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“Utilize Local Products for Feeding School Program to Improve the Income of Farmers in Lautem Municipality”

By

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ABSTRACT

This study aim to analysed Utilizing Local Products in the School Meal Program (FSP) to Improve Farmers' Economy in Lautem Municipality. The research involved various stakeholders, including school directors and local suppliers. Findings revealed many farmers produce agricultural products but lack access to the school meal program. Issues like distance, poor road conditions, and limited market access hinder their ability to sell.

The findings highlight responses from members of agricultural groups and partners in the PROSPEK initiative and show the result that most farmers produce agricultural products, with the following percentages: 66% for beans, 48% for vegetables and tubers, 59% for maize, 37% for aquaculture, 60% for local livestock, and 36% for pigs, while 27% focus on goat production. Many farmers are capable of producing a variety of products (not limited to just one type). Farmers sell their products weekly or based on the harvest season. Farmers have the capacity to produce more, but they face difficulties accessing markets due to long distances or poor road conditions, along with limited local buyers. Many roads are only accessible during the dry season. Improving roads and market access could enhance their opportunities to sell their products. Farmers also want access to market information and storage facilities or extension services. Government programs can also purchase their products; however, many farmers still lack access.



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INTRODUCTION

The Government of Timor-Leste has been implementing the National School Feeding Program (FSP) across all municipalities in Timor-Leste since 2012. This program is a continuation of the initiative that began under the World Food Programme (WFP) from 2005 to 2012. In 2017, the implementation of the School Feeding Program continued but faced ongoing delays due to budget approval from the National Parliament and bureaucratic challenges, including the political impasse that Timor-Leste has been experiencing. These issues have significantly affected the maximum and effective implementation of the School Feeding Program (Otoni et al., 2019).

The primary objective of the FSP is to improve the nutritional outcomes for students, provide energy for them to focus on their studies, develop local economies, and engage communities in managing educational programs alongside local schools. The School Feeding Program is designed to prepare meals for basic education students during school hours when children are present. FSP utilizes a local procurement model. Each school receives a specific budget allocation (Monitoring PDHJ, 2017).

The FSP employs a local procurement model. Each school receives a budget allocation of approximately \$0.25 per student for each effective school day. Each school is responsible for encouraging local supplier groups (GFL) and allocating their budget to these groups to procure, prepare, and serve meals to students, using local products to enhance the economic impact on farmers in the Lautem Municipality. The school feeding program is implemented in all schools according to a menu based on local products; however, the availability of local products can be limited, making it challenging to provide meals in all schools (Grantham-McGregor et al., 1998). The production of local products, which is limited by farmers, indicates the impact on the implementation of the school feeding program in Lautem municipality," said a local education director. "We do not want to purchase biscuits for the students; we want to procure local products such as fish, chicken, and vegetables, along with other items.

FSP aims to fulfill the government's obligations to achieve progress related to economic, social, and cultural rights in the areas of nutrition, education, and health. Its primary goal is to enhance economic accessibility to basic education, thereby increasing enrollment and attendance while reducing school dropout rates. Thus, effective implementation relies on good governance and human rights (Trivellato et al., 2019).

The School Feeding Program is overseen by the National Directorate for School Social Action (DNASE). However, the program's implementation is managed at the local level, covering various costs, including general expenses related to equipment, transportation, and material supplies for meals, as well as local remuneration. The Ministry of Education also provides food supplies sourced from the Ministry of Commerce, Industry, and Environment (MKIA), which manages the importation and distribution of food to schools participating in the FSP (Mostert, 2021).

According to the HATUTAN Education and Nutrition Program 2019, about 96% of respondents reported that their schools procure food locally from farmers for school meals at least some of the time. During interviews, many coordinators commented that they face challenges related to the procurement of nutritious food, particularly local products in rural areas; the quantity and variety available in rural markets are limited, and access to these markets can be difficult. It is very important to note that while access to capital for

municipalities and administrative posts has seen improvements, access to rural and remote areas remains challenging, particularly during the rainy season. A principal concern is the high cost of local food, which exceeds the budget of \$0.25 per day allocated per student for each meal. Many schools request parents to contribute in kind to the school meals, as the funds are insufficient to procure products from local farmers (Chakrabarti et al., 2021).

