in processes, waste reduction etc.), mergers and acquisitions of existing assets, as well as investments in the construction of production units with cogeneration technology [16].

It is distinguished "area of expansion of the culture" (expansion) and "area of agricultural expansion" (greenfield). This refers to the increase of the area of cultivation in an area never cultivated (virgin areas), whereas that refers to the increase of the area of cultivation in areas already cultivated with other crops, that is, the substitution of one crop by another occurs.

Historically, the BNDES has become the main financial institution contributing to the development of Brazil. In the last decade, it has reached a greater weight in the composition of public credit in the country, due to its support in areas considered strategic within the development framework established since the 1990s [17]. One of the main reasons for the performance of the indirect (non-automatic) operations was BNDES Prorenova - Program to Support the Renovation and Implementation of New Canebrakes - whose launch stimulated the renovation and expansion of the sugarcane plantations. Thus, the program collaborated in a decisive way for the resumption of the productivity levels of the Brazilian sugar cane crop (BNDES, 2013). This is the scenario that this study intends to analyze, considering the temporal cut (2000 - 2015).

III. Methodology

Although the analysis data were not generated by the researcher [18], rather, they were obtained directly from the National Development Bank (BNDES) through a request for Information Access Law (LAI) [19]. Requested by the e-SIC system, received at the end of the year 2015, are considered here as primary data [20] conception that considers primary data those that present a direct physical relationship With the facts analyzed, that is, they were collected specifically for a given investigation [21]. The temporal cut of the transverse cut type with a longitudinal perspective was established [20] for the period from 2000 to 2015.

In countries such as the United States, the so-called Freedom of Information Act (FIA) has been in existence for more than five decades, the first edition being signed by President Lyndon Johnson on July 4, 1966 [22]. In this work, the (primary) data received the same treatment as the secondary data. Recent trends have increased the use of secondary data. In addition, the technology made this data more readily accessible to a larger number of researchers [23]. In this context, it can be said that the study used as a collection technique the documentary research that, even having the challenge of the degree of confidence about the veracity of the data [24], it was mitigated by the official seal Of the institution issuing the information, and, therefore, considered an official document [25].

The requested data were received in Excel spreadsheet, which facilitated the adjustments, as well as the pre-analysis of the data. Descriptive character, this preliminary analysis constitutes a good practice to verify data quality, among other aspects [26].

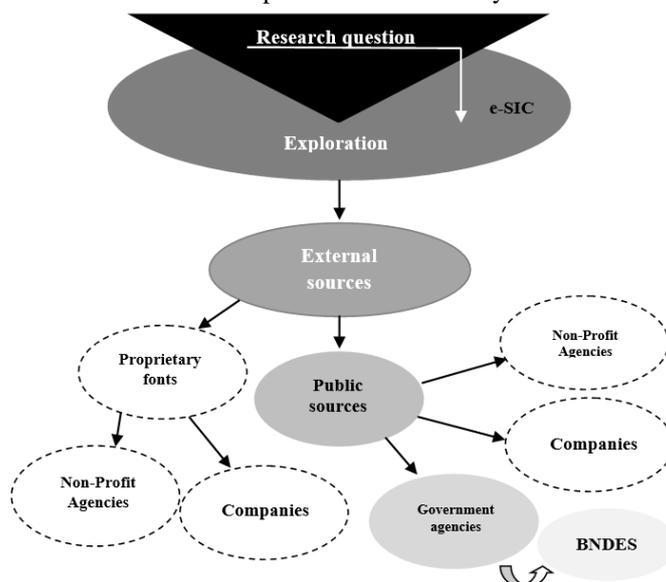
The study is exploratory, based on analysis of secondary sources (analysis of documents and / or retrieval of information from institutional databases) [27]. The secondary data help to [28]:

- Identify the problem;
- Better define the problem;
- Develop an approach to the problem;

- Formulate an appropriate research design;
- Answer certain research questions;
- Interpret the primary data with more discretion.

