

SCALE OF PUBLIC FOOD PROCUREMENT IN BRAZIL

3

Food and Social Policies Series



Centre of Excellence
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FOOD AND SOCIAL POLICIES SERIES

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SCALE OF PUBLIC FOOD PROCUREMENT IN BRAZIL

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Presentation

In Brazil, family farming represents 84.4% of rural establishments, and is responsible for 74% of rural jobs and 33.2% of the agricultural GDP. In order to recognize, add value and encourage farming activity on a family scale, the country invests in public food procurement from family farming designed to reduce food and nutrition insecurity nationwide.

This study examines the institutional procurement process in Brazil and estimates the total scale of the governments' purchases of farm produce. In this context, it describes the two major public programmes that procure food from family farming: the National School Feeding Programme (PNAE) and the Food Acquisition Programme (PAA).

The study estimates, on the basis of information from the National Accounts of the Brazilian Institute of Geography and Statistics (IBGE), all government demand for food by measuring the direct and indirect procurement from farmers and the food industry. Next, the study analyses how the institutional purchasing policies can be enhanced in order to enable family farmers to add value to their produce and have access to the institutional market as suppliers.

The PNAE and PAA together represent the largest structured demand for family farming

in Brazil. The expression "structured demand" refers to the efforts of connecting large foreseeable demands for food to the family farmers, which in Brazil mainly occurs through public procurement.

When making this connection, the government guarantees conditions for family farmers to invest in and enhance their production and increase their income. The effect of reducing poverty is boosted by the fact that the food procured by these programmes is allocated to vulnerable populations suffering food insecurity, namely, children, adolescents from the public education system and beneficiaries from social welfare.

These programmes, and other successful projects, have attracted the attention of a number of countries interested in learning how Brazil is overcoming hunger and extreme poverty. The Brazilian experience has been an inspiration for other developing countries endeavouring to set up their own policies and programmes. However, studies and analyses of the Brazilian experience are still few and far between.

This is why the World Food Programme's Centre of Excellence against Hunger has formed a partnership with the Bill & Melinda Gates Foundation to conduct studies on the Brazilian

experience of institutional food procurement, focusing on the government programmes that purchase food from family farming. The results will be disseminated to governments and other players interested in adopting similar strategies.

The product of the research is a series of five studies addressing the different aspects of institutional procurement in Brazil. The first volume offers an analysis of the background of institutional food procurement, with a focus on the factors leading to the current scenario in which the country prioritises purchasing from family farmers. The second volume analyses how the modalities of institutional procurement from family farming function. This third study provides the scale of institutional food purchasing.

Two other studies complete the series. The fourth study will address in detail the costs of institutional procurement of the National School Feeding Programme. The fifth study will address a cost-benefit analysis and the PNAE investment model, measuring the benefits on nutrition, health and education of the students provided with a school meals programme that procures part of its food from family farming.

The data published by this research helps to clarify the context, operation and potential

benefits of creating programmes and social policies linked to institutional procurement of family farming produce. They present the factors that can influence the implementation of such programmes and the scale they can achieve. Moreover, the studies explain the impacts of institutional procurement from family farming on food and nutrition security.

This series of studies is a meaningful contribution to the South-South cooperation efforts, by acting as a subsidy for dialogues between countries interested in enhancing or creating programmes and policies to overcome hunger and poverty.



DANIEL BALABAN
Director of WFP Centre of
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Executive Summary

As part of the Zero Hunger strategy, in 2003 the government began to purchase food from family farmers. Since then, investments and efforts to facilitate access of THESE farmers to the institutional markets increased with a view to increasing food and nutrition security and eradicating hunger. This study is designed to assess and more clearly understand the magnitude of institutional food procurement in Brazil, on providing an estimate of the quantity of food purchased by the government. And like the other studies in this series, it focuses on the PNAE and the PAA. The two programmes combined represent the largest stable and foreseeable demand for Brazilian family farmers.

Both programmes continue to develop by creating new procurement modalities and laws. In 2009, the PNAE was redrafted to include the supply of food from family farmers. A law was approved that allocates 30% of federal funds from PNAE to procure food from family farmers. The PAA was extended to permit state and

municipal governments and other institutions to use the same simplified purchasing processes to procure food from family farmers for their own programmes and institutional markets. The study also estimates the government's total demand for food, measuring the direct and indirect food procurement from farmers and the food industry. The two sessions jointly represent the actual and potential market for family farmers.

Results

A large majority of people living in rural areas depend on agriculture to survive. Investing in small-scale production is a sustainable way to revive farming based on local and diversified systems. The increase in agriculture, in fact, has the potential to reduce rural poverty, diminish the effects of volatile food prices on the international market and boost the domestic economy. A central part of the Brazilian experience in promoting agricultural growth has been the public institutional procurement focusing on

family farmers. Small-scale agriculture is the main source of income for the majority of people living in the rural areas of Brazil.

Purchasing from Family Farming

The PAA and the PNAE are the two most important programmes of institutional food procurement from family farmers in Brazil. They are the bridge between the family farmers' production and foreseeable demand – such as schools, social welfare institutions, and hospitals. By providing farmers with

possible buyers, these programmes help establish prices, reduce crop losses and increase the quality of the produce. The effect of these programmes is to reduce poverty and increase income. The Bill & Melinda Gates Foundation created the expression “structured demand”. In the case of Brazil, this term applies to regular governmental procurement of produce from family farmers in order to support their production.

Since 2009, at least 30% of federal transfers to the PNAE school meals must be allocated to purchase food

* The values presented in this document are calculated in BRL, Brazilian Real. In order to know the amount in US dollars, please check the daily conversion in the Brazilian Central Bank's website.

from family farmers. With the annual budget of BRL 3.5 billion (approximately one billion US dollars), at least BRL 1 billion must be spent on buying food from family farmers for schools. The ceiling sales value for each farmer is BRL 20 thousand a year, which allows farmers to consider the school meals market an alternative to their traditional market options, but prevents that market from being concentrated in the hands of a few farmers.

PAA was created in 2003 to help reinforce the family farming pillar of the Zero Hunger strategy. Right from the start, the main purpose of the programme was to support family farmers' production and their access

to the market through simplified public procurement procedures, and to distribute food in the quantity, quality and regularity required for the population in a food insecurity situation. The PAA also plays a role in regulating prices and guaranteeing a minimum price. Since the start of the programme the allocated funds have continued to increase, as well as the number of family farmers who benefit from the programme.

PAA has six different procurement modalities to allow the largest number of families to benefit from the programme, presenting it as a profitable market alternative. The budget allocated to the programme has steadily increased since its creation

in 2003, to reach around BRL 850 million in 2012 invested in purchasing from family farmers, benefitting more than 180,000 rural families. The annual ceiling sales value for each farmer within each modality varies from BRL 8,000 to BRL 20 thousand, with the farmers having access to more than one modality at the same time.

Total government food procurement

In addition to buying direct from farmers, the government sector buys semi-processed and processed farm goods from the food industry. The estimated government procurement from the food industry that potentially affects the farming sector was based on National Accounts data analysis. Adding direct and indirect purchases, the government procurement at federal, state and municipal levels from all domestic farmers was BRL 4.1 billion in 2009, while total farm production in Brazil was BRL 301.1 billion – corresponding therefore to 1.37% of the total production.

The percentage of total domestic farm produce corresponding to the direct and indirect demand of the Brazilian government is quite insignificant when compared to the size of the agricultural market in Brazil. The percentage increased from 1.18% in 2003 and 1.15% in 2004 to 1.33% in 2005, and since then has fluctuated around 1.3%. On the other hand, the BRL 4.1 billion purchased by the government in 2009 is significantly higher than the institutional markets supplied by the PAA and PNAE for the family farmers.

There is, therefore, a margin for increasing the market share of the family farmers in public food procurement. Since most of the government

food purchases is focused on processed food, if family farmers are able to add value to their produce – possibly through some kind of basic food processing – the government could extend the access of family farmers even farther to the institutional food market.



Introduction

Why does Brazil use Institutional Procurement?

The majority of people living in rural areas depend on agriculture for their livelihoods. Investing in smallholder production can be a sustainable way to revitalise farming based on local and diverse food systems. Inclusive agricultural growth has the potential to reduce rural poverty, mitigate the effects of volatile global food prices and boost the domestic economy (IPC, 2013).

A central part of Brazil's experience in promoting inclusive agricultural growth has been institutional public procurement with a focus on family farmers. Small-scale agriculture is the main source of income for most people who live in Brazil's rural areas. Investing in smallholder farmers is a way to maintain their agricultural production, which has three benefits:

- Reduction of rural poverty
- Strengthening local economy
- Increasing food and nutrition security





Brazil's government launched their Zero Hunger Strategy in 2003, introducing institutional public procurement as a tool to provide a stable market and benchmark price for smallholder production. By providing market access to family farmers job creation was fostered and land reform encouraged (da Silva et al, 2011; da Silva et al, 2002: 145).

Family farming in Brazil currently represents 84.4% of rural establishments, provides 74% of total rural employment and accounts for 33.2% of the agricultural GDP (Bacha et al 2014), yet it only received 13.37% of agricultural credit in 2013/2014, In spite of their importance, family farmers received only 13.37% of the agricultural credit granted in 2013/2014.

The purpose of this report is to assess and estimate the size of Brazil's food procurement using the latest data available. The report will focus on the two main government programmes: the Food Acquisition Programme (PAA) and the National School Feeding Programme (PNAE). These two programmes provide the link between supply (produce from family farmers) and predictable demand (schools and social welfare institutions). By providing the farmers with a predictable buyer these programmes help stabilise prices, reduce loss for the farmers, and increase the quality of production and produce. The effect of these programmes is less poverty and higher income. The Bill & Melinda Gates Foundation

coined the term “structured demand”; for Brazil, this term applies to regular government purchase of farm products from family farmers in order to support their production (IPC, 2013).

The direct and indirect effects of the Brazilian government food procurement of farm produce will be examined. Brazil’s government institutions require that foods be semi- or whole-processed. This report offers an estimate of the total food demand that could potentially benefit family farming if it was better integrated in food processing activities or better integrated in the country’s food industry.

This publication has four sections, in addition to this introduction. The second

section briefly describes the main characteristics of family farms and farmers in Brazil, based on the government definition of family farms, documenting their participation in the total farming production. The third section describes the nature of institutional food procurement from family farmers through the PAA and PNAE programmes. The design of the PAA and the recent reforms of the PNAE have established a procurement quota to be spent exclusively on purchases from family farmers. The fourth section estimates the scale of government food procurement at the national level. In the final section, this report discusses the policy implications of institutional procurement

in Brazil and puts forward some suggestions on how to improve public procurement policies. Emphasis is placed on the importance of ensuring that family farmers are able to add value to their products - possibly via some basic food processing that could be done by cooperatives - as well as supporting them in gaining access to the food industry as suppliers.



Family Farmers in Brazil

Laws defining family farms in Brazil were first introduced in the 1960s (Law Nº 4,504/1964). In the 1990s, the concept of smallholder farmer was defined in order to direct government support to family farms (Law Nº 8,629/1993 and Delgado, G et al. 2013).

Currently, family farms are defined by Law Nº 11,326/2006, as follows:

- A rural establishment with less than four fiscal modules (it can vary between 20 hectares and 440 hectares depending on the municipality)¹
- Most of the labour deployed in the establishment originates from the owners' family
- A minimum percentage of the family income is obtained from the establishment (agriculture, fishing, extractivism, tourism, etc.)
- The establishment is family-run

Under these guidelines, the 2006 Census of Agriculture reports that there are over four million family farms in Brazil. Eighty-four per cent of rural establishments in Brazil fall into the family farm category and at least 50% are located in Northeast Brazil.

SIZE MATTERS

- The average size of a family farm is 18 hectares
- The average size of a non-family farm is 313 hectares
- Some non-family farms in the Midwest region can be up to 955 hectares.