Local Supplier Groups also mentioned that they want to procure food on that day but cannot do so because they are isolated. The budget of \$0.25 is inadequate to purchase local food, making it difficult as food in those villages is limited. For instance, flour is not always available, so they must buy from markets, but this is very challenging due to the lack of schools nearby and the food being brought from far away. Coordinators explained that schools do not have direct connections with local farmers but prefer to procure from markets. They do not have consistent contact with all farmers (HATUTAN Education and Nutrition Program, 2021).

METHODOLOGY

The research questions revolve around how NGOs make decisions about participating in intensive and interactive programs, seeking technical advice, and forming partnerships with USAID/Timor-Leste for promoting good governance. Let's talk about what matters most to our community and how we can make it even better. The questions we ask will guide our organization's efforts in policy, advocacy, and technical areas, and we hope to benefit other people who are also interested in these topics.

Research Design

The PROSPEK team will focus on priority advocacy areas in specific geographic regions. These areas include key stakeholders such as the Director of Agriculture, the Director of Health, the Director of Education, the Head of the Nutrition Department, the Head of the Health Promotion and Hygiene Department, the Head of the School Feeding Program, the Area Inspector, the Director of Central Basic Education, the Director of Branch Basic Education, the Head of the Agriculture, Horticulture, and Extension Department, the APP Structure, as well as students and members of the targeted groups, which include local communities engaged in agricultural production and groups led by farmers.

Due to this focus, the research team employs purposive sampling and snowball sampling methods to identify respondents. This approach is necessary because of the limited number of potential respondents in the targeted areas and the logistical challenges involved in locating and accessing these individuals. The team also conducts follow-ups to develop data collection instruments and analyze the data (including data entry and analysis tools) while providing support during the research process (Sugiyono, 2014, 2015b, 2016, 2018).

Instruments of survey

The interview instruments are designed to engage knowledgeable informants and group members. The process begins with obtaining consent before conducting interviews, Key Informant Interviews (KII), Focus Group Discussions (FGD), and structured questionnaire interviews. These consent formats are developed by the program and research personnel from the PROSPEK organization, who act as key facilitators and receive technical assistance from USAID/Timor-Leste's Advocacy for Good Governance NGO activity.

Interview questions for knowledgeable informants are tailored to each institution to gather perspectives connected to "Utilizing Local Products in the School Feeding Program (FSP) to Improve the Income of Farmers in Lautem Municipality." The instrument is

developed based on demographic information and survey approaches that have already received feedback from the involved stakeholders.

The questions selected for the survey are informed by previous research conducted in the relevant sector and the experiences of the PROSPEK program. The team aims to obtain feedback regarding concerns related to local community production volumes, access to markets, and to provide open-ended questions to supplement and enhance understanding of the problems faced by respondents and potential solutions they prefer.

The team produces survey instruments with assistance from the activity, which includes instructions for facilitators, consent questions for respondents, and a combination of open and closed questions.

Sample

Using a mixed-methods approach, conducting surveys and interviews with Key Informants, KII, and FGDs, as well as utilizing questionnaires to interview the APP President, local supplier groups, and EBF and EBC students. The consent format is used during the data collection process to gather information through interviews with knowledgeable respondents. The PROSPEK team works with key informants and members of the identified targeted groups according to each Administrative Post (Sugiyono, 2005, 2015a).

For the constituent groups in the targeted sub-districts, respondents are identified based on a total of approximately 5-10 respondents per EBC and EBF school in each targeted sub-district. PROSPEK collaborates with municipal administration and administrative posts to carry out the interview process. At the school level, PROSPEK conducts interviews at EBC and EBF schools in six Administrative Posts (Lospalos, Iore, Iliomar, Tutuala, Lautem, and Luro).

The NGO PROSPEK defines its constituents and knowledgeable informants for interviews and group discussion forums. Attached is a list detailing the total respondents, totaling one hundred thirty-nine (139), all from newly formed cooperative groups. Including purposive sampling directly from these members, PROSPEK's targeted sample measure identifies 139 respondents (this number can also be used in focus group discussions).