Thus, the methodology used in this study makes it clear that "every method has possibilities and limitations" [29]. The Fig 2 presents the basic design for the development of the hierarchy of the research question from the data collection for analysis.

Figure 2. Sources for the development of the hierarchy of the research question.



Source: Adapted from Cooper, D. R., & Schindler, P. S. (2016).

Following this brief outline of methodological procedures, the following section will present and analyze the data collected.

IV. Presentation And Data Analysis

The study in question proposes to analyze only the non-automatic operations, also called indirect operations. Indirect transactions consist of those operations carried out by the borrowers through a public or private financial institution, previously accredited to BNDES to act as intermediary in these transactions. In turn, the automatic operations or direct operations are those contracted by plaintiffs directly with the BNDES institution. Using the Excel® Spreadsheet tool, 1,254 operations grouped into twenty (20) categories were systematized and analyzed, as shown in Table 2.

Table 2. Categories of non-automatic operations with BNDES.

Nº	Categories
1	Innovation
2	Extension of Planted Cane Area
3	Expansion of Productive Capacity
4	Production Capacity Increase + Cogeneration
5	Production Capacity Increase + Planting
6	Increase in Production Capacity + Cogeneration + Planting
7	Increase in Productive Capacity + Implantation of Production Unit + Planting
8	Expansion of Production Capacity + Implementation of Production Unit + Cogeneration
9	Implantation of Production Unit
10	Implantation of Production Unit + Cogeneration
11	Implantation of Production Unit + Planting
12	Implantation of Production Unit + Planting + Cogeneration
13	Working capital
14	Cogeneration
15	Debt Assumption Agreements
16	Modernization
17	Modernization + Planting
18	Modernization + Cogeneration
19	Planting
20	Investment in Small Producers

Source: Prepared by the author.

Then, the values of the operations were calculated for each of the previously created categories Table 3 presents the values of the investments by category, the proportional percentage of each category and the total of operations.

Table 3: Investment values by category.

Category number	Value of operations (Millions of reais)	%	Total operations
1	528.944.441	2,31	1254
2	171.257.514	0,78	
3	886.134.110	3,67	
4	2.586.744.810	10,32	
5	297.897.247	1,39	
6	1.705.168.464	6,80	
7	145.536.082	0,58	
8	993.127.694	3,96	
9	3.447.219.430	13,78	
10	3.982.254.110	15,99	
11	992.008.238	3,96	
12	2.241.876.183	8,94	
13	601.083.000	2,65	
14	188.367.000	0,89	
15	477.576.335	1,99	
16	471.040.234	1,98	
17	237.333.665	0,98	
18	593.215.290	2,47	
19	4.080.545.442	16,48	
20	20.716.565	0,08	
Total	25.059.850.454	100,00	

Source: Prepared by the author.

The average value of the investments is R\$1,232,402,293. However, considering that there is a greater concentration of values in some categories over others, the median for the set of values of all operations in the period, whose value is 597,149,145, was calculated. This shows the asymmetry in the listed categories. The emblematic example is the case of category 20 ("Investment in Small Producers"), whose value is the smallest of all, and in the case in question, part of this amount was taken by the financial institution Unibanco União de Bancos Brasileiros SA, which exercised The role of intermediary. The objective of the project is to finance approximately 50 rural producers of sugar cane, located in the state of São Paulo, integrated to two sugar and alcohol plants.

Category 19 ("Planting") is the category with the highest value of investments representing 16.28% of the total value. If all categories containing "renovation and implantation of new cane fields" are considered, the amount reaches R\$ 9,871,622,835, representing 39.39% of the total value. This result is in line with the proposal of the BNDES Prorenewa Program [13]. For this year (2016), Prorenewa made available R \$ 1.5 billion for investments. However, high interest rates have pushed borrowers out of resources, with a reduction in investment of 76% over the previous year. Category 10 ("Deployment of Production Unit + Cogeneration") represents 15.89% of the total volume of investments, followed by the category "Deployment of Production Unit" (9), with 13.76%.