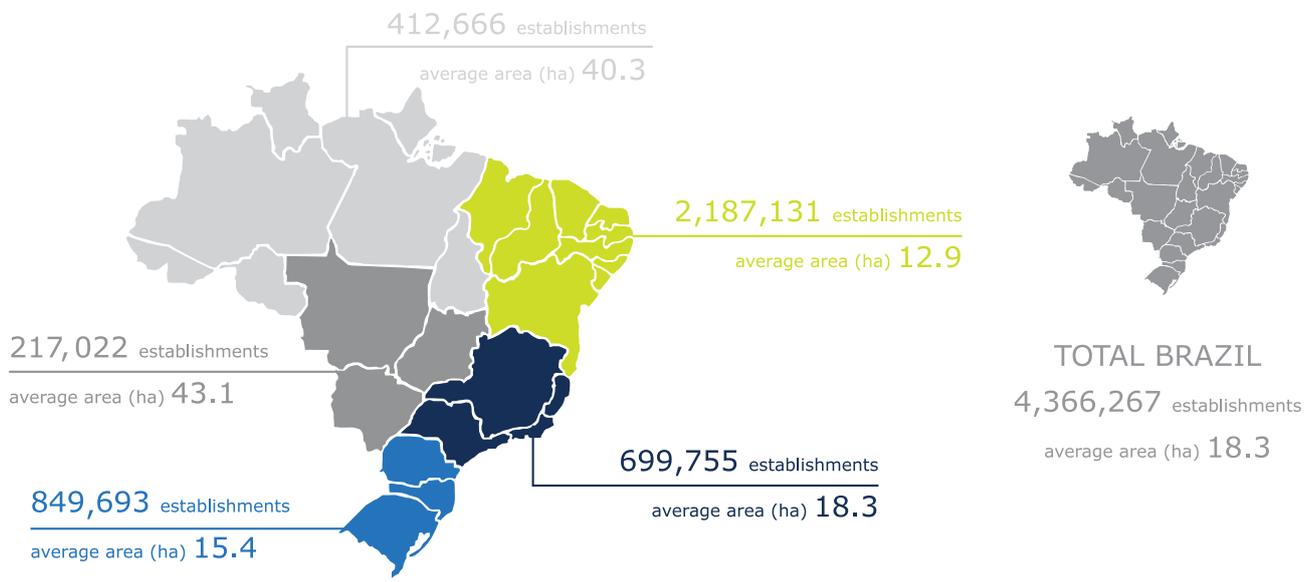
PRODUCTION

- Family farms generate 33.2% of Brazil's gross agricultural product (2006 Census)
- Family farms in the South produce 38.7% of farm products for the region
- Family farms in the Northeast produce 25% of farm products for the region, despite having more family farms than any other region of Brazil (Bacha, 2014)

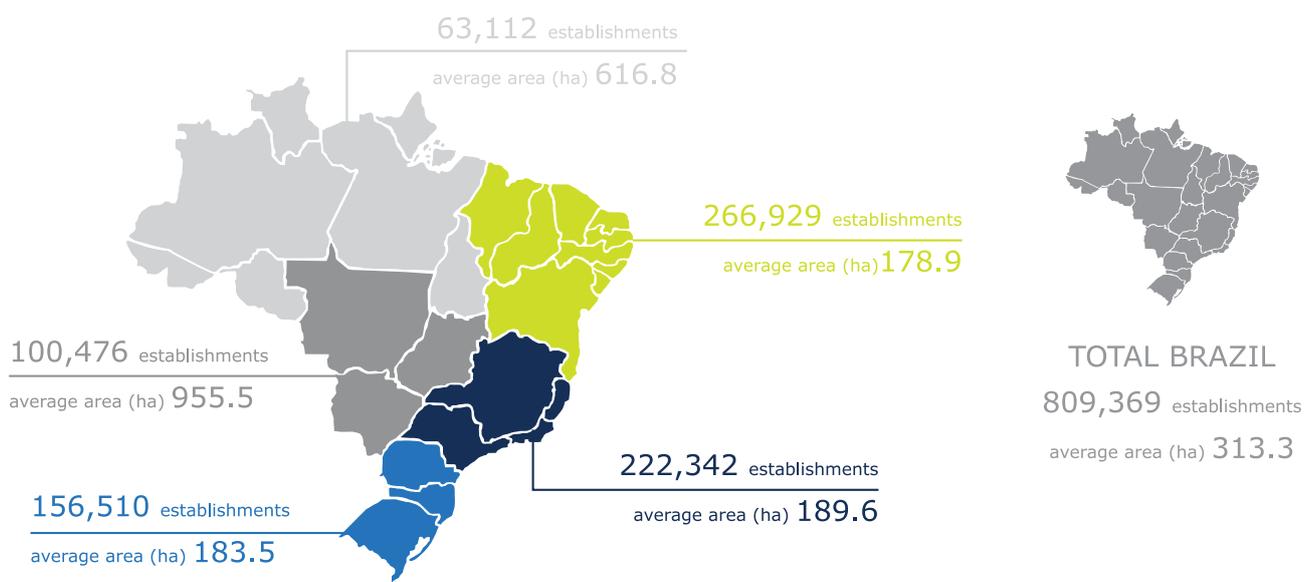
¹ A fiscal module is the unit of land measurement that represents the minimum size for an establishment to be considered economically sustainable. It was established by Law Nº 6,746/1979. A fiscal module is specified by each municipality and varies between 5 to 110 hectares. The smallest fiscal modules are in the South and Southeast region, metropolitan areas and coastal municipalities, with most fiscal modules covering less than 30 hectares. In the North and Midwest regions a fiscal module can reach 100 hectares and over (Embrapa, 2012).

FIGURE 01: Number of establishments and average area (in hectares) of family farms in Brazil, 2006.

FAMILY FARM ESTABLISHMENTS



NON-FAMILY FARM ESTABLISHMENTS



Source: Census of Agriculture, IBGE 2006.

Even though family farms comprise 84.4% of all rural establishments in Brazil, they receive only 13.37% of total available credit. For the 2013/14 harvest season the federal government announced a budget of BRL 21 billion for family farms through the National Programme for Strengthening Family Farmers (PRONAF) rural credit programme. According to government figures, this budget represents an increase of 400% in relation to the 2003 credit budget (MDA, 2013). It is important to bear in mind, however, that total farming credit has significantly increased in Brazil. Data from the Ministry of Agriculture shows that non-family farm establishments received BRL 136 billion for the same harvest period of 2013/2014 (MAPA, 2013).

HOW TO QUALIFY FOR INSTITUTIONAL PROCUREMENT

The family farmer must qualify for and be registered in the federal government registry through a form: Declaration of Eligibility for the PRONAF, or DAP.

The DAP also identifies the vulnerable populations who are targeted by specific public policies. These groups basically determine who is eligible for each type of credit line and which family farmers are to be prioritised for specific programmes:

- Indigenous populations
- Quilombo dwellers (communities of descendants of Afro-Brazilian slaves)
- Fisher-folk
- Forest Extractivists

HAVE THEY BEEN SUCCESSFUL?

- Since 2013, 5.1 million family farmers have been registered with a valid DAP
- This is an increase of 735 thousand farmers since the 2006 census
- 3.3 million of the registered family farmers are in the targeted group (A, A/C and B)

PRONAF

Credit scheme available exclusively to family farmers

DAP

Instrument used to identify family farmers who can benefit from programmes targeted at this group, according to the following categories:

- A & A/C - Land reform settlers or agrarian credit beneficiaries (beneficiaries of the National Land Reform Programme—PNRA or National Land Credit Programme – PNCF).
- B - Family farmers who are not included in group A and A/C, but whose annual gross income is below BRL 20 thousand.
- C/D/E/V - Family farmers whose annual gross income is above BRL 20 thousand, but below BRL 360 thousand.

* The values presented in this document are calculated in BRL, Brazilian real. In order to know the amount in US dollars, please check the daily conversion in the Brazilian Central Bank's website.

TABLE 01: Family farmer establishments in the DAP registry by group, 2013

	Group A		Group A/C		Group B		Others (C/D/E/V)	
Brazil	180,943	3.5%	37,556	0.7%	3,072,664	60.2%	1,810,529	35.5%
North	33,619	0.7%	3,656	0.1%	227,221	4.5%	234,070	4.6%
Northeast	107,244	2.1%	21,719	0.4%	2,516,995	49.3%	498,247	9.8%
Southeast	13,635	0.3%	5,096	0.1%	193,035	3.8%	383,639	7.5%
South	9,179	0.2%	1,794	0.0%	97,994	1.9%	591,401	11.6%
Midwest	17,266	0.3%	5,291	0.1%	37,419	0.7%	103,172	2.0%

Source: SAF/MDA, 2013

In spite of the recent Brazilian experience of inclusive growth and poverty reduction, family farmers represent one of the poorest shares of the population in Brazil. To estimate the level of poverty faced by family farmers in comparison to the total population, one has to rely on the income data from the National Household Sample Survey (PNAD), which includes information on rural households (Del Grossi & Graziano Silva, 2002). Poor and extremely poor households are defined by the administrative poverty line used to establish the eligibility

for the Family Allowance (Bolsa Família) programme, BRL 140 per capita and BRL 70 per capita, respectively. The government's goal is to reduce overall poverty by providing its poorest citizens with programmes that encourage economic growth. Family farmers have benefited from the programmes, and poverty has fallen sharply as shown in table 02. However, poverty is proportionally higher in rural than in urban areas in Brazil. When the head of the household works in agriculture, the chances of the family falling into the poor or extremely poor categories

are even greater. In 2013, for instance, 9% of the people living in rural areas were extremely poor. When the head of the household worked primarily in agriculture, this percentage increased to 11%.

DAP: FAMILY FARMERS' REGISTRY IN BRAZIL

The DAP identifies each of the family rural production units. It is a single number that identifies the head of the household and spouse as cosignatories of the rural establishment. Enrolment is free of charge and is linked to the municipality. The registry uses an online platform to collect information on farmers' income, land size, ethnicity and access to public policies regarding land reform and credit. The registry classifies family farmers and their organised groups (associations or cooperatives). An organised family farmer group must have at least 60% of its family farmers members/participants with a valid DAP number. The Declaration can be issued by over 20 institutions, including federal agencies such as the National Institute for Colonisation and Land Reform (INCRA) and non-government institutions. In 2014, there were 26,787 registered issuers of DAP throughout the country. The information collected in the form is valid for up to three years. The DAP is regulated and managed by the Secretariat of Family Agriculture of the Ministry of Agrarian Development (MDA), which is the federal government agency responsible for agricultural policies targeted at family farmers. (MDA, Manual do Agente Emissor de DAP, 2014).

TABLE 02: Poverty and extreme poverty among the population by area of residence and head of the household's occupation in agriculture, Brazil, 2003-2013

Year	Total Population		Rural Population		Head activity in Agriculture	
	Poor	Extremely poor	Poor	Extremely poor	Poor	Extremely poor
2003	24.9 %	9.0%	48.3%	21.2%	54.1%	25.1%
2006	17.3%	5.8%	37.9%	15.1%	44.2%	19.3%
2009	13.5%	4.7%	29.6%	11.5%	35.6%	14.7%
2011	11.0%	4.4%	27.5%	11.3%	33.0%	13.4%
2013	9.0%	4.0%	22.9%	9.2%	28.3%	11.4%

Source: Pnad



Public Institutional Food Procurement from Family Farmers

The Brazilian government procures food directly from family farmers primarily through two programmes, namely the Food Acquisition Programme (PAA) and the National School Feeding Programme (PNAE). Following the development of these two programmes, some interesting innovations that have taken place recently can be documented in order to consolidate a structured demand for Brazilian family farmers based on public procurement. Broadly speaking, these two programmes are also important tools. Together with other social protection policies implemented in Brazil - including land reform - aim to contribute to income redistribution, promotion of family farmers' production, and furthering rural employment, with the ultimate goal of eradicating hunger and poverty.

While the PAA was launched in 2003 with a clear focus on supporting family farmers based on structured demand, the PNAE has adopted on this role more clearly after a legislative change in 2009. The new legislation established a quota, so that a minimum 30% of the funds transferred by the FNDE to states, municipalities and the Federal District for the national school feeding programme must be used for procuring foodstuffs directly from family farmers and/or family farmers' organisations. The rationale for the PAA and for this recent reform of the PNAE is rooted in the understanding that local food procurement can facilitate community development, bolster market access for family farmers and extend the access to food for segments of the population in food insecurity.