Data Collection

The team received training and accompanied by the team activities to gain knowledge about the methods and processes of facilitating Focus Group Discussions (FGD) and Key Informant Interviews (KII). In this regard, PROSPEK used advocacy staff as key facilitators and identified PROSPEK staff from different programs and government representatives to act as enumerators in the data collection process according to the FGD and KII methods. The FGD process involved constituent groups, and PROSPEK utilized staff members fluent in local languages (Fataluku and Makasae) to support the FGD process within target groups to facilitate the data collection process, led by key facilitators and co-facilitators. The KII and FGD processes took place in October 2024 and were conducted in the following regions: Administrative Post of Lospalos, Lore, Iliomar, Tutuala Lautem, and Luro. The data collection process was primarily the responsibility of the key facilitators and co-facilitators, who performed verification of the data collected.

Facilitators employed various techniques to gather information through the FGD and KII methods:

- Conducted interviews with knowledgeable informants using a prepared set of questions tailored to the specific institution and the position of the informant.

- Ensured gender equity in data collection, considering both female and male respondents.
- Conducted activities in secure locations while collecting information through the FGD process, including interviews with teachers, the President of the APP from EBC and EBF schools, and local supplier groups from EBC and EBF schools, creating small groups at different times based on the assigned schedule for each group.

Choosing the right instruments, locations, and timings for data collection ensured optimal accessibility. For example, interviews were conducted at times that did not conflict with the working hours of the respondents and children's school hours, including both female and male interviewers. It was ensured that the demographic section was disaggregated by gender.

Data Analysis

Responses and comments from participants were processed through systematic and verifiable methods. Recordings from the FGDs were transcribed completely or edited to define key themes and compile principal quotes. Notes taken during the FGDs included contributions from all participants as appropriate. Comments or suggestions made by participants were documented within the group. Identification of participants was based on principal criteria such as their role, age, and gender, in alignment with the themes and main responses highlighted.

Content analysis was conducted manually or using Excel. Common categories or themes were derived from this analysis based on participant groups and the original research team. Categories that emerged frequently were documented.

The analysis process defined the title of categories and subcategories. These titles were discussed in narratives that included principal situations. The objective was to summarize and explain the differences and similarities between groups. For example, Excel codes could be used, along with manual coding and synthesized results.

The final report presented in a narrative format included an executive summary, background, methods used, principal results, conclusions, and recommendations.

Limitations

- Interpretation and understanding of the questions: Enumerators received training to assess whether respondents understood the questions and could define key terms. Although we are confident that many participants comprehended the survey well, there remains some uncertainty regarding the data.
- Respondents comprised six categories: Municipal Leadership, Department Heads and School Directors, EBF Coordinators, APP Presidents, Local Supplier Groups, and Community Representatives from each school, along with student representatives from each school.
- Minimal engagement in data recording by field personnel requires verification of the recorded data from the collected field recordings.
- Target respondents included APP presidents, teacher representatives, and community groups, which may not accurately reflect the total from each school.
- The Prospek team covered five Administrative Posts (Lospalos, Iliomar, Tutuala, Lautem, and Luro), with the exception of Lore, where the research was not conducted due to resource constraints.

- The team utilized new methodologies for the information collection process in the field and needed to adapt to processes such as KII and FGD.

RESULT AND ANALYSIS

In the realm of agricultural policy and community nutrition, the interplay between local farmers and feeding school programs has garnered increasing attention. Lautem Municipality, known for its rich agricultural potential, presents a unique case for exploring the implementation of FSP (Feeding School Programs) policies that support local products. This article delves into three critical areas: the execution of FSP policies to utilize local agricultural products, the impact of feeding school programs on farmers' income and agricultural production, and the identification of challenges and opportunities for farmers within this framework.

