Sectorial Report of Industrial Division, n. 25, june 2013

BNDES The Brazilian development bank

SECTORIAL REPORT

Industrial Division June/2013 nº 25

The BNDES and the sugar-ethanol industry in 2012: innovation as a priority

1. Introduction

The last few years have been difficult for the sugar-ethanol industry due to poor crop yields and reduced investment in new production capacity. Even regular investments were postponed, such as those to renew sugarcane plantations. This lack of investments contributed to reducing the quality and quantity of sugarcane available for milling. As a result of low agricultural productivity, the slowdown in the industry reached high levels in this period. Just as investments in the industry have fallen, the BNDES' disbursements to this segment fell for the second year in a row in 2012.

However, to accelerate technological development in the industry, the BNDES began to prioritize innovation projects, especially after the successful experience with the Innovation Support Plan for the Sugar-Ethanol and Sugar-chemical Sectors (PAISS). The main results are highlighted in this report.

2. Disbursements

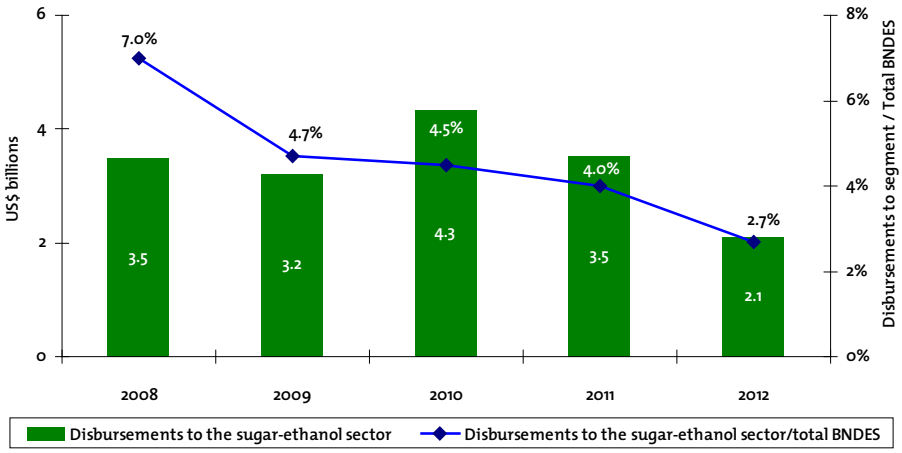
Chart 1 shows the BNDES' disbursements to the sugar-ethanol industry since 2008. The drop between 2011 and 2012 was was 40%, which is due to the fact the sector postponed planned investments and to existing projects maturing in the BNDES' portfolio, as had been forecast in the previous edition of this report. As a result of lower disbursements to the sugar-ethanol segment, its share in the BNDES' total disbursements also dropped, reaching 2.7% in 2012, the lowest level in the period.

However, the perspective for 2013 is to resume investments to the sugar-ethanol industry. The BNDES' disbursements for this segment are expected to exceed US$ 2.4 billion in 2013, mainly due to the BNDES' Investment Maintenance Program (BNDES PSI-Capital goods) and the BNDES Prorenova, aimed at financing the expansion and renewal of sugarcane crops, and the beginning of PAISS disbursements.

2.1 Per financing modality

Table 1 compares the BNDES' direct and indirect operations. In the latter,

Chart 1. Evolution of disbursements to the sugar-ethanol sector



Source: BNDES.

Table 1. Distribution of the BNDES' disbursements per type of operation (in US$ billion)

	2008	2009	2010	2011	2012
Direct	1.4	1.5	1.5	1.7	0.7
Indirect	2.1	1.7	2.9	1.8	1.5
Total	**3.5**	**3.2**	**4.3**	**3.5**	**2.1**

Source: BNDES.

the financial transfer is made via accredited financial institutions. Indirect operations remained relatively constant between 2011 and 2012; however, their participation in the BNDES' disbursements for the segment increased from 51% to 71%.

One of the main reasons for the performance of indirect operations was the BNDES Prorenova, which stimulated the renewal and expansion of the sugarcane crops. In 2012, the total portfolio of the BNDES Prorenova reached approximately US$ 700 million, of which US$ 230 million was disbursed later that year. This portfolio was responsible for renewing approximately 315,000 hectares and adding another 87,000 hectares planted with sugarcane.

The BNDES Prorenova contributed decisively to resuming the productivity levels of Brazilian sugarcane crops. As a result, there has been a significant reduction in the unused industrial capacity in sugar and ethanol production. In the 2010-2011 harvest, the average unused capacity of mills in the Central-South region was estimated at approximately 20%. For the 2013-2014 season, industrial experts indicate that the region's average unused capacity will drop to levels of approximately 5%.

Based on this positive assessment, the BNDES Prorenova was renewed in 2013 and is now valid until December 31, 2013.

2.2 Plantations, industry and cogeneration

In the data presented in Table 2, it is important to point out that disbursements for ethanol and sugar production remained relatively constant between 2008 and 2011. However, the 2012 drop in total disbursements does not reflect a decrease in disbursements for maintaining and planting sugarcane. On the contrary: these activities gained ground in the total disbursements to the sugar and ethanol segment.

As pointed out earlier, the recent increase in the importance of agricultural activities lies in the BNDES Prorenova. The activities related to the production of ethanol lost ground due to the fall in investments in production capacity.

Disbursements for cogeneration have fallen each year, since sugarcane biomass has become less competitive than other alternative energy sources, such as wind power. Therefore, the participation of sugarcane cogeneration in recent federal government energy auctions has tapered off.