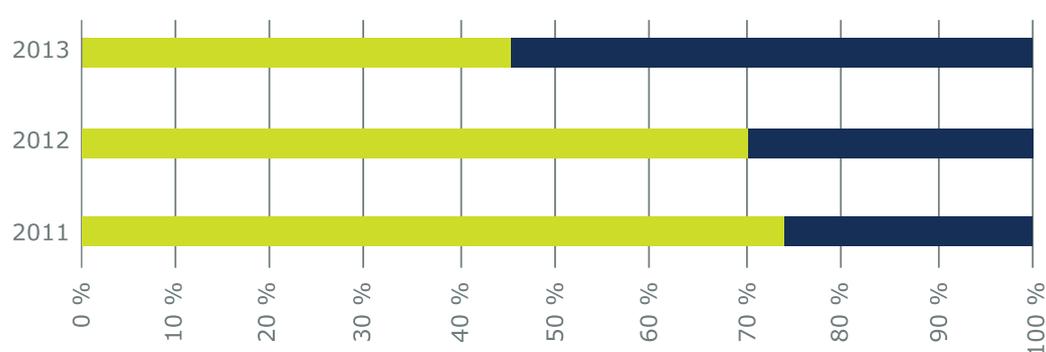
From 2011-2013, the PAA and PNAE procured over BRL 1 billion per year in produce from family farmers. PAA and PNAE are carrying equal shares of the institutional food markets from smallholder farmers. PAA went from providing 70-75% of procurement to about 45% in 2013, with the PNAE shouldering 55% of procurement in 2013. Both the PAA and PNAE, however, have different functions and strategies.

TABLE 03: Government food procurement from family farmers in Brazil, 2011 to 2013 (in millions)

Year	PAA		PNAE		Total	
	BRL Nominal	USD PPP	BRL Nominal	USD PPP	BRL Nominal	USD PPP
2011	699	475	235	160	934	635
2012	847	542	366	234	1,214	776
2013	466	283	564	342	1,030	625
TOTAL	2,012	1,300	1,165	736	3,178	2,036

Note: PPP conversion factor, GDP, World Bank, base year: 2011.
Source: FNDE, CONAB and PAA DATA/MDS

FIGURE 02: Percentage of government food procurement from the PAA and PNAE, 2011 to 2013



Source: FNDE, CONAB and PAA Data/ MDS

The Food Acquisition Programme (PAA)

The PAA was established by article 19 of Law N° 10,696 dated 2nd July 2003. From the outset, the main goal of the programme was to support family farmers' production and their market access through simplified public procurement procedures as well as to distribute food in the required quantity, quality and regularity to the food-insecure population.

These objectives were updated in the Decree N° 7,775 (4 July 2012) to include broader goals such as the promotion of biodiversity and the guaranteed right to adequate food. The PAA became part of the National System for Food and Nutrition Security, with the following purposes:



- Support family farm production by promoting their economic and social inclusion with sustainable surplus growth, the processing of food and expansion of value-added production
- Encourage the population to appreciate and consume family farm produce
- Promote food access, in the quantity, quality and regularity required by the populations living in conditions of food and nutrition insecurity, based on the Right to Food legislation
- Promote food supply through government food procurement, including providing food to schools at the municipal, state, district and federal levels; as well as areas of public consortiums
- Stockpile food produced by family farmers
- Assist in stockpiling through farmer cooperatives and other family farm organisations
- Strengthen local and regional networks for food marketing
- Promote biodiversity, organic and agro-ecological food production, and encourage healthy food habits at local and national levels
- Promote the organisation of family farmers through cooperatives and associations (Brazil, 2012)

Both producers and consumers benefit from this programme, which prioritises the most vulnerable producers such as:

- Land reform settlers
- Agrarian credit beneficiaries (beneficiaries of the National Land Reform Programme - PNRA or the National Agrarian Credit Programme - PNCF)
- Forest extractivists
- Fisher-folk
- Artisanal producers
- Indigenous communities
- Quilombo dwellers

It also encourages the participation of women by selling individually or through women's organisations.

On the food demand side, the beneficiaries of food assistance are:

- Populations who face food shortages
- Poor and extremely poor households who are enrolled in a registry for social programmes (CadUnico)
- Households headed by women
- Social welfare institutions
- Public schools
- Institutions that are part of the National System of Food and Nutrition Security (SISAN) such as food banks, restaurants with subsidised prices ("restaurantes populares") in urban settings and community kitchens

Because both producers and consumers benefit from it, two government ministries finance the PAA: the Ministry of Social Development and Fight Against Hunger (MDS) and the Ministry of Agrarian Development (MDA). The MDS implements policies for social protection while the MDA implements agricultural policies to benefit family farmers.

The PAA also has a governing body called the PAA Management Group (GGPAA), which designs and regulates its policies (GGPAA Resolution Nº 63, 2013). This group includes federal government representatives from various ministries including the Ministry of Education and Ministry of Agriculture (through Brazil's National Food Supply Company - CONAB), the Ministry of Planning, Budget and Management (MPOG) as well as the Ministry of Agrarian Development. The GGPAA attribution includes key competencies regarding the stipulation of food prices; criteria for targeting beneficiaries; and the establishment of rules for quality control and for the definition of food assistance.

The PAA operations are influenced by the National Food and Nutrition Security Council (CONSEA). CONSEA's model helps ensure transparency and accountability through the participation of civil society.

² See Study 2

SOCIAL PARTICIPATION

The National Food and Nutrition Security Council (CONSEA) aims to facilitate the dialogue between policymakers and civil society organisations in order to ensure their participation in the fight against hunger, which upon Lula's first election became a policy priority. The composition of CONSEA, which meets bi-monthly, consists of one-third government officials and two-thirds civil society representatives. CONSEA not only denounces the underlying causes of hunger but also contributes to the discussions around and the design of a rights-based framework for Brazilian food security policies. The Right to Food legislation helped to create a legal framework at the federal level that has facilitated policymaking to explicitly guarantee that every Brazilian has the right to eat healthy and culturally appropriate food. Through these rights and with the participation of the Brazilian civil society, CONSEA has championed the advocacy for innovative programmes that can support family farmers. It is responsible for the initial design of the PAA and for several changes and improvements in both the PNAE and PAA since their original implementation.

How much is spent on the PAA? PAA expenditure

The steady flow of funds since the beginning of the programme shows the government's commitment to strengthening social policies related to food and nutrition security. The public expenditures in the PAA in nominal Brazilian Reals (BRL) and in USD PPP from 2003 to 2013 are presented in Table 04. The investment on PAA

has increased from BRL 145 million to 466 million—at nominal 2013 prices—between 2003 and 2013, with a peak in 2012, when it reached an outstanding BRL 847 million.

Figure 03 shows PAA expenditure by region from 2010 to 2013. The Northeast received the most resources. This is largely explained by the fact that one modality - namely PAA Milk (this modality is described further in the next section), is only implemented in the semi-

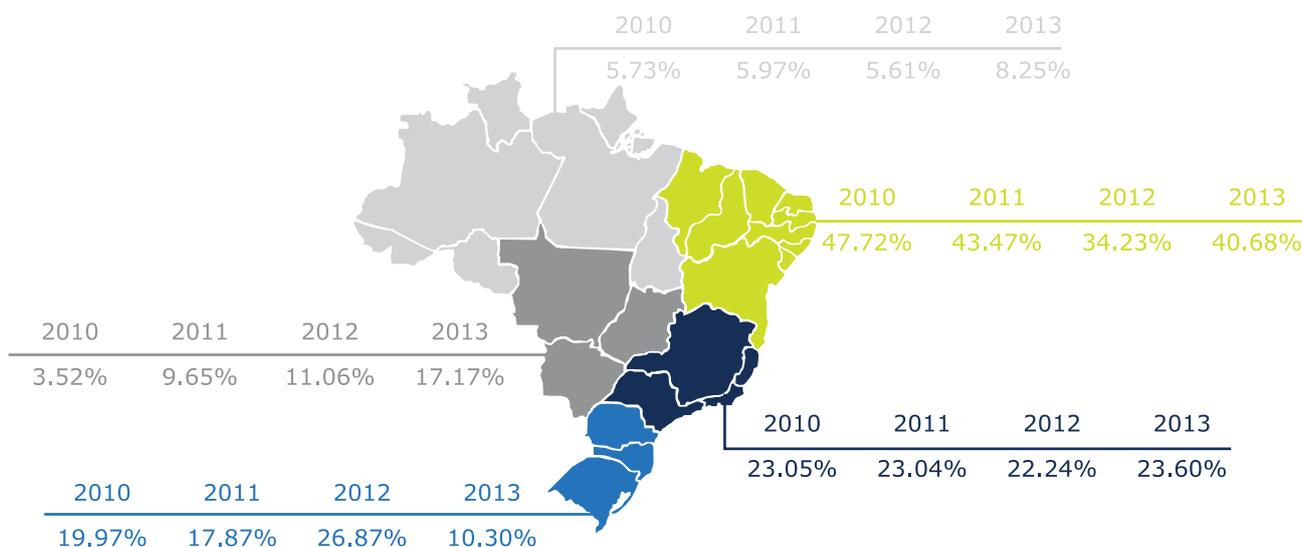
arid region, which in turn is predominantly located in the Northeast. Figure 03 also reveals that the Southern region was largely responsible for the drop in the programme expenditures in 2013, which suggests that the decrease in overall expenditure during that year was mostly due to implementation constraints in that region.

TABLE 04: Distribution of PAA financial resources, 2003 -2013

Year	Financial Resources (in millions)	
	Nominal BRL	USD PPP
2003	145	149
2004	180	174
2005	333	306
2006	492	440
2007	461	392
2008	509	407
2009	591	454
2010	681	491
2011	699	475
2012	847	542
2013	466	283

Note PPP conversion factor, GDP, World Bank, base year: 2011
Source: Sambuichi et al., 2013, PAA Data/ MDS and CONAB, 2011-2013

FIGURE 03: PAA Expenditure per Region of Brazil from 2010 to 2013, in percentage



Source: Sambuichi et al., 2013, PAA DATA/MDS and CONAB

How does the programme operate? Description of the PAA modalities

The PAA uses different methods to achieve maximum potential throughout the country:

- Purchase with Simultaneous Donation - CDS
- Stockpiling Support Programme – CPR-Stock
- Direct Procurement from Family Farming - CDAF
- Milk Production and Consumption Incentive – PAA Milk
- Institutional Procurement
- Seed Procurement

The most widely used modality within the PAA is the Purchase with Simultaneous Donation (CDS). The CDS modality provides market access for family farmers and food assistance for vulnerable populations. It has a far-reaching coverage, through three different implementing partners (CONAB, state and municipalities). It incentivises cooperativism and two of its implementing partners even offer a simplified payment system (through a debit card). A detailed description of its functioning can be found in Nehring and McKay (2013). It is worth mentioning that the diversification of

products is also an important feature of this modality. It includes a list of over 400 different food products, raw or processed. When CONAB implements this modality, the information on the quality, quantity and price of the products donated are detailed on a delivery form. The paperwork is then forwarded to CONAB along with the invoice, where it is analysed before any payment is made to the family farmer or their organisation.