Implementing FSP Policies for Sustainable Food in Lautem Municipality Through Enhancing Local Agriculture

The Director of the Ministry of Education in Lautem Municipality reports that the IX government policy has issued decree law 61/2023, which grants the Municipal Authority President the competency to manage the School Meal Program. This signifies that the program will be implemented and managed directly by local government, representing a positive step toward managing the budget at the municipal level.

The Director further emphasizes that the implementation of the Feeding School Program (FSP) specifically focuses on daily menus, which utilize local agricultural products grown by farmers in the region. Such products include Flower, vegetable, meat, maize, Cassava, petatos, rice, eggs, and others. The objective of this policy is to enhance local food production and also contribute to increasing the income of local farmers.

However, the Director reaffirms that the sufficiency of food production depends on whether farmers in Lautem Municipality can produce enough. This implies that there is a need to enhance local food production in Lautem Municipality to meet FSP requirements without relying on external suppliers.

To address the issue of insufficient local food production, the Director of Agriculture for Lautem Municipality explains that there is already a plan in place regarding how the FSP budget can circulate within the municipality. The plan will involve strengthening farmer groups in the municipality, including those in local post offices and villages. There is also a need to open tender processes for companies that can collect products from farmer groups and distribute them to schools. A team will be formed to conduct outreach to farmer groups to prevent them from abandoning their farmland, while also encouraging agricultural activities to produce products locally.

The Director of EBC Lautem clarifies that the FSP menus are sourced from local products produced by farmers, such as modo tahan, aifuan, na'an, batar, and fos. The Director always advises the Local Supplier Group (GFL) to source local products in Lautem Municipality. However, the main issue is the high prices in Lautem's market compared to the Municipality of Baucau, where most products from Baucau are sold in Lautem. This indicates that agricultural production in Lautem Municipality is lower, hence the need for policies that can enhance production in Lautem.

To resolve the issue of low production in Lautem Municipality, the Head of the Extension Department reports that there is little food production since many communities abandon their agricultural potential and do not engage in activities. There is a plan to socialize

communities to prevent them from leaving their land, but it is essential to conduct agricultural activities to produce food.

Additionally, information from the Head of the Agriculture Department indicates that it is necessary to improve existing farmer groups so that they can provide products to the FSP. There is also a need to establish regulations to facilitate local suppliers in sourcing products from local farmers. Furthermore, collaboration is needed among the ministries of Education, Agriculture, Health, and Food Security to support local farmers.

From the information provided, it is noted that low agricultural production is a significant problem, necessitating resolution to ensure food security while also meeting community needs without dependence on imported products.

Regarding hygiene and nutrition, the Director of Health in Lautem Municipality states that the chief of the nutrition health department is responsible for managing and coordinating with ministerial lines to ensure the FSP runs effectively, guaranteeing that the food is nutritious and hygienic. Monitoring activities depend on the plans set out by the ministerial teams.

Moreover, the National Directorate for School Social Action (DNASE) controls the FSP implementation, stating that they have a complete plan to monitor each school. The team works in collaboration with various ministries, including Health, Education, Food Security, and municipal administration. They report that transportation issues and poor road conditions are obstacles, and thus, the monitoring team is not fully complete, resulting in insufficient monitoring volumes.

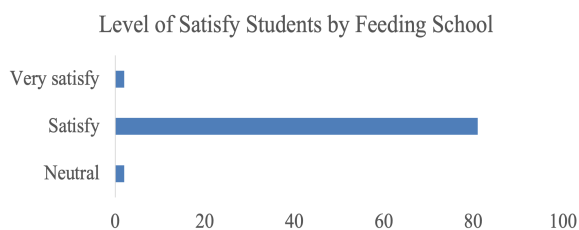
Parents and the Local Supplier Group (GFL) assert that DNASE needs to conduct routine monitoring of FSP implementation to observe menu compliance with standards and to learn about the facilities that schools face, such as inadequate kitchens, poorly equipped dining rooms, and difficulties in other areas. Additionally, there are questions about how to address bureaucratic delays in managing FSP budgets, as delays in budget execution for the FSP hinder implementation. They also need to assess the conditions affecting the quality of FSP and to execute budgets according to set standards while reducing bureaucratic obstacles.