It is important to highlight that, although category 14 ("cogeneration") has a low value compared to the others (188,367,000), considering all the categories that have "cogeneration" in the project description (objective), the amount reaches The level of R \$ 12,102,386,551, representing 48.29% of the total investment of all categories, which seems to be in harmony with BNDES guideline 4 presented previously mentioned studies [6], in addition to the one proposed by IBASE [15]. Also worth mentioning is the value for the implementation of productive units (categories 9, 10, 11 and 12), whose total value was R \$ 10,663,357,961, corresponding to 44.55%. This scenario is corroborated by other studies [14]; [13]; [15].

The Table 4 shows the total numbers of operations, investments and average annual investment. There was no record of non-automatic financing operations for the sector in 2000. There is a higher concentration of investments from 2007 onwards, going up by the year 2009. Only those four years (2007-2010) Represent 55.54% of the total resources made available in the period, equivalent to R \$ 13,918,857,244. For the same period, the number of operations was 706, representing 56.30% of total operations in the period surveyed.

It is possible that this highlight in the value of investments and in the number of operations reflects the crisis of 2008 that strongly impacted the Brazilian economy in general and the sector in particular. The average grace period for the operations is 21 months, ranging from 0, that is, zero grace period, up to a maximum of 40 months.

Table 4: Number of operations, total and average investments per year in the period.

Year	Value (millions)	Average value (millions)	No. of operations
2000	-	-	-
2001	98.795.350	6.586.357	15
2002	58.085.812	2.420.242	24
2003	129.115.981	6.455.799	20
2004	40.625.000	4.513.889	9
2005	311.932.835	13.562.297	23
2006	488.553.130	9.395.252	52
2007	2.934.993.960	21.470.696	135
2008	3.826.019.612	17.390.998	220
2009	4.403.554.015	16.249.277	271
2010	2.754.289.657	34.428.621	80
2011	1.262.735.026	21.402.289	59
2012	2.495.260.332	17.208.692	145
2013	2.844.452.995	33.464.153	85
2014	3.067.638.876	31.625.143	97
2015	343.797.873	18.094.625	19
Total	25.059.850.454	19.983.932	1254

Source: Prepared by the author.

There is a marked decline in the value of investments in 2015 compared to the previous year. Percentage, it represents an 88.8% drop in the volume of investments for the year 2014. When considering all the modalities of operations (automatic and non-automatic), in general, the financial institution has presented decrease in the annual volumes of the investments. However, it was estimated that, starting in 2013, this downward trend would begin to reverse [13], which is not in line with the results obtained here.

The Table 5 shows the ranking of the ten companies in the sector with the highest value taken from BNDES investments in the period studied. Most companies have branches in other regions, states, and even countries. However, the fourth column of Table 3 considers the State of origin of the agroindustrial unit, or the State of registration of its CNPJ.

It is observed that the states of São Paulo and Goiás predominate, each accounting for 40% among those listed, followed by Mato Grosso (10%) and Mato Grosso do Sul (MS). The total investment volume of this group is equivalent to 39.01% of the amount of investment in the period for all companies. This is a very significant percentage, since it represents more than a third of the total investments, which can be corroborated by other studies [16]. The largest concentration of investments in the states that are part of the Central-South region (RS-SC - SP - RJ - MG - ES - MS - MT - GO - DF) also finds support in the literature [30]; [5].

Table 5: Ranking of the ten companies with the largest volume of loans in the period.