FIGURE 04: Description of PAA modalities



Purchase with Simultaneous Donation (CDS)

Purchase of food from local family farmers to donate to institutions/entities in the social welfare network

Yearly limit
Family farmers
BRL 6,500
(BRL 8 thousand when sold through an organisation)

Yearly limit
Organisation
BRL 2 million

Implementer
CONAB, States and Municipalities

Type of access
Individual, Cooperative/ associations or informal group*

Price
Average of 3 prices in local or regional wholesale market in the last 12 months



Support Programme for Family Farming Stockpiling (CPR-Stock)

Financial support for stockpiling by farmers' organisations. Provide tools to support commercialisation

Yearly limit
Family farmers
BRL 8 thousand

Yearly limit
Organisation
BRL 1,5 million

Implementer
CONAB

Type of access
Cooperative/associations

Price
CONAB's benchmark price



Direct Procurement from Family Farming (CDAF)

Purchase of a list of products/produce to sustain price. An important role in the regulation of prices and supply

Yearly limit
Family farmers
BRL 8 thousand

Yearly limit
Organisation
BRL 0.5 million

Implementer
CONAB

Type of access
Individual Cooperative /association or informal group

Price
CONAB's benchmark price



Support to Milk Consumption and Production (PAA Milk)

Purchase of milk to donate to families at risk of food insecurity in the semi-arid region

Yearly limit
Family farmers

BRL 8 thousand
(BRL 4 thousand every half year)

Yearly limit
Organisation
Not applicable

Implementer
Semi-arid region states

Type of access
Individual,
Cooperative/Associations

Price
Averaging the prices paid to farmers in the last 3 months in each state



Institutional Procurement

At least 30% of public institution funds for food procurement must go to purchase family farmer produce

Yearly limit
Family farmers

BRL 20 thousand per institution

Yearly limit
Organisation
BRL 6 million per institution

Implementer
Federal government, States and Municipalities

Type of access
Cooperative/associations

Price
Call for proposals based on price research (minimum 3) in the local or regional market or PNAE's benchmark price



Seed Procurement

Purchase of seeds (not genetically modified) and seedlings for donation

Yearly limit
Family farmers
BRL 16 thousand

Yearly limit
Organisation
BRL 6 millions per organisation

Implementer
CONAB

Type of access
Cooperative/associations

Price
Average of three price quotes in the local regional market for similar seeds, considering logistics costs

Note: * At least 40% purchases from women
Source: MDS and CONAB

CONAB

Brazil's National Supply Company (CONAB) is a central institution responsible for stockpiling and maintaining food supply in the country. It was created in 1990, shortly after Brazil's re-democratisation as an administrative arm of the Ministry of Agriculture, Livestock Farming and Supply (MAPA). It is the result of a merge of three other institutions, namely the Brazilian Food Company (Cobal), Production Financing Company (CFP) and Brazilian Storage Company (Cibrazem) (Gandolfi et al, 2010). CONAB's mandate is to manage farming policies and food supply in order to ensure the basic needs of Brazilian society in ways that preserve and encourage market mechanisms. These objectives were primarily carried out through price guarantees for farmers and limited procurement programmes, but none of them was focused specifically on family farmers. It would take just over a decade until CONAB would focus on family agriculture and social programmes in tandem with the MDA and MDS (ibid). The 2008 global food crisis signalled an increased role for CONAB to secure sufficient food stocks to mitigate the volatility of global prices and maintain sufficient demand for both family farm production and household consumption. Almost every state in Brazil has a CONAB office that helps to grant institutional assistance to farmers and farmers' organisations on issues such as procurement processes, price guarantees and food stocks. This institutional structure has been a crucial mechanism to implement and extend the coverage of structured demand policies to many vulnerable and marginalised populations throughout the country.

The PAA Milk is the second most important modality in terms of resources. Milk is purchased from family farmers, after which it is pasteurised and distributed to beneficiaries. It is the only modality restricted to the semi-arid region of Brazil. The beneficiaries can be either institutions or vulnerable groups such as young children, pregnant women, the elderly, etc.

CONAB is the sole implementing partner of the Direct Procurement from Family Farming, Stockpiling Support and Seed Procurement modalities. The purpose of Direct Procurement from Family Farming is to regulate prices and maintain food for public stocks from a

list of products previously established by GGPAA. Stockpiling Support offers financial support towards establishing food stocks by farmers' organisations for subsequent sale and the return of resources to the Government or products to sustain public stocks.

There is a relatively new PAA modality— Institutional Procurement —enacted in October 2011 that does not imply additional funds from the PAA budget. It extends the benefit of waiving the bidding process to a range of public institutions, including state and municipal governments. Through this newer modality, public institutions such as hospitals, prisons and military bases can allocate their

budgets for food procurement to purchase from local family farms according to the rules and guidelines established by the programme's legislation. In June of 2015, Decree Nº 8,473 demanded that at least 30% of public institutions' resources destined for the purchase of foodstuffs must be destined to the purchase of produce from family farmers and their organizations.

Seed procurement is the most recent modality added to the PAA, in August 2014. It includes seed and seedling procurement to the programme's scope and legal framework, to be donated to selected beneficiaries. This modality has been in place since January 2015. CONAB receives requests for seeds

and seedlings from applicant institutions and then performs the procurement using a soft tender process. The applicant institutions are responsible for selecting beneficiaries and certifying delivery. Applicant institutions are the MDA, INCRA, National Indigenous Foundation (FUNAI), Palmares Cultural Foundation, Chico Mendes Institute for Biodiversity Conservation and state governments. Priority must be given to beneficiaries categorised as settlers, indigenous communities, quilombo dwellers and vulnerable families. It is important to note that the purchase of genetically modified seeds in the PAA is not permissible.

When the PAA started in 2003, farmers could only sell a maximum of BRL 2,500 annually to the programme. Since then, the annual cap has been increased. It now ranges from BRL 6,500 to BRL 20 thousand per farmer, depending on the modality. This cap prevents the concentration of purchases on a small number of producers, spreading the purchases across a larger number of family farmers (preferably clustered in farmers' cooperatives or formal associations). Farmers can now participate in several modalities to increase their institutional sales, within the limit set for each modality. A yearly limit is also imposed to farmers' organisations (cooperatives and associations) within each modality.

Food procurement must have compatible/comparable prices to local or regional markets, as established by Decree N° 7,775/2012. The GGPAA sets the price based on the average price found in the local market. The GGPAA encourages producers to transition to agro-ecological production. Agro-ecological or organic foods can be purchased with a maximum premium of up to 30% over the normal price (Law N° 12,512/2011).

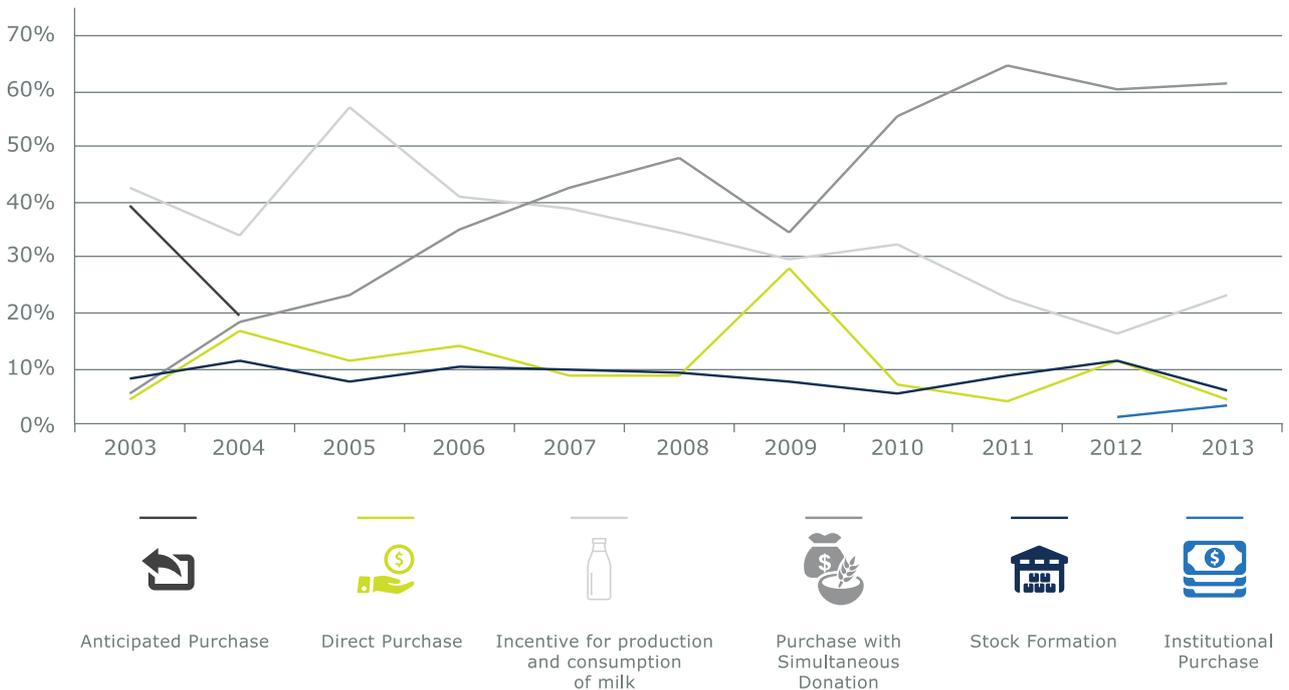
Produce sold through the PAA must comply with rules and regulations regarding the sale of animal and vegetable products. Industrialised and processed food items should comply with the rules and regulations of the following agencies: the Brazilian Health Surveillance Agency (ANVISA/Ministry of Health) and Agricultural and Livestock Health Care System (SUASA/Ministry of Agriculture and Livestock Farming). Compliance with these rules and regulations must be observed throughout the PAA procurement process. However, specific rules for animal and vegetable products and processing will be developed in 2015 to address the needs of family farmers (Decree n 8,471/2015). Raw products such as fruit and vegetables are inspected upon delivery.

Minimising food losses and waste is crucial in the efforts to improve food security. Overall food losses in Brazil are in the range of 10%–30%

of total production for fruit and vegetables according to previous assessments (Fehr et al, 2001). The estimate does not specify in which part of the food supply system the losses occur. Estimates of food losses from the PAA from farming and post-harvesting through to packaging are not explicitly accounted for in the programme.

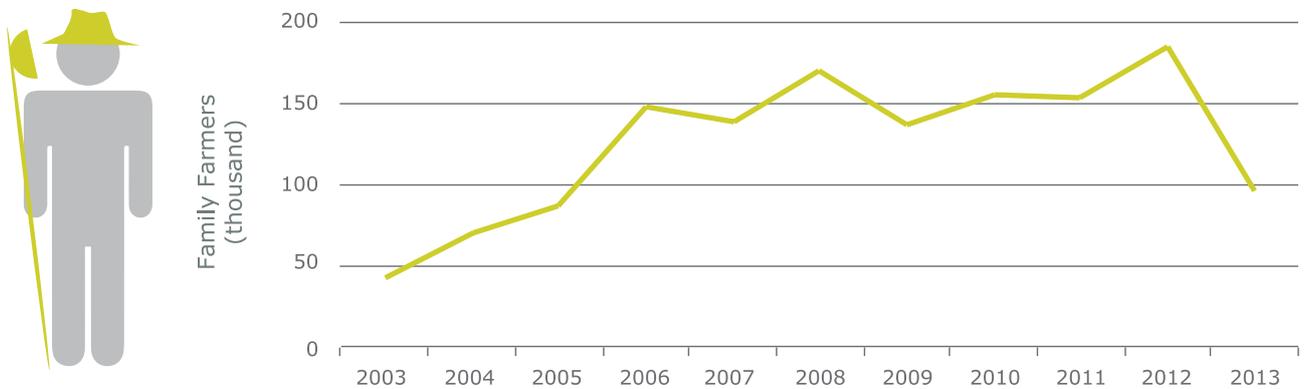
Figure 05 shows the evolution of the PAA funds according to each modality. The PAA Milk used most funds from the beginning of the programme until 2006. There was a shift, and after 2007 the CDS modality became the most prominent one in terms of funds. Expenditure from the other modalities remained mostly steady during the same period, with the exception of Direct Procurement from Family Farming in 2009. The drop in resources for the PAA in 2013 can be seen in all modalities, except for Institutional Procurement, which experienced expenditure increases in 2013. The budget for Institutional Procurement is not linked to the overall budget of the programme, as the funds for food procurement from family farmers come from the institution responsible for the purchase. It is interesting to note that the CDS modality became increasingly important over the years and is now the flagship of the PAA, accounting for over 60% of the resources spent on the programme.

FIGURE 05: Expenditure of the PAA by modalities from 2003 to 2013, in percentages



Note: Anticipated Purchase (extinguished in 2005) and Institutional Procurement (created in 2011).
 Source: Sambuichi et al., 2013. PAA Data MDS and CONAB 2011 -2013.

FIGURE 06: Family Farmers Participating in the PAA, all modalities, 2003 - 2013



Source: Sambuichi et al., 2013 and PAA DATA MDS 2011-2013

Family farmer beneficiaries

With regard to the number of family farmers covered by the programme, the PAA has grown from 42 thousand in 2003 to 185 thousand in 2012. However, this number dropped to 96 thousand in 2013, as seen in Figure 06, falling way short of its target of more than three million registered family farmers for institutional food procurement programmes (with a DAP A, A/C and B in 2014).

National School Feeding Programme

School feeding interventions in Brazil have a long history dating back to the 1940s. Since then, a number of major policy reforms were put into place, until the PNAE reached its current coverage of basic education—which comprises preschool (from six months to five years old), primary (from 6 to 15 years old) and secondary education (from 16 to 18 years old) as well as young and adult students who attend special classes (Education for Youth and Adults – EJA). School meals in Brazil feed around 45 million students nationwide and, as such, offer a sizeable institutional market for food producers (MEC, 2013).