The Director of EBC Lautem emphasizes that the FSP aims to provide opportunities for students and parents to learn about good nutrition, particularly regarding food variety. However, suppliers must comply with nutritional standards.

The Lautem Education Ministry Director also clarifies that school meals should prioritize local products, ensuring that local currency circulates within the local economy surrounding the schools in Lautem Municipality. However, local farmers will miss opportunities when schools purchase large quantities from kiosks or shops instead of sourcing fresh products from local agricultural factories.

Parents also express concerns about the lack of clear information regarding the school meal program and the need for better communication to be part of the solution with active involvement to improve FSP quality. There are also opportunities to strengthen collaboration between parents and school staff to enhance infrastructure in schools, paying attention to sanitation, water supply, and food preparation areas. Nevertheless, strong relationships between parents and schools must be mutually responsible, as many parents state that the services provided by schools do not meet their expectations.

Beneficiary satisfaction rights 'Student, Parent and Community' regarding the implementation of FSP



School feeding programs (SFPs) have shown positive impacts on various educational and socioeconomic outcomes. Studies indicate that SFPs can increase student enrollment and attendance, particularly for girls. These programs also have the potential to improve nutritional status, though effects on health outcomes are mixed. SFPs can contribute to local economic development by involving community producers in food supply chains. This approach can strengthen local microeconomies and increase income levels for residents. However, challenges such as parental attitudes, lack of resources, and infrastructure issues can affect program effectiveness. While SFPs show promise in addressing multiple development goals, more research is needed to assess their cost-effectiveness and potential linkages with agricultural development. Overall, SFPs appear to be valuable tools for improving educational outcomes and supporting local communities in developing countries.

According to the respondents' reports from student representatives in each school, the majority of students are satisfied with the school feeding program, with approximately 80% expressing approval of the initiative provided by the Ministry of Education. This program allows students to receive school meals every day from Monday to Friday, with no meals served on Saturday.

The situation indicates that the school feeding program can positively impact the performance of local farmers in the Lautem Municipality. When the local government establishes an adequate and proper control system, it can effectively monitor the quantity and quality of production, as well as the marketing processes, ensuring that everyone has access from village to municipal levels. This, in turn, can promote and strengthen community groups' interests in enhancing production and boosting economic performance within the Lautem Municipality.

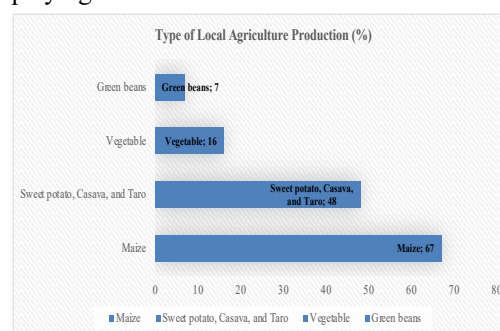
Additionally, students from EBF Luro expressed concerns regarding food as well, citing that their school does not provide enough food. The students reported that they often receive meals late, making it difficult for them. Consequently, students' parents also recommend that the school feeding program should be transparent and require an open tender process for GFL in each school. This way, the GFLs will take responsibility for the entire school feeding process. They also requested that the right to choose should not be determined by the school or the local authorities, as this could negatively affect the quality of the school feeding program.

Types of agricultural farming production provide FSP in Municipality Level

Livestock production in Timor-Leste is primarily subsistence-based, with smallholder farmers raising animals for food, income, and cultural purposes. The country's livestock sector encompasses various species, including poultry, goats, cattle, pigs, and fish. The Ministry of Agriculture and Fisheries (MAF, 2021) reports that

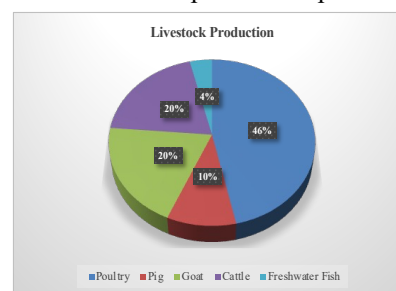
livestock farming is integral to rural livelihoods, with over 60% of households involved in some form of animal husbandry.