Table 2. Distribution of the BNDES' disbursements per nature of activity (in US$ billion)

	2008	2009	2010	2011	2012	Var. previous year (%)
Agriculture	0.4	0.3	0.5	0.5	0.6	7
Industrial	2.6	2.6	3.4	2.5	1.2	(52)
Cogeneration	0.5	0.3	0.4	0.5	0.3	(34)
Total	**3.5**	**3.2**	**4.3**	**3.5**	**2.1**	**(40)**

Source: BNDES.

3. Innovation as a priority: PAISS results

Launched in 2011 through a partnership with the Brazilian Innovation Agency (Finep), PAISS was created to foster R&D, production and commercialization projects for new industrial technologies aimed at processing sugarcane biomass.

The plan prioritized three Lines: Line 1 for projects related to cellulosic ethanol; Line 2 basically for chemicals from sugarcane biomass; and Line 3 for gasification technologies.

There were 25 companies selected, which submitted 35 business plans. The selected companies vary from small biotechnology startup companies to large chemical companies as well as sugar and ethanol mills.

After the completion of PAISS, the business plans generated 42 projects that constitute a portfolio of approximately US$ 1.6 billion. Table 3 presents the current status and the purpose of those projects.

PAISS can be assessed in a variety of ways, but two of them are more capable of revealing the success of the Plan. The first significant indicator is the

Table 3. Projects derived from PAISS per status and ultimate goal

Status	Nº. of projects – 2G ethanol	Financial support (US$ million)	Nº. of projects – biochemical	Financial support (US$ million)	Nº. of projects – gasification	Financial support (US$ million)	Nº. total	Total amount (US$ million)
Perspective	1	95	6	292	0	0	7	387
Analysis	6	122	4	91	0	0	10	213
Approved	10	234	10	152	1	120	21	506
Contracted	1	282	3	224	0	0	4	505
Total	**18**	**733**	**23**	**758**	**1**	**120**	**42**	**1,611**

Source: BNDES and Finep.

difference between the PAISS' original budget, of R$ 500 million and the current budget of US$ 1.6 billion. This increase demonstrates that PAISS' efforts fostered investments that exceeded initial expectations.

The other assessment is the comparison between the scenarios before and after PAISS, which not only confirms the success of the Plan, but also makes it possible to measure the size of its contribution: Brazil became a major player in the global race for second generation biofuel technologies (see Chart 2).

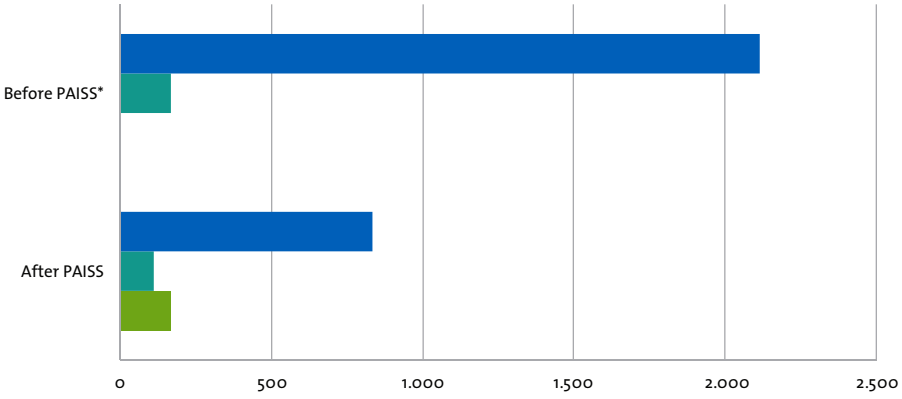
In 2010, prior to the release of PAISS, the medium-term estimates for the production of cellulosic ethanol suggested large volumes in the United States and, although to a lesser extent, for significant production in Europe. At that time, there was neither production nor a projection of cellulosic ethanol production in Brazil for the next few years.

However, in 2013, estimates for the production of cellulosic ethanol underwent substantial revisions due to the delay or standstill of several projects. For the United States, expected annual production for 2015 dropped to just over 800 million liters, a volume more than 60% lower than the estimate made in 2010. For Europe, with a drop of more than 30% in volume, expected production is slightly more than 100 million liters of ethanol for 2015.

In Brazil, on the other hand, changes occurred in the complete opposite direction and at a different level. Due to the planned investments after PAISS, the estimate for cellulosic ethanol production will reach nearly 170 million liters per year, a level that places Brazil ahead of the European continent and closer to the American reality.

In this new scenario, PAISS projects will enable Brazil to catch up on technology, which can be seen in the increase in the number, size and ambition of R&D activities focused on cellulosic ethanol. In addition to placing Brazil in that race, PAISS has also triggered investments in large-scale commercial plants that will transform Brazil into a major worldwide producer of cellulosic ethanol and renewable chemicals in the near future.

Chart 2. 2G ethanol production expected for 2015 (in millions of liters)



	After PAISS	Before PAISS*
US	834	2.115
Europe	114	168
Brazil	168	-

Sources: Nyko et al. (2010), FO Licht and mapping of initiatives in Brazil.
*Due to lack of data at that time, Pre-PAISS estimates, generated in 2010, refer to 2014.

Created by the Biofuels Department

Responsible team:

Artur Yabe Milanez and Diego Nyko

Published by the Communication Department of the BNDES

BNDES

Ministry of Development, Industry and Foreign Trade

BRAZILIAN GOVERNMENT BRASIL