In 2003, the first year of President Lula's first term, the Zero Hunger Strategy was adopted with the goal of fighting hunger and poverty. As a central feature of this strategy, major steps were taken to strengthen the PNAE. The government's Food and Nutrition Security System introduced the concepts of 'food culture' and 'local solutions' to respond to food insecurity, leading the PNAE to strengthen procurement from local farmers. Social participation and accountability through the School Feeding Councils (CAE) at the municipal level (which is mandated to oversee and monitor food purchases) and the work of the nutritionist as the person responsible for the school menu (responsible for including local products and for taking eating habits into account) were decisive steps in increasing demand for local products.

With its new legal framework, encompassing both Law N° 11,947 and FNDE resolutions N° 38/2009 and N° 26/2013, the PNAE has strengthened the structured demand for food produced by local family farmers.

The PNAE objectives encompass the support of education sectoral policies in addition to its primary objective of addressing food and nutrition security of school children to:

- 1) meet some of the nutritional needs of children by providing one meal a day;
 - 2) encourage healthy eating habits and provide nutritional education; and
 - 3) improve learning capacity.
- Indeed, very few social protection programmes have the potential to provide so many benefits.

The PNAE budget

With an annual transfer of BRL 3.5 billion from the federal government for food procurement, the PNAE has the resources to significantly increase family farmers' income and expand market opportunities. The funds earmarked for school feeding are implemented by the education departments of municipalities, states and the Federal District through a decentralised legislation enacted in 1994 (Law N° 8,913). The federal government allocates funds for school feeding to the executing agencies, as long as they have

SETTING PRIORITIES

- In June 2009, a new PNAE legislation (Law N° 11,947) introduced the legal requirement of at least 30% of the federal government's budgetary spending for school meals being used to fund food purchases from family farmers and/or family farmers' organisations
- Priority must be given to vulnerable family farmers from land reform settlements, traditional communities such as quilombolas and indigenous peoples (DAP category "A")
- Organic and agro-ecological food should also be prioritised in school menus, in line with similar priority criteria developed by the PAA

students enrolled according to the school's previous year census.

Table 05 shows the evolution of the total amount transferred from the federal government to executing agencies to procure food for the school feeding programme from 2003 to 2013 (in BRL nominal values and in USD PPP). In 2003, the programme spent about BRL 954 million. That figure has increased every single year since then. The majority of this increase occurred after 2008, and spiked in 2010. This was due to two changes: (a) the expansion of the coverage of the PNAE to include secondary school students and students in special classes, such as young adult and adult education in 2009 and; (b) the increase in the per capita (per student) value of the transfer from BRL 0.22 cents to BRL 0.30 cents for students in the pre-school to high school range, and to BRL 0.60 cents for nursery children, from BRL 0.44 cents to BRL 0.60 cents for indigenous and quilombola students, and from

BRL 0.66 cents to BRL 0.90 cents to students in schools who take part in the "Mais Educação" (Further Education) programme (Peixinho, 2013).

The PNAE's 30% rule combines the objective of improving school children's food and nutrition security with the objective of offering structured market access for family farmers. One of this programme's major contributions has been the waiver of the formal procurement process, which usually focused only on prices and competitiveness, as well as legal tax compliance. Traditional institutional procurement would make it practically impossible for family farmers to compete with larger firms in the bidding process.

Prices for the PNAE are similar to those observed in the local market (preferably prices found in the local farmers' market, if one exists at the municipal level). Regardless of the market price, however,

organic and agro-ecological foods can be purchased at a 30% premium, at the most. The transport cost for delivering the products to schools is also considered when determining the price as a means of boosting family farmers' interest in taking part in the process.

The National Fund for the Development of Education (FNDE)—which is linked to the Ministry of Education (MEC), is responsible for the programme's management. The FNDE published a booklet titled "Procurement of Produce from Family Farmers for School Feeding" that describes how executing agencies should organise a procurement process targeted at family farmers in 10 steps. These steps are detailed in the box below (adapted from Saraiva et al. (2013).

TABLE 05: Financial Resources from the federal government to PNAE, 2003-2013

Year	Financial resources (in million)	
	Nominal BRL	USD PPP
2003	954.2	979
2004	1,025	991
2005	1,266	1,165
2006	1,500	1,342
2007	1,520	1,294
2008	1,490	1,191
2009	2,013	1,545
2010	3,034	2,188
2011	3,051	2,074
2012	3,306	2,116
2013	3,539	2,146

Note: PPP conversion factor, GDP, World Bank, base year: 2011
Source: FNDE

PNAE PROCUREMENT FROM FAMILY FARMERS



1. Budget

To identify the amount transferred by the federal government based on the school census of the previous year

To estimate the proportion of purchases from family farmers to be implemented that year



2. Menu

The nutritionist responsible for the school menu must:

- (a) map the products produced by local smallholder farmers
- (b) prepare a menu with these products, taking into account nutritional requirements
- (c) inform the municipality of the products and their amounts to be purchased



3. Price Listing

The municipality should research the prices of the several products in the local market, including the transport cost to have them delivered to the schools



4. Public Open Call

An open call details the products, price and quantities demanded by the executing agency in order to proceed with the purchase



5. Sale Proposal

Family farmers respond to this call with a sale proposal in which they state how much they are able to supply with regard to the demand detailed in the Public Open Call, respecting the limit of BRL 20 thousand per year and per DAP, per executing agency



6. Receiving Proposals

The required documents specified in the FNDE resolution No. 23/2012 must be attached to the proposal for it to be considered valid:

- (a) Informal groups: individual DAP, CPF (individual taxpayer registry) of each family farmer and the sale proposal
- (b) Formal groups: corporate DAP (DAP jurídica), CNPJ (national registry of legal entities), all fiscal and labour documents proving (a) that the cooperative is operating legally and (b) the sale proposal



7. Samples for Quality Control

Food items should comply with the rules and regulations of the following agencies:

- (a) Brazilian Health Surveillance Agency (ANVISA/Ministry of Health)
- (b) Agricultural and Livestock Health Care System (SUASA/Ministry of Agriculture and Livestock Farming)



8. Project Selection and Assessment

The municipality will choose the projects according to the following priorities: projects from family farmers from the (i) municipality, (ii) region, (iii) rural territory, (iv) state and (v) country. Within these groups land reform settlers, indigenous communities and quilombolas should be prioritised, according to the different DAP categories as discussed in the PAA section



9. Contract/Project Signing

The municipality and the family farmers or the cooperative will sign the sale proposal which must also detail the schedule for product delivery to the schools as well as the payment dates



10. Product Delivery

The family farmer or cooperative will deliver the products according to the schedule stated in the sale proposal

The FNDE regulates, monitors and oversees the expenditures of the PNAE at the municipal, state and federal levels. Monitoring of annual expense reports is done online. Reports must include information on purchases made from family farmers in order to ensure that the 30% food procurement standard from family farmers is being met. The indicator for this database is the proportion of aggregate DAP expenses over FNDE funds transferred to the executing agencies.

The 2013 database has information on 5,562 executing agencies, whereas the 2011 and 2012 databases have information on 5,523 and 5,529 executing agencies, respectively. Figure 07 shows

the reported information submitted by type. In 2013, there was 6.3% missing information; executing agencies lagging behind in the submission of this information were from the Southeast (2%) and Northeast (2.2%) regions.

In 2011, 57% of the executing agencies reported purchases from family farmers. Even though this figure increased to 61% in 2013, 40% of the executing agencies had still to report any purchase from family farmers. It is important to bear in mind that it is an ongoing data collection, so the reporting has not yet been finalised as executing agencies can still, at the time of this publication, report their expenses. The information

received from the executing agencies is organised into two types of expenses: the expenditure to complement food purchase, and other expenses. There was a drop in the counterpart expenses from executing agencies during this period, for both food and other expenses.

FIGURE 07: Executing agencies and type of information reported on the FNDE system

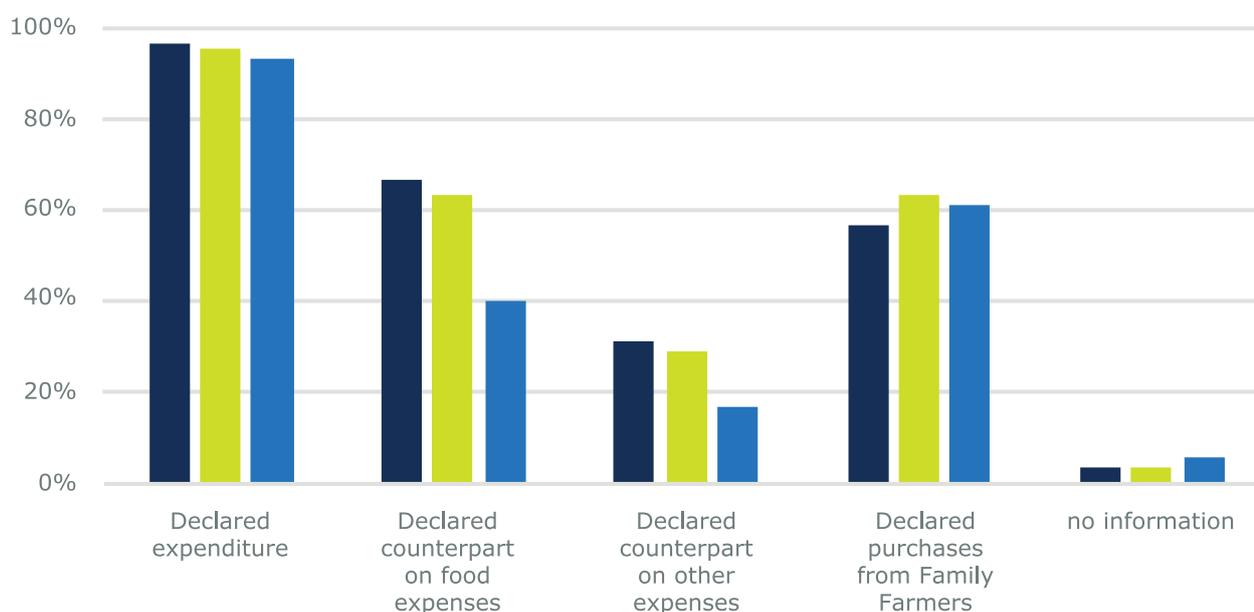


Table 06 shows total PNAE expenditure with food procurement, including expenses from all three levels of government: federal, state and municipal. The reported information shows that in 2013 the school feeding programme's annual budget totalled BRL 5.4 billion. The information received from executing agencies is organised into two types of expenses: 1) the expenditure to complement food purchases and 2) other expenses. Most of the resources reported accounted mainly for food procurement, totalling up to BRL 5 billion. The federal transfer (BRL 3.1 billion) and executing agencies' own resources together total BRL 4.6 billion spent on food procurement. Thus, most of the

resources accounted for in the programme are related to food procurement. Other expenses (non-food related) are equivalent to BRL 761 million.

The amount reported on purchases from family farmers was BRL 564 million in 2013, as shown in Table 07. There was an increase in the percentage of institutional food procurement from family farmers between 2011 and 2013. It has increased from 8.3% in 2011 to 17.9% in 2013. Despite this increase, the PNAE has not yet achieved the 30% of food procurement from family farmers across the nation as required by the legislation. Figure 08 presents institutional food procurement from family farmers by region.

When looking by region, an increase in procurement from family farmers can be seen across all regions. However, only the Midwest region reached the minimum of 30%. The Northeast region reported the least purchases, around 14%.

TABLE 06: Executing agencies' reported expenses from federal transfer allocated to food purchase, counterpart and total expenses (in million), 2011-2013

Year	Reported expenditure from the federal transfer	Executing agencies counterpart		Total expenses	
		Food expenses	Other expenses	BRL Nominal	USD PPP
2011	2,848	1,703	691	5,243	3,564
2012	3,215	1,632	855	5,703	3,651
2013	3,153	1,500	761	5,414	3,283

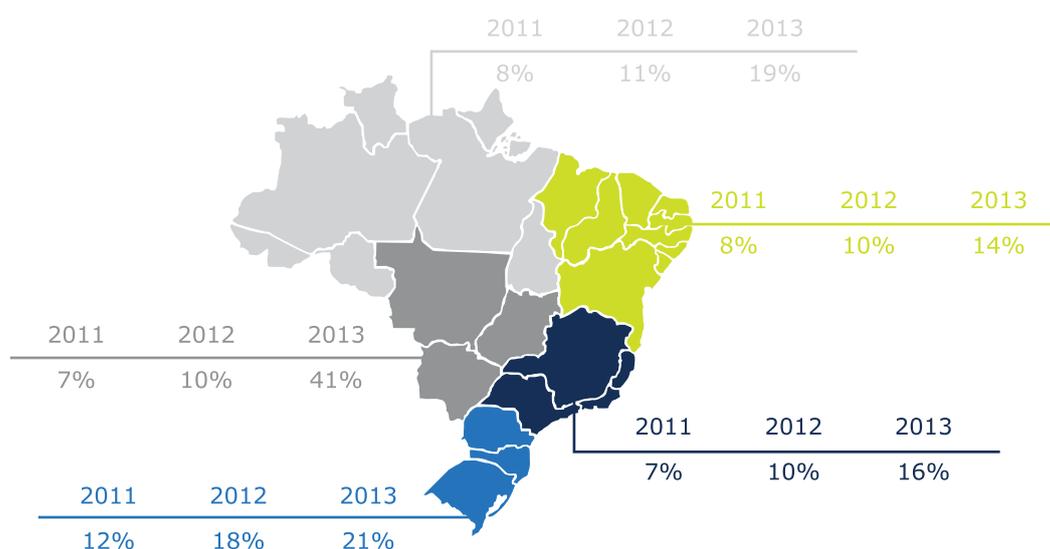
Note PPP conversion factor, GDP, World Bank, base year: 2011
Source: FNDE 2011-2013.

TABLE 07: Executing agencies' reported expenses from federal transfers for food procurement and reported purchases from family farmers

Year	Reported expenditure from the federal transfer	Food budget used to purchase from family farmers	
2011	2,848	235	8.3 %
2012	3,215	366	11.4%
2013	3,153	564	17.9%

Source: FNDE, 2011-2013

FIGURE 08: PNAE's reported family farmer procurement by region, 2011-2013, in percentages



Source: FNDE, 2011-2013

Table 08 shows the result of a simulation exercise based on the aforementioned data. Basically the calculation is on how much would be spent on products from family farmers if each of the executing agencies were to spend at least the 30% of their school feeding budget, as per the current legislation. In response to this hypothetical question, the gap was closed for each executing agency that reported not reaching the 30% requirement. It is estimated that if each of the implementing agencies had achieved the 30%

requirement, the PNAE would have purchased a total of BRL 1.16 billion in products from family farmers in 2013.

TABLE 08: Potential purchase for the PNAE's reported institutional procurement from family farmers if the 30% legal requirement was achieved (in millions), 2011-2013

Year	Purchases from family farmers	If 30 % was reached
2011	235	941
2012	366	1,036
2013	564	1,162

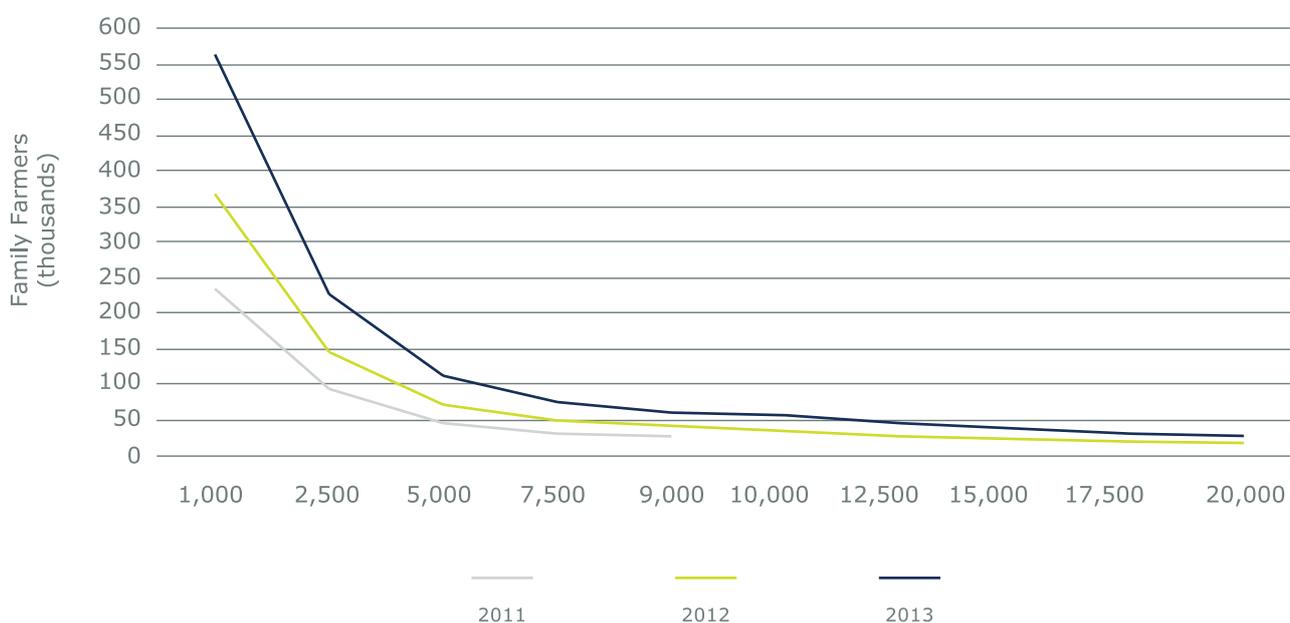
Source FNDE, 2011-2013

Estimating the number of family farmers supplying to PNAE

When the law was enacted in 2011, the maximum procurement from an individual farmer was established in a similar way as in the case of the PAA. The cap was initially set at BRL 9 thousand per year (per family farmer). There was an increase in 2015 to BRL 20 thousand for each family farmer (per DAP) per year, per executing agency (FNDE, 2015). It is interesting to observe that the ceiling set by the PNAE is more than twice that set for the PAA modalities, except for Institutional Procurement, which has the same cap. This reflects the trade-off between diversifying suppliers on the one hand and, on the other, the need to have a minimum scale to supply schools' demand for food on a regular basis, particularly in medium and large cities. Figure 8 estimates the number of family farmer beneficiaries from the PNAE's institutional procurement. If all farmers had reached their PNAE's purchase cap, i.e. BRL 20 thousand, around 28,216 farmers would have benefited from the programme's purchases. This is hardly the case, as the average amount purchased from family farmers is usually much smaller, particularly in small towns.

If the average amount sold per family farmer were BRL 5 thousand, around 112,868 farmers would have benefited from the programme. As the average amount sold per family farmer to the programme is unknown, Figure 09 depicts the range of the PNAE coverage, taking into consideration an average of BRL 1 thousand, up to the cap of BRL 20 thousand per family farmer (or DAP), i.e., from 564,340 to 28,216 family farmers, respectively.

FIGURE 09: Estimated family farmer participation in the PNAE, 2011-2013



Source FNDE, 2011-2013



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Government Food Procurement: Measuring Direct and Indirect Government Purchases

This section addresses government procurement from the agricultural sector and estimates the indirect impact of government purchases from the food industry on the farming sector. In addition to direct purchases from farmers, the government sector (through institutional procurement) also buys semi-processed and processed farm products, i.e. outputs from the food industry. National Accounts data help estimate the indirect effect of food industry purchases that potentially reach the agriculture sector, given that processed food use farming products as input. Last but not least, National Accounts allows us to gauge the relative size of the PAA and PNAE with respect to all structured demand (institutional purchases) in the country.

To determine government purchases related to agricultural products, direct purchases are considered to be those purchases from the following sectors in the National Accounts: “Public Education”, “Public Health” or “Government Services”. Indirect purchases are purchases of industrialised foodstuffs (beef, poultry, beef hamburgers, white rice, wheat or other flour types) that revert to agriculture. While direct purchases are taken directly from the National Accounts data, indirect purchases are estimated based on some assumptions explained in detail below, and in the appendix.



BASED ON THE 56 INDUSTRY TYPES, OUR ESTIMATES INCLUDE:

0101 – Crop Production and Forestry

0102 – Cattle Ranching and Fishing that we refer to as “agriculture”

0301 – Food and Beverages Industry that we label as “Food Industry”

These sectors supply food and/or use agricultural produce as inputs—such as soybeans to manufacture soy cooking oil, for example.

‘GOVERNMENT PURCHASES’ FIGURES ARE BASED ON THE FOLLOWING SECTORS:

1201 – Public Education

1202 – Public Health

1203 – Public Administration and Social Security

Final consumption by the government is also considered.

At the time of this research, the most recent National Accounts data made available by the Brazilian Institute of Geography and Statistics (IBGE) are those for the period 2003–2009. They are based on the UN System of National Accounts (SNA) 1993 (see, for example UN, 2003). The product/activity data from the Supply and Uses Tables (SUT) is most commonly used.

The SUT tables provide information of total supply by product list, e.g. total output of soy seeds and of soy cooking oil, at basic and consumer prices. The basic price is the amount receivable by the producer from the purchaser for a unit of a product or service produced as output minus any due tax, plus any subsidy receivable, on that unit as a consequence of its production or sale; it excludes any transport

charges invoiced separately by the producer. Total supply is presented by industry source (crop production and fishing; cattle ranching; food manufacturing) for domestic output and imports.

The use of each product is broken down into intermediate consumption (when a product is used as input for sector output) and final demand (family or government consumption, investment or exports).

For the purpose of this research, Direct Government Procurement is defined as government purchases of agricultural and food industry outputs. Details are available in the Appendix.

Two comments are worth making at this point. First, note that government procurement

– of food or produce – for schools, resale or stockpiling is classified as government intermediate consumption. Government final demand for food or produce is not a reasonable classification, as the government does not ‘consume’ lettuce, but rather supplies lettuce through its services to final consumers (e.g. school meals). Even produce purchased to supply government-subsidised restaurants would be classified as intermediate inputs.

Secondly, purchases of crop and livestock production actually mean purchase of products such as unprocessed rice and live cattle (‘boi em pé’). However, when products such as rice and beef are purchased through public procurement to supply schools, they have already been processed by the

food industry; therefore very few direct purchases from the farming sector are made – mostly limited to fresh fruit and vegetables.

In addition to direct purchases from farmers ('agriculture'), government purchases of food industry outputs actually revert to farmers, as 'Industry' inputs must be acquired from the latter.

The extent of institutional procurement that reverts to agriculture has been calculated using constant input requirements of food industry outputs from agricultural products (please refer to the technical details in the Appendix).

In 2009, direct purchases from agriculture based on National Accounts, plus the procurement of intermediate products by government sectors (education, health and public administration) and the final demand from public sectors of agricultural produce totalled BRL 675 million. Government direct purchases were 0.2% of the country's total agricultural supply. However, around 2.5% of this supply was actually imported, so the estimated direct expenditure was BRL 650 million to Brazilian farmers in 2009.

The government also purchased industrialised foodstuffs, from simple cuts of beef to fried chicken nuggets, coffee, refined sugar, flour and other products. These purchases totalled BRL 7.9 billion in 2009, or 1.5% of the total supply of these food

industries. Imports represented up to 2.4% of the total supply of these goods. Using this average percentage of food imports, total government purchases of these goods from domestic producers are estimated at BRL 7.8 billion.

The SUT describes the industry input requirements for industry output. There is no detailed input use; namely, no available information on how much flour is used to produce processed meats such as chicken nuggets; in other words, there is no product-to-product input use. In monetary figures, what can be calculated is how much wheat was used by the food industry as a whole to generate its output. Based on aggregate figures, for each BRL 1 million in output, the domestic foodstuff industry procured BRL 0.45 million in farming produce. Taking into account that part of these inputs came from overseas, an estimated BRL 0.43 million input purchases came from domestic producers for each BRL 1 million in industry output. Since government purchases from domestic producers totalled BRL 7.8 billion, we estimate indirect institutional procurement from agriculture at BRL 3.4 billion in 2009 using produce-specific import percentages.

Adding together direct and indirect purchases, government procurement from domestic farming producers (including all farmers) at federal, state and municipal levels of the Brazilian government for 2009 is estimated at BRL 4.1 billion, based on National Accounts.

These estimates do not include aggregate demand multipliers, since the focus is on intermediate input purchases. These estimates include freight and retail margin losses that the producers incurred in order to sell their produce either directly to the government or indirectly through the food industry input sales.

Using more detailed data, Table 11 presents the total food and agriculture output for the period 2003-2009 for which data is available, as well as our estimates of total government purchases of agricultural products, both direct and indirect. Moreover, the percentage of total domestic farming output corresponding to the direct and indirect government demand, i.e. being sold directly to the government or indirectly, was calculated as input for food industry output that is procured by the government. The percentage has risen from 1.18% (2003) and 1.15% (2004) to 1.33% in 2005 and since then has been fluctuating around 1.3%.

TABLE 09: Farming output and total institutional procurement (direct and indirect)

Year	Total Domestic Agricultural Purchases	Total Domestic Agricultural Output	%
2003	2,286.5	194,432.3	1.18%
2004	2,471.8	214,523.7	1.15%
2005	2,766.6	207,947.5	1.33%
2006	2,920.9	213,151.8	1.37%
2007	3,387.7	244,915.0	1.38%
2008	4,048.8	305,367.3	1.33%
2009	4,109.6	301,049.1	1.37%

Source: Author's estimates based on IBGE National Accounts

This table illustrates that there are far more indirect purchases than direct purchases, i.e. the government spends over five times more on processed food (including basic processing such as rice husking) than on

raw food. Table 10 shows the total food product institutional procurement and output. Here, government purchases are direct purchases only. The share of institutional procurement to the food industry has increased over

time. There is a level change from 2003 to 2004 (1.30-1.34%, respectively) to 2005 and later (about 1.5%).

TABLE 10: Food industry output and total institutional procurement

Year	Total Food Purchase	Total Domestic Food Output	%
2003	3,970.60	292,568.32	1.36%
2004	4,365.08	335,466.09	1.30%
2005	5,226.21	355,324.42	1.47%
2006	5,745.21	377,927.82	1.52%
2007	6,367.03	420,073.68	1.52%
2008	7,322.72	492,849.66	1.49%
2009	7,808.69	524,846.67	1.49%

Source: Author's estimates based on IBGE National Accounts

It should be mentioned that the institutional procurement from the food and farming industries should not be added together (tables 09 and 10, respectively). The estimated farming produce includes the input content of procured food products. Adding the percentages across tables would lead to double counting (e.g. soy beans used and total value for soy oil).

Disaggregated direct and indirect estimates are presented in Table 11. It can

be seen that a large part of domestic farm produce procurement actually consists of indirect purchases. Indirect procurement is about six times more than direct procurement. This is expected, as direct farm produce procurement excludes processed food— even very simple processing, such as slaughter and husking. Table 13 also shows that food industry procurement creates demand for the farming sector in a 50%- 40% proportion; that is, for each BRL 1 million in food procurement,

agricultural input demand is about BRL 0.4 to BRL 0.5 million. The figure varies over time due to changes in food product demand profiles and technological changes.

TABLE 11: Food industry output and total institutional procurement (in BRL million, nominal values)

Year	Direct Domestic Purchases from Food Industry	Direct Domestic Purchases from Agriculture	Indirect Domestic Purchases from Agriculture	Total Domestic Purchases from Agriculture
	(A)	(B)	(C)	(B)+(C)
2003	3,970.6	295.8	1,990.7	2,286.5
2004	4,365.1	330.2	2,141.6	2,471.8
2005	5,226.2	389.6	2,377.1	2,766.6
2006	5,745.2	438.5	2,482.4	2,920.9
2007	6,367.0	498.9	2,888.8	3,387.7
2008	7,322.7	589.9	3,458.9	4,048.8
2009	7,808.7	650.3	3,459.2	4,109.6

Source: Author's estimates based on IBGE National Accounts

The figures from tables 09-11 can be broken down into government services, namely education, health and others (army, prisons, etc.). Tables 12 and 13 present the breakdown of purchases from the Farming and Food Industry, respectively. There is a steady increase in expenditure on

education at the expense of other government services, as the main source of demand from the public sector. For the farming sector it has increased from 30% in 2003 to 53% in 2009 and for the food industry it has increased from 23% to 44%. Farm produce procurement for health

services has also increased, but it is only a smaller fraction of total expenditures, only 7% in 2009 for agriculture and 9% for the food industry.

TABLE 12: Direct farming institutional procurement by public service (in BRL million, nominal values, or percent shares)

Year	Direct Domestic Purchases from Agriculture	Direct Domestic Agriculture for Education	Direct Domestic Purchases Agriculture for Health	Direct Domestic Agriculture Purchases for Other
2003	295.8	30%	5%	65%
2004	330.2	30%	6%	64%
2005	389.6	31%	6%	63%
2006	438.5	34%	5%	61%
2007	498.9	42%	6%	51%
2008	589.9	42%	6%	52%
2009	650.3	53%	7%	40%

Source: Author's estimates based on IBGE National Accounts.

TABLE 13: Direct Food institutional procurement by public service (in BRL million, nominal values, or per cent shares)

Year	Direct Domestic Food Purchases from Food Industry	Direct Domestic Food Purchases for Education	Direct Domestic Food Purchases for Health	Direct Domestic Food Purchases for Other
2003	3,970.6	22%	7%	70%
2004	4,365.1	24%	7%	69%
2005	5,226.2	23%	7%	70%
2006	5,745.2	26%	6%	67%
2007	6,367.0	33%	8%	59%
2008	7,322.7	34%	8%	58%
2009	7,808.7	44%	9%	47%

Source: Author's estimates based on IBGE National Accounts

The total production of the farming and food industry estimated for the period 2010-2013 was extrapolated from 2009 figures of the nominal output indices calculated from the IBGE agriculture sector and food industry output estimates, based, respectively, on the GDP growth measured by the quarterly National Accounts for the farming sector and on the monthly real output indicator for the food industry as per the Monthly Manufacturing Survey (PIM - Pesquisa Industrial

Mensal). Unfortunately, the quarterly National Accounts do not present estimates for the manufacturing sectors, such as the food industry. Thus, the monthly real output indicator for the food industry from the PIM is used. All figures in this paper are presented in current nominal values, so the food industry real output indicator is inflated based on the price performance for the food industry, from the IBGE IPP (Índice de Preços ao Produtor—Producer Price

Index). These are used to construct a nominal (current prices) output index for 2009-2013 and extrapolate the 2009 data (from tables 11 and 12) to 2010-2013. The estimated total domestic farming output and total domestic food output are presented in Table 14, completing the series shown in Table 09.

TABLE 14: Agriculture and food output estimates (in BRL million, nominal values)

Year	Total Domestic Farming Output	Total Domestic Food Output
2003	194,432.3	292,568.3
2004	214,523.7	335,466.1
2005	207,947.5	355,324.4
2006	213,151.8	377,927.8
2007	244,915.0	420,073.7
2008	305,367.3	492,849.7
2009	301,049.1	524,846.7
2010	327,750.1	664,926.6
2011	368,869.8	685,665.8
2012	379,369.4	778,470.6
2013	449,172.0	836,599.0

Note: 2010-2013 production estimates from aggregate index growth
Source: Author's estimates based on IBGE National Accounts

Table 15 provides estimates of the institutional procurement for 2009-2013 using information from the preceding tables. In 2013, government procurement

by the federal government, states and municipalities has been estimated for all uses to reach almost BRL 6 billion from farming and BRL 12.5 billion from the food industry.

This amounted to 1.37% of the total farming output and 1.49% of the total food industry output in Brazil.

TABLE 15: Agriculture and food institutional procurement estimates (nominal values in BRL million, and USD PPP)

Year	Total Farming Purchases		Total Food Purchases	
	Nominal BRL	USD PPP	Nominal BRL	USD PPP
2003	2,286.5	2,345.7	3,970.6	4,073.4
2004	2,471.8	2,389.3	4,365.1	4,219.3
2005	2,766.6	2,545.7	5,226.2	4,809.0
2006	2,920.9	2,614.2	5,745.2	5,141.9
2007	3,387.7	2,883.3	6,367.0	5,419.0
2008	4,048.8	3,236.2	7,322.7	5,853.1
2009	4,109.6	3,155.1	7,808.7	5,995.0
2010	4,474.1	3,226.3	9,892.8	7,133.8
2011	5,035.4	3,422.9	10,201.4	6,934.7
2012	5,178.7	3,314.9	11,582.1	7,413.8
2013	6,131.6	3,718.0	12,446.9	7,547.5

Note: 2003-2009: Table 11 (Agriculture) and Table 12 (Food); from 2010-2013 constant share expanding from Table 11/12 figures (Agriculture - 1.37 per cent; Food - 1.49 per cent based on 2009 share).
PPP conversion factor, GDP, World Bank, base year: 2011.
Source: Author's estimates based on IBGE National Accounts

Procurement estimates can be broken down by government sector, if wishing to maintain an ongoing expenditure breakdown. The education and health sectors' direct expenditure on produce and foodstuffs is highlighted. Using the latest figure available (2009) on expenditure share by allocation, Table 16 points out that government expenditure on food and farming products for education was around BRL 6 billion in 2013. This figure is consistent with the expenditure in food for education reported by the executing agencies and total annual budget for 2013 in

Table 6 above, of around BRL 5.4 billion for that same year. What the estimates reveal is that a larger part of the PNAE expenditure is on food products, i.e. goods from the food industry. Around one tenth of this expenditure is obtained directly from farming economic units.



TABLE 16: Agriculture and food institutional procurement estimates for education (nominal values in BRL million, and USD PPP)

Année	Direct Agriculture Purchases		Direct Food Purchases	
	Nominal BRL	USD PPP	Nominal BRL	USD PPP
2003	87.3	89.6	899.5	922.8
2004	99.1	95.8	1,011.7	977.9
2005	119.1	109.6	1,212.0	1,115.2
2006	150.1	134.3	1,515.1	1,356.0
2007	210.7	179.3	2,127.8	1,811.0
2008	246.0	196.6	2,466.4	1,971.4
2009	345.9	265.6	3,456.7	2,653.8
2010	376.6	271.6	4,379.3	3,157.9
2011	423.8	288.1	4,515.9	3,069.8
2012	435.9	279.0	5,127.2	3,281.9
2013	516.1	312.9	5,510.0	3,341.1

Note: 2003-2009: Table 12 (Education) and Table 13 (Education); 2010-2013: Table 12/13 2009 percentage over Table 17 figures. Exchange rate converter: USD PPP World Bank.

Source: Author's estimates based on IBGE National Accounts

TABLE 17: Estimated farming and food institutional procurement for health (nominal values in BRL million, and USD PPP)

Year	Direct Agriculture Purchases		Direct Food Purchases	
	Nominal BRL	USD PPP	Nominal BRL	USD PPP
2003	14.5	14.5	266.4	266.4
2004	20.3	19.3	324.7	308.8
2005	23.2	21.2	376.7	344.9
2006	22.3	19.8	364.4	323.9
2007	31.9	27.5	505.0	435.2
2008	37.7	30.6	608.1	493.3
2009	44.5	34.0	706.0	538.4
2010	48.5	34.6	894.4	637.8
2011	54.6	37.1	922.3	626.9
2012	56.1	37.0	1,047.1	690.2
2013	66.4	41.3	1,125.3	699.6

Note: 2003-2009: Table 12 (Farming) and Table 13 (Food); 2010-2013 Table 12/13 2009 percentage over Table 17 figures. PPP conversion factor, GDP, World Bank, base year: 2011.

Source: Author's estimates based on IBGE National Accounts



Nevertheless, the potential for farmers to generate income from structured demand can be significant. An important contribution made by this report is to estimate how much input the food industry requires from the farming sector. As seen in Table 11, food purchases create indirect effects on farming, ranging from 40%-50% of the food expenditure depending on the benchmark year. The indirect effect of food procurement by use (education and health) can be estimated by breaking down the extrapolated differences between direct and total procurement using the continuous percentage principle. The figures are impressive. While the family

farmers' direct structured demand for farm products is estimated at BRL 516 million in 2013, indirect structured demand could reach more than BRL 5 billion. These figures are detailed in Table 18.

TABLE 18: Estimated Direct and Indirect Institutional Procurement from Farmers (in BRL million, nominal values)

Year	Direct Domestic Procurement from Agriculture	Indirect Domestic Procurement from Agriculture	Total Domestic Procurement from Agriculture
	(A)	(B)	(C)
2003	295.77	1,990.7	2,286.5
2004	330.24	2,141.6	2,471.8
2005	389.55	2,377.1	2,766.6
2006	438.49	2,482.4	2,920.9
2007	498.91	2,888.8	3,387.7
2008	589.90	3,458.9	4,048.8
2009	650.34	3,459.2	4,109.6
2010	708.02	3,766.0	4,474.1
2011	796.84	4,238.5	5,035.4
2012	819.53	4,359.2	5,178.7
2013	970.32	5,161.2	6,131.6

Source: Author's estimates. 2003-2009 (National Accounts); 2010-2013 see Table 11 and Table 17 for column (C). Same method used for column (A). Column (B) obtained as the difference between (A) and (C).



Final Remarks

Brazil's experience with government-led institutional food procurement can shed some light on the worldwide debate on rural development policies and the feasibility of linking institutional procurement to food-based safety nets. This report documents the scale of government-based structured demand in Brazil and describes the evolution of the PAA and PNAE, which are the most important programmes with earmarked funds for food procurement directly from family farmers and their organisations.

Institutional procurement from family farmers started in 2003, together with other policies to promote food security, alleviate hunger and strengthen family farmers. The success of the policies led to the unparalleled agricultural inclusive growth seen throughout the last decade. A significant reduction was noticeable in poverty among the population, including rural households whose main source of income is farming. In spite of the improvement in average income, about 22.9% of the rural population still lived below the poverty line (measured as the upper eligibility line for the Family Allowance programme) in 2013. In contrast, the poverty rate for the overall population was only 9%.

Institutional procurement from family farmers has not reached its full potential in spite of increased food purchases since 2003. However, there are mechanisms that have been put in place to boost the flow of resources through the PAA, and performance improvements through the PNAE, to expand the market access by family farmers.

The PNAE reform that set a minimum of 30% of the school food budget to be spent on food purchases from family farmers is fairly recent. In 2013, 30% of the federal government funds

transferred to the executing agencies would amount to BRL 1.16 billion, but less than half of that amount (BRL 564 million) amounted to actual procurement. Therefore, there were still funds of BRL 598 million that could have been spent on procurement from family farmers in 2013. Even if this nominal value is overestimated — since it is based on reported information from the executing agencies— it is important to consider the fact that the amount available through the PNAE for family farmers has not been fully utilised towards procurement from them. Once executing agencies start purchasing it seems that, on average, the 30% requirement by the legislation can be achieved. The drawback from this fact is that around 40% of the executing agencies still fail to report any procurement from family farmers. Further studies to determine the

red tape for purchases from family farmers can improve the performance of the PNAE's institutional public procurement.

Although the expansion of the PAA was put on hold with a decrease in expenditure in 2013, it does not lessen the importance of food procurement via the PAA. The programme has a complex *modus operandi* to meet the demands of the most vulnerable family farmers and those suffering food insecurity. The PAA procurement comprises six different modalities, each with its own rationale, as previously explained. The drop in PAA expenditure demonstrates that even a programme that has existed for over 10 years may need adjustments to its operation. The public food procurement process involves different mechanisms such as payment

systems, delivery processes and food supply. Adjustments to standardise procedures may have caused the programme's expansion to slow down (IPEA, 2013). This is clearly noticeable with Resolution Nº 62 from 2013, for example, which specifies and tightens the rules related to food assistance. It also required more transparency; for instance, organisations must provide payment receipts for all farmer beneficiaries and diversification of farmers with an additional cap established for procurement from organisations (cooperatives or associations).

Lessons can be learned from the Brazilian structured demand policies. The coverage of family farmers by the PAA and PNAE can be modest in comparison to the sheer number of family farmers in Brazil. The registry of family farmers includes over five

million family farmers that can benefit from institutional food procurement. However, it may require a two-tier system to be set up for both established farmers—who can provide a steady supply of produce—and subsistent farmers that still need to create surplus.

The last section of this report emphasises that the scope of structured demand for farmers in Brazil reaches beyond the government's direct procurement of farm produce from family farmers. In fact, in Brazil a much greater impact of government procurement on farming is indirect, through the demand for processed foods. This indirect effect could be greater if family farmers, through cooperatives, were to participate in basic food processing, such as rice husking, bean extraction and packing. An important issue that our estimates draw

attention to is the need to improve the technical skills of smallholder farmers in order to be able to sell to the food industry and/or get involved in food processing themselves. This channel can be very important towards generating sustainable income for those small farmers from products of higher added value and/or other sources of demand. If only large and medium-scale farmers can supply to the food industry, then a very significant opportunity for structured demand to reach family farmers is missed.

The waiver of competitive tenders is a key feature of the PAA and PNAE. By means of a recently added mechanism in the PAA, any government organisation can procure food using a 'soft' bidding process, and from 2016 onwards, at least 30% of the budget used for food purchases by government institutions must

be procured from family farmers. Thus, the PAA expenditure can encompass the Brazilian government food budget. Nonetheless, as shown above, the Brazilian government's participation in the farming market is less than 2%. Most government food procurement is based on products that require some level of processing. Thus, an increase in procurement from the government targeted at family farmers must not overlook how to better link them with the food industry or how to provide them with food processing capacity; the recent relaxing of the food and animal regulation barriers is a good start. Possible solutions to achieve the full potential of the benefits of including family farmers in the food industry are something to consider for further studies.

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List of Acronyms

ANVISA – Agência Nacional de Vigilância Sanitária - National Agency of Health Surveillance

CadÚnico – Cadastro Único para Programas Sociais do Governo Federal - Single Registry for Federal Government Social Programmes

CAE - Conselho de Alimentação Escolar – School Feeding Council

CDS - Compra com Doação Simultânea – Purchase with Simultaneous Donation

CONAB - Companhia Nacional de Abastecimento – National Supply Company

Consea - Conselho Nacional de Segurança Alimentar e Nutricional - National Council for Food and Nutrition Security

DAP - Declaração de Aptidão ao Pronaf – Eligibility Declaration for PRONAF

EJA - Educação de Jovens e Adultos – Education for Youth and Adults

FNDE – Fundo Nacional de Desenvolvimento da Educação - National Fund for the Development of Education

FUNAI – Fundação Nacional do Índio - National Foundation of Indigenous People

GGPAA – Grupo Gestor do Programa de Aquisição de Alimentos - Management Group for the Food Procurement Programme

IBGE - Instituto Brasileiro de Geografia e Estatística – National Accounts of the Brazilian Institute of Geography and Statistics

INCRA – Instituto Nacional de Colonização e Reforma Agrária - National Institute for Rural Settlement and Land Reform

MAPA - Ministério da Agricultura, Pecuária e Abastecimento – Ministry of Agriculture, Livestock and Supply

MDA - Ministério do Desenvolvimento Agrário – Ministry of Agrarian Development

MDS - Ministério do Desenvolvimento Social e Combate à Fome - Ministry of Social Development and Fight against Hunger

MEC - Ministério da Educação – Ministry of Education

PAA - Programa de Aquisição de Alimentos - Food Acquisition Programme

PNAD - Pesquisa Nacional por Amostra de Domicílios - National Household Sample Survey

PNAE - Programa Nacional de Alimentação Escolar - National School Feeding Programme

PNCF - Programa de Crédito Fundiário - Programme National de Crédit Foncier

PNRA- Programa Nacional de Reforma Agrária - National Land Reform Programme

PRONAF - Programa Nacional de Fortalecimento da Agricultura Familiar – National Programme for Strengthening Family Farming

SUASA - Sistema Unificado de Atenção à Sanidade Agropecuária - Agricultural and Livestock Health Care System

Appendix

We present the estimates for both direct and indirect government food procurement based on National Accounts in Brazil. To determine government farm produce procurement, we considered direct procurement to be that purchased from the following sectors: 'Public Education', 'Public Health' or 'Government Services'. Indirect procurement is considered to be monetary purchases of industrialised foodstuffs (beef, poultry, beef hamburgers, white rice, wheat or other types of flour) that revert to agriculture. While direct procurement is measured directly, indirect procurement is estimated.

Our basic sources are the National Accounts published by IBGE. They are based on the UN System of National Accounts 1993 (see, e.g., UN, 2003). We extensively use the product/activity data from the Supply and Usage Tables (SUT) ('Tabela de Recursos e Usos' – TRU).

The SUT tables provide information on the total supply by product list, e.g. total output of soy seeds and of soy cooking oil, at basic and consumer prices. Total supply is presented by industry source (crop production and fishing; ranch production; food manufacturing) for domestic output and imports.

Use of each product is broken down into intermediate consumption (when a product is used as input for sector output) and final demand (family or government consumption, investment or exports).

Based on the 56 industry classification tables, our estimates include industries 0101 (Crop Production and Forestry), 0102 (Ranch Production and Fishing), which we refer to as Agriculture, and industry 0301 (Food and Beverages Industry). These sectors supply food or use farm produce as inputs (such as soy beans to manufacture soy cooking oil). 'Government procurement' figures are based on industries 1201 (Public Education), 1202 (Public Health) and 1203 (Public Administration and Social Security), as well as final consumption by the government.

Products included in the estimates are those from 'agriculture' (0101xx, 0102xx), excluding tobacco leaves (010108), and those from the food industry and animal slaughter and processing (0301xx), including beverages (alcoholic or otherwise) referred to as 'food industry' henceforth. Tobacco products (030201) are excluded.

Two comments are required at this point. First, note that government purchases of food or produce for schools, resale or stockpiling are classified as government intermediate consumption. Government final demand for produce is not a reasonable classification, as it does not 'consume' lettuce, but uses it to provide its services (e.g. school meals). Even produce procured to stock government-subsidised restaurants would be classified as intermediate inputs. Second, purchases from crop and ranch production mean procuring live cattle ('boi em pé') or unprocessed rice. When beef is purchased through public procurement for schools, it has already been processed by the food industry (slaughterhouses), so we should see very little direct procurement from the farming sector, mostly limited to fresh fruit and vegetables.

We start by totalling government procurement of farm and food industry produce:

$$DGP = \sum_i \sum_j S_i S_j CI_{ij} + \sum_i S_i G_i \quad (1)$$

Where $i = \{0101xx, 0102xx, 0301xx\}$ is a list of products, excluding tobacco leaves, $j = \{1201, 1202, 1203\}$ is a list of industries, and G is final demand by the government. We term this 'Direct Government Procurement' (DGP).

However, some of these purchases might have been imported produce. SUT does not discriminate intermediate input use based on origin, whether domestic or foreign. We use a continuous percentage hypothesis, used extensively when constructing input-output matrices from SUT data. Namely, we assume that government purchases each output from domestic farmers and the food industry in the same proportion of aggregate domestic supply to total supply.

State m_i as the percentage of imports in total supply of a specific product ('product by product percentage'). Then $(1 - m_i)$ is the percentage of domestic output in total supply of product i . Our first estimate is Government Direct Domestic Product Procurement.

$$DDGP = \sum_i \sum_j S_i S_j CI_{ij} (1 - m_i) + \sum_i S_i G_i (1 - m_i) \quad (2)$$

Alternatively, we use an average import share based on all 010xxx and 0301xx products and apply it to DGP calculated in (1).

In addition to these purchases, we should note that food industry output from government procurement actually reverts to farmers and ranchers, as inputs must be procured from this industry.

We calculate the extent of institutional procurement that reverts to agriculture using constant input requirements of food industry output from agricultural products. For example, we calculate $a_{ifood} = CI_{ifood} / Y_{ifood}$ où Y_{ifood} is the total output from the food industry. The technical coefficient a_{ifood} indicates what is the requirement for input i to generate BRL1 unit of food industry output. Thus, if, say BRL 2 of food industry output is from government procurement, we estimate the agricultural product i output induced by the government purchase as BRL2 * a_{ifood} . Our technical coefficient is adjusted for import percentage in output of a product i , that is, our CI_{ifood} is multiplied by the imported percentage as above, thus $\tilde{a}_{ifood} = CI_{ifood} (1 - m_i) / Y_{ifood}$.

$$DIGP = \sum_i \tilde{a}_{ifood} DDGP_{ifood} \quad (3)$$

where $DDGP_{ifood}$ is the direct domestic government procurement of food industry output, namely, the result of equation (2) when restricted to food products (i.e., goods classified as 0301xx).



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