Lautem Municipality, located in the eastern part of East Timor (Timor-Leste), is characterized by its diverse agricultural practices and varying types of livestock production. The region's livestock sector plays a vital role in the livelihood of its inhabitants, contributing to food security, income generation, and cultural practices. This report aims to provide a comprehensive analysis of the types of livestock production in Lautem Municipality, focusing on the prevalence of local chicken, goats, cattle, pigs, and aquaculture. The analysis will incorporate relevant data, statistics, and contextual background to provide actionable recommendations for enhancing livestock production in the region. According to the National Directorate of Statistics (NDS, 2022), agriculture accounts for about 24% of the country's GDP, with livestock production playing a crucial role in this sector.



Research on agriculture in Timor-Leste reveals a diverse landscape of farming practices and challenges. Subsistence agriculture is prevalent, with households relying on staple crops, livestock, and poultry for food and income. The country's varied topography supports different agricultural livelihoods, from coffee-covered mountains to lowland rice cultivation. Common crops include rice, maize, cassava, and vegetables, while livestock farming is also significant. However, agricultural productivity remains low, with farmers facing issues such as pests, soil fertility, and limited market access. The sustainability of small-scale farms is a concern, with environmental practices scoring particularly low. To improve food security and attract investment, there is a need for agricultural modernization, including the use of high-quality seeds and better farm management techniques.

Generally, the research team found from the respondents that agriculture in Lautem focuses primarily on staple crops (such as rice and tubers), livestock, and poultry, which they consider as primary sources (still important) or processes for other products, especially for local consumption. The specific results are as follows.



Lautem, a region in East Timor, has a diverse agricultural sector with livestock production playing a significant role in the local economy. This report analyzes the livestock production statistics of Lautem for the year 2023, focusing on the types of livestock and their respective contributions to the overall agricultural output. The report will delve

into the implications of these statistics on food security, economic development, and sustainable practices within the region.

Lautem is characterized by its unique geographical and climatic conditions, which influence agricultural practices. The economy of Lautem is predominantly agrarian, with a substantial portion of the population engaged in small-scale farming and livestock rearing. The livestock sector, in particular, is crucial for providing food, generating income, and sustaining rural livelihoods. In 2023, the livestock production in Lautem is segmented into various categories, including chicken, pigs, goats, cows, and freshwater fish.

1. Poultry Production

The production of chickens in Lautem accounts for 47% of the total livestock output. The popularity of chicken can be attributed to its versatility in cuisine, relatively low production costs, and the ability to rear them in both commercial and subsistence farming systems. The demand for chicken is expected to rise, driven by population growth and dietary shifts toward protein-rich foods.

Economic Impact: The poultry sector provides employment opportunities and contributes to the local economy. However, it is essential to ensure that biosecurity measures are in place to prevent disease outbreaks, which can significantly impact production levels.

2. Pig Production

Pigs represent 10% of the livestock production in Lautem. Though less dominant than poultry, pig farming is culturally significant in many communities within the region, often associated with traditional ceremonies and local customs.

Challenges: The pig sector faces challenges such as limited access to veterinary services and feed resources, which can hinder productivity. Initiatives to improve breeding practices and disease management are crucial for enhancing pig production in Lautem.

3. Goat Production

Goats account for 20% of the livestock production. They are well-suited to the local environment due to their adaptability to various climatic conditions and their ability to thrive on less nutritious forage. Goats are valued for their meat, milk, and hides, making them an integral part of the agricultural landscape.

Sustainability Considerations: The ability of goats to graze on marginal lands makes them a sustainable livestock option, but overgrazing can lead to land degradation if not managed properly. Implementing rotational grazing systems can help mitigate this issue.

4. Cattle Production

Cattle also represent 20% of livestock production in Lautem. Cattle farming is typically associated with larger landholdings and is often linked to dairy production as well as beef. The cattle sector can contribute significantly to the region's economy, but it requires proper management to ensure sustainability.