Posição	Company	Value (R\$)	State
1	Brenco Companhia Brasileira de Energia Renovável	2.480.770.717	Mato Grosso
2	Raizen Energia Ltda	1.304.207.108	São Paulo
3	Usina Boa Vista S.A.	1.150.050.567	Goiás
4	Biosev S.A.	806.802.312	São Paulo
5	Noble Brasil S.A.	703.904.482	São Paulo
6	Adeagro Vale do Ivinhema Ltda	694.638.000	Mato Grosso do Sul
7	SJC Bioenergia Ltda	688.574.997	Goiás
8	Cosan Centro Oeste S.A. – Açúcar e Alcool	687.749.029	Goiás
9	Cocal Com. Ind. Canaa Açúcar e Álcool Ltda	631.191.000	São Paulo
10	Rio Claro Agroindustrial S.A.	628.193.664	Goiás
	TOTAL	9.776.081.876	

Source: Prepared by the author.

The investment objectives of the companies listed in Table 3 reflect, mainly, categories 9, 10, 11, 12 and 19, corroborating other studies [16]. In other words, the largest public borrowers fall into the categories "Implantation of Production Unit", "Implantation of Production Unit + Cogeneration", "Implantation of Production Unit + Planting", "Implementation of Production Unit + Planting + Cogeneration" And "Planting", respectively. These considerations largely reflect the sectoral policies of the BNDES. However, it is necessary to recognize the urgent need to increase investments in research and development (R&D), with a specific focus on innovation, be it in processes, products and, above all, value added to the commodity.

Studies indicate that several products can be manufactured based on the products and / or by-products of the agroindustries of the sector. Biotechnology routes or based on the chemical synthesis of sugars can be used in the production of important building blocks, such as acrylic acid, butadiene and adipic acid. As for the routes based on alcohol, they can be used in the production of ethylene, propene, among others [30].

With the advent of new technologies, products and by-products from the processing of sugarcane become important inputs for the chemical industry. In this sense, bioproducts constitute an advantageous alternative both for the Brazilian chemical industry and for the strengthening of the sugar-energy industry.

V. Conclusion

This study aimed to analyze the profile of the financing operations contracted by the sugarcane industry with the National Bank for Economic and Social Development (BNDES) from 2000 to 2015. A greater volume of resources was observed in the categories "Planting" and "Deployment of Production Unit + Cogeneration". The highest values of investments were between 2007 and 2010, which may reflect the crisis of 2008 that affected all sectors of the economy, with a strong impact on the sugar-energy sector. The ten agro-industries that take the largest volumes of investments are concentrated in the Center-South region, with emphasis on the states of Goiás and São Paulo. For the year 2015, there is a significant reduction in the volume of investments, representing a little more than 11% in relation to the investment amount of the previous year (2014); A scenario that should not be different in 2016, since the increase in interest rates charged by the Bank has not attracted the attention of those interested in taking resources. If that were not enough, the sector is still heavily indebted.

It can not be said that there is no prospect for the sector; However, the windows of opportunity seem increasingly tight and distant. There are many challenges that need to be overcome. Despite the investments made in the sector, the lack of specific national public policies for energy in recent years contributed to the closure of approximately 40 productive units in the country. Another 33 are unemployed even in the process of judicial recovery [32]. On the other hand, it is estimated that the Center-South region could increase its sugar production by up to 1 million tons for the next harvest (2017/18), considering investments, even modest, in new processing capacity. In addition, the industry has registered investments in distilleries, which produce only ethanol, and also produce sugar, not counting on more structured projects in terms of technology and efficiency, both in the field and industry [33].

What is perceived is that the Brazilian sugar and ethanol sector was unable to take and firm position in both the domestic and international spheres. It is urgent to establish strategies with the main actors involved and to make efforts to definitively increase the sector in a number of different aspects - technological, competitiveness, productive efficiency, sustainability, effectiveness, among others. Like all scientific work, the limitations of this work are evident, especially regarding the temporal cut and the absence of field research, especially with the largest borrowers with the purpose of investigating in loco the application of the public resources taken. However, what appears to be a limitation, on the other hand, can be seen as an opportunity to build a future research agenda.

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