



## School Feeding Logistics in Brazil: Intersections between Social Policies and Education and Food Safety

*The Logistics of School Feeding in Brazil: Intersections between Social Policies, Education and Food Security*

Carlos Aragon Vasconcelos

Fabrcia Cayres Vasconcelos - Architecture and Urban Planning, State University of Goias.

### Summary

School meals in Brazil play a fundamental role in the integration of public policies on education, food security and social inclusion. The National School Meals Program (PNAE) is one of the main pillars of this policy, benefiting millions of students in the public school system. Despite this, little is discussed about the complex logistics involved in providing school meals, which include stages such as purchasing, transporting, storing and preparing food. This structure, often invisible, is essential to the success of school meal policies.

**Keywords:** School meals, Public policies, Food logistics

### Abstract

School feeding in Brazil plays a fundamental role in the integration of public policies on education, food security and social inclusion. The National School Feeding Program (PNAE) is one of the main pillars of this policy, benefiting millions of students from the public network.

Despite this, little is discussed about the complex logistics involved in the supply of snacks, which includes steps such as acquisition, transportation, storage and preparation of food. This structure, often invisible, is essential for the success of food policy in schools.

**Keywords:** School feeding, public policies, food logistics

### Introduction

School meals in Brazil play a central role in the articulation between public policies focused on education, food security and social inclusion. Programs such as PNAE (Program National School Feeding Program) constitutes one of the pillars of Brazilian social policy, serving millions of students in public schools. However, little is discussed about the complex logistical mechanism that supports the daily supply of snacks, from acquisition to distribution, including transportation, storage and preparation. This structure, invisible to the eyes of the majority, it is crucial for the success of food policy in the school context. In this article, we will discuss how the areas of logistics, nutrition, social assistance and education are intertwined in the construction of an efficient and fair school feeding system. The interdependence between these areas is fundamental, especially in the face of inequalities regional and access difficulties in rural, indigenous and peripheral areas. The school lunch school, therefore, goes beyond the dish served: it involves strategic planning, infrastructure and qualified management.

The approach adopted in this study is interdisciplinary and is based on data from institutions such as FNDE, IBGE, Fiocruz and international organizations such as FAO and PAHO. They are analyzed empirical evidence from research carried out up to 2022, respecting credibility criteria scientific and up-to-date information. Furthermore, the importance of logistics is highlighted as critical link between public policy and its concrete implementation in schools.

While the effects of school meals on student performance and health are already widely recognized (IPEA, 2017; PAHO, 2020), the logistical steps that make the arrival of food at the table still receives little attention. Problems such as delays in delivery, poor food preservation and lack of infrastructure significantly undermine the right to adequate nutrition.

This article therefore proposes to understand the logistics of school meals as a dimension strategic of broader social policies, being decisive for the promotion of equity education, social inclusion and the fight against hunger. The articulation between sectors and spheres of government, as well as between civil society and local farmers, is presented as a condition indispensable for the success and expansion of these policies.

With this, we seek to demonstrate that ensuring quality school meals is not just a task of cooks and nutritionists, but also a challenge for public managers, professionals logistics and social planners. Understanding this interconnected system is essential to improve public policies and address food inequalities in a structured manner

in the country.

## 1. School Feeding and Social Rights: a historical and legal overview

School meals in Brazil are legally recognized as a social right, integrated the right to education and health. This perspective gained strength with the Federal Constitution of 1988, which established food as a duty of the State, especially in the context of protection of children. Law No. 11,947/2009 consolidated this vision, regulating the provision mandatory school meals in public schools and creating guidelines for its implementation, prioritizing nutritional quality and the appreciation of family farming.

Historically, the provision of school meals emerged as a response to contexts of hunger and exclusion, being institutionalized in the 1950s through the School Lunch Campaign.

Over time, policy has evolved to address not only the caloric value of foods, but also its quality and regularity. The inclusion of the responsible nutritionist, the requirement of balanced menus and prioritizing local products represent significant advances in tackling food insecurity among children.



The recognition of school meals as part of the right to education is defended by international organizations. FAO (2021), for example, reinforces that food policies school are essential to guarantee access, permanence and learning of students, especially in regions marked by poverty and inequality. The school lunch works, therefore, as an incentive to school attendance, but also as a safeguard against hunger and its consequences on children's cognitive and physical development.

In Brazil, the data reflects this reality: according to FNDE (2020), more than 40 million basic education students benefited from the PNAE, and for a portion of them significant, school lunch represents the main meal of the day. This dependence reveals not only the success of the policy, but also the serious situation of food insecurity that still persists in the country.

Therefore, understanding school meals as a right implies viewing it as a commitment of State, whose execution requires more than political good will.

It requires planning, adequate financing, infrastructure and efficient coordination between different areas. This is where logistics becomes a key element to ensure that the right declared by law is realized in the daily life of schools.

School meals are, therefore, a concrete expression of social policy in action. It is a tool to ensure social justice and combat the multiple forms of exclusion that still affect millions of Brazilian children. Recognition of this multidimensional character is essential to guide its management and expansion in the coming years.

## 2. The invisible gear: the logistics of school meals

The logistics of school meals is one of the most strategic and, at the same time, most important aspects neglected in the structuring of public nutrition and education policies. It includes from planning food demand to transporting, storing and distributing food food in schools. It also involves managing contracts with suppliers, complying deadlines and monitoring the quality and quantity of products delivered.

It is, therefore, a large-scale operation that requires technical organization, investment in infrastructure and team qualification.

According to the National Fund for Education Development (FNDE, 2020), school meals move thousands of tons of food across the country every year national territory, with specific challenges in each region. Geographical distances, precarious roads, the seasonality of agricultural production and the lack of warehouses refrigerated are just some of the obstacles faced. In rural areas and communities



indigenous people, for example, logistics depends on adapted solutions, such as river transport or alternative routes in unpaved areas.

A study by the State University of Campinas (UNICAMP, 2021) showed that failures in school feeding logistics chain are directly associated with the interruption of the supply of school meals in several public networks. The survey, carried out in municipalities in the North and Northeast, revealed that around 28% of schools faced some type of interruption in last five years, often due to delays in the delivery of inputs or lack of suitable conditions for the storage of perishable products.

Logistical complexity increases when we consider the legal requirement that at least 30% of food purchased with PNAE resources must come from family farming.

Despite promoting the local economy and ensuring fresher food, this guideline requires detailed planning. It is necessary to coordinate producers, cooperatives and city halls, to ensure the transporting production to distribution centers and ensuring that food reaches the schools within the deadline and in suitable conditions for consumption.

Additionally, it is necessary to consider the climatic and structural factors that impact directly to logistics. In times of heavy rain, for example, transportation can be interrupted for days in certain regions. In peripheral urban areas, traffic and lack of paved roads makes it difficult to deliver food. Given this, many food networks education resort to outsourcing transportation or creating regional distribution centers, but such solutions require resources and long-term planning.

Therefore, the logistics of school meals is not a mere operational detail, but a factor decisive for the effectiveness of public policy. Investing in the professionalization of processes logistics, in the modernization of fleets and in the digitalization of the supply chain is essential to ensure that quality food arrives regularly and safely at hands of those who need it most: students in the public education system.

### **3. Education and nutrition: integrated impacts on school performance**

The relationship between adequate nutrition and academic performance is solid and widely documented by national and international studies. Well-fed children have a greater capacity to concentration, better cognitive development, more resistance to diseases and, consequently, better academic performance. In the context of Brazilian public schools, where many students live in a situation of food insecurity, school meals become unavailable just a complement, but a fundamental condition for the learning process.

Studies conducted by the Oswaldo Cruz Foundation (Fiocruz, 2019) indicate that deficits

nutritional disorders during childhood and adolescence compromise essential brain functions, such as memory and attention, as well as affecting physical growth. Poor nutrition, especially in critical periods of development, can cause irreversible delays, making it difficult to performance in school activities and the socialization of students. Therefore, ensuring balanced and regular nutrition is as important as the supply of materials pedagogical.

Furthermore, a report published by the Institute of Applied Economic Research (IPEA, 2017) revealed that, in municipalities where school meals are continuous and diversified, the rates of dropout and grade repetition rates are significantly lower. School attendance increases by function of providing daily meals, especially in vulnerable communities, where school lunch represents the main incentive for children to attend school. In this sense, the food serves as a bridge between the right to education and the right to food.

The Pan American Health Organization (PAHO, 2020) reinforces that health promotion through school environment is an efficient strategy to reduce inequalities and promote sustainable development. School meals are one of the most effective instruments of this policy, by combining access to nutrition with food education. Programs that articulate healthy menus with pedagogical practices, such as school gardens and cooking workshops, show promising results in the formation of more conscious eating habits among students.

Another relevant aspect is the role of school meals in social inclusion. Children with disabilities, for example, often depend on specific diets, which need to be planned and adapted with guidance from nutritionists. The absence of this personalization can lead to food exclusion and, consequently, to exclusion from the school environment. Therefore, An effective food policy must provide for nutritional flexibility and attention to food diversity. audiences served.

Finally, it is important to highlight that school meals do not replace the role of families, but complements in contexts where poverty prevents regular access to quality food.

In this sense, the State acts as a guarantor of an essential right, strengthening the retention and academic success of millions of students. The intersection of nutrition and education cannot be ignored if the goal is to promote social justice and expand opportunities for new generations

#### **4. Regional inequality and the challenge of food distribution**

Brazil is a country of continental dimensions, with marked regional disparities in terms of

infrastructure, access to public services and socioeconomic indicators. These inequalities are directly reflected in the logistics of distributing school meals, making the process of ensuring quality food is an even greater challenge in more remote areas or economically disadvantaged. The disparity in the provision of school meals, both in quality and on a regular basis, reinforces the cycles of social and educational exclusion that the country faces historically.

According to the Brazilian Institute of Geography and Statistics (IBGE, 2020), municipalities in the regions The North and Northeast face the greatest logistical obstacles. In many of these locations, delivery of school meals depend on river transport or dirt roads that become impassable in rainy seasons. This situation affects not only the school calendar, but also the quality of the food received, which often arrives spoiled or in insufficient quantity lower than that provided for in the contracts.

In contrast, states in the Southeast and South, with higher population density, road network structured and greater budgetary resources, they can maintain more efficient logistics and continuous. This structural inequality compromises the principle of equity that should guide national public policies. Children living in hard-to-reach areas, indigenous or quilombolas, for example, often have their food and educational rights violated due to management failures and lack of investment.

A survey carried out by the Institute of Socioeconomic Studies (INESC, 2019) indicated that around 60% of small municipalities face difficulties in hiring local suppliers, properly store food and maintain a distribution chain efficient. The lack of distribution centers, refrigerated vehicles and trained teams This situation is further aggravated. In some cases, school meals are limited to items industrialized or ultra-processed foods, to the detriment of fresh and nutritious foods. Furthermore, the decentralized management of the National School Feeding Program (PNAE), although positive in allowing local adaptations, it also has limitations. Municipalities with little administrative capacity, they face difficulties in preparing notices, monitoring bids and monitor compliance with contracts. This leaves room for delays, fraud and discontinuity in the provision of meals, directly harming the most disadvantaged students vulnerable.

Overcoming these obstacles requires not only financial investment, but also cooperation between spheres of government and technical support to local administrations. Projects of technical assistance, intermunicipal consortia and partnerships with universities and organizations civil society have shown viable ways to improve logistical efficiency in regions needy. The challenge of food distribution in Brazil, therefore, is not just a question



technical, but deeply political and social.

Recognizing and addressing regional inequality in school meal logistics is a condition essential for the right to food to be realized equally throughout the territory national. No child should be penalized for living in a remote or impoverished region. The school, as a space for guaranteeing rights, needs to be prepared to serve everyone, with equity, dignity and respect for territorial and cultural differences.

## 5. Family farming and sustainability in school meals

The inclusion of family farming in the school lunch supply chain is one of the more innovative and socially relevant guidelines of the National Food Program School (PNAE). Since the publication of Law No. 11,947/2009, it has become mandatory that at least 30% of the resources transferred by FNDE for school meals are used in the acquisition direct access to food produced by family farmers. This measure aims to promote local development, guarantee fresh food and value sustainable production. The impact of this policy is twofold: while it improves the quality of school meals, served in schools, generates income and social inclusion for thousands of small producers. From according to the National Supply Company (CONAB, 2021), more than 150 thousand family farmers benefited annually from supply contracts for the PNAE until 2022. In regions such as the semi-arid northeast, this partnership between school and agriculture family has been fundamental to ensuring economic survival and reducing rural migration. Furthermore, local production facilitates logistics and reduces transportation costs and storage, which contributes to the environmental and financial sustainability of the program. Food purchased locally reaches schools more quickly, with lower emissions of polluting gases and less waste. This short supply circuit logic strengthens the local economy and contributes to the fight against hunger in a structural way, respecting the biome, regional food culture and the traditional knowledge of producers. However, there are significant challenges in fully implementing this guideline. Many farmers family members face difficulties in fulfilling bureaucratic requirements, such as issuing invoices tax, product standardization and formalization of cooperatives. According to a study by Federal University of Viçosa (UFV, 2020), 47% of the farmers interviewed who had already provided food to schools reported obstacles to maintaining regular contracts, especially due to lack of technical assistance and management training. Another limiting factor is the regional inequality of access to the institutional market. While states such as Paraná, Minas Gerais and Rio Grande do Sul show high

family farming purchase rate for the PNAE, poorer and more remote regions still depend on external suppliers. The lack of policies to promote agricultural production in small scale in these areas limits the program's potential to transform local realities and democratize access to the public market.

Therefore, the link between school meals and family farming needs to be strengthened by integrated public policies, involving rural credit, technical assistance, infrastructure production flow and ongoing training of producers. The sustainability of the system of school meals necessarily involve valuing family farming as a link strategic link between food security, territorial development and social justice.

## 6. Conclusion

School meals in Brazil, far from being an isolated action within the daily lives of educational institutions, it is a central strategy in the articulation between public policies of education, nutrition, social development, sustainability and combating inequalities. The school meals, especially in the context of social vulnerability in which part of the population lives. significant part of the Brazilian student population, it often becomes the main or only access daily to a balanced diet, functioning as a true pillar of maintenance school attendance and cognitive development.

As demonstrated, the regular and quality provision of school meals requires a lot of more than political will: it involves complex logistical processes, articulation intergovernmental, investment in infrastructure, qualification of professionals, planning nutritional and, above all, social sensitivity. The challenges are multiple and are accentuated in regions poorer and more remote areas, where structural deficiencies deepen the difficulties of operationalization of public policies. Regional inequality, therefore, needs to be addressed with priority for the right to food and education to be effectively universal.

Furthermore, the positive impacts of school meals on academic performance and retention of students in schools are supported by extensive scientific literature. Students Well-fed people learn more, are absent less, interact better and develop in a more fuller. These data reinforce that school meals are not a side benefit, but an essential right, with a direct influence on literacy rates, performance in national assessments and school completion rates.

Another fundamental axis of the school feeding policy is integration with agriculture family-run, which combines food security with the appreciation of the local economy and sustainability environmental. This connection strengthens regional production, reduces the environmental impacts of



long-distance transportation and creates a virtuous cycle of development. However, in order for this model reaches its full potential, it is necessary to overcome bureaucratic and logistical barriers, in addition to expanding technical and financial support to small producers. School meals, therefore, must be thought of in a systemic way, as part of an ecosystem of interdependent public policies. It is necessary to understand that the dish served in schools is the result of a chain of decisions and actions involving health, education, economy, infrastructure and social justice. Investing in school meals is investing in the future of country, in equal opportunities and in the formation of healthier, more critical and conscious.

In short, guaranteeing the right to food in Brazilian public schools requires commitment continuous, intersectoral policies and a close look at the inequalities that still mark access to education and nutrition in the country. School meals are not just food. They are dignity, they are politics public, is an instrument of profound social transformation.

## References

- BRAZIL. National Fund for Education Development (FNDE). *PNAE Implementation Report*. Brasília, 2020.
- CONAB – National Supply Company. *Bulletin of Family Farming in the PNAE*. Brasília, 2021.
- FIOCRUZ – Oswaldo Cruz Foundation. *Study on Child Nutrition and School Performance*. Rio de Janeiro, 2019.
- IBGE – Brazilian Institute of Geography and Statistics. *National Sample Survey Continuous Households*. Rio de Janeiro, 2020.
- INESC – Institute of Socioeconomic Studies. *Mapping of School Feeding in Brazilian Municipalities*. Brasília, 2019.
- IPEA – Institute of Applied Economic Research. *School meals and combating dropouts in public networks*. Brasília, 2017.
- PAHO – Pan American Health Organization. *Good practices in health promotion in school environment*. Washington, 2020.
- UFV – Federal University of Viçosa. *Challenges of Family Farming in the PNAE*. Viçosa, 2020.
- UNICAMP – State University of Campinas. *Logistical Diagnosis of School Meals*. Campinas, 2021.