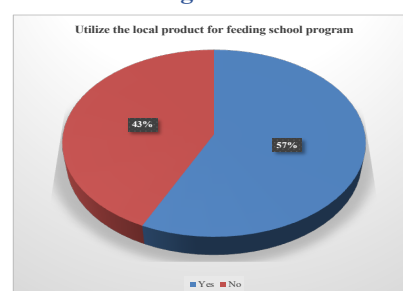
Market Opportunities: There is potential for expanding beef production and improving the quality of cattle through better breeding programs. This could enhance market competitiveness and meet growing demand within the region.

5. Freshwater Fish Production

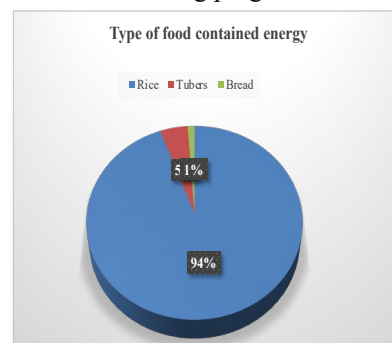
Freshwater fish constitutes 4% of the livestock production, reflecting the importance of aquaculture in Lautem. Fish farming can provide a significant source of protein and income for local communities.

Aquaculture Development: Promoting sustainable aquaculture practices can enhance fish production and support livelihoods. Investment in training programs for fish farmers can improve yield and sustainability.

Boosting Farmer Income and Agricultural Production in Lautem Through FSP

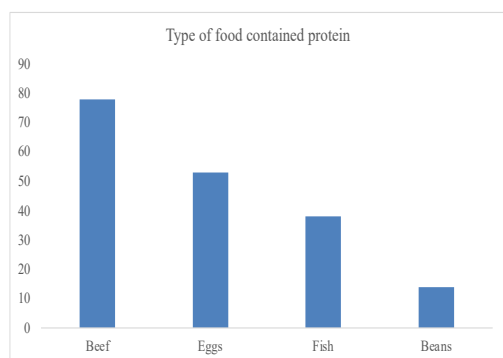


The objectives of the school feeding program focus on reducing chronic malnutrition; increasing enrollment and attendance in primary schools; strengthening local institutions to sustain the program; and seeking significant economic benefits for local communities (PDHJ 2017). According to respondents reporting from student representatives in the administrative posts of Lospalos, Iliomar, Tutuala, Lautem, and Luro, during the program, students consumed local products for the school feeding program, with a total of 57% accepting to use local food products in their schools, while 43% did not accept that they did not consume local products during the school feeding program.



According to the information gathered from Key Informant Interviews (KII) regarding food security and health, it was mentioned that the school feeding program has not maximized the use of local products based on the monitoring results already conducted in many schools. Respondents, including school directors, APP presidents, and local supplier groups, stated that their schools purchase local food from local farmers for school meals at least every other week. During the interviews, many school directors commented that they faced questions regarding the purchase of nutritious food grown locally in rural areas; the quantity and variety available in rural markets are limited, making access to larger markets difficult. It is crucial to note that even though access to capital in the municipality and administrative posts has seen improvements over the years, access to rural and remote areas remains challenging, particularly during the rainy season.

The main question is whether the cost of local food, which exceeds the budget of \$0.25 per day allocated to each student for meals, can be sustainable. Due to insufficient funds to procure products from farmers, we wish to purchase local food this day, but it is difficult because we are isolated. The allocation of \$0.25 per day is insufficient for us to procure local food, making it challenging to provide meals for students with such a large number. Thus, we have to rely on the market, which becomes quite challenging because many schools are far from the sources (the coordinators explained that schools do not buy directly from local farmers but prefer to buy from the market). We do not encounter all vendors to sell directly to schools. Therefore, we have to purchase directly from the market since we lack contact with all vendors.



According to respondents who reported from student representatives at each school in the administrative positions of Lospalos, Iliomar, Tutuala, Lautem, and Luro, students consume food that provides nutrition and protein, which is supported by the school snack program in their schools. The types of food mentioned include those with nutritional value, which consist of carbohydrates at 53%, protein from sources such as beef at 36%, and fish at 11%. Students consume a significant amount of carbohydrates, with 94% of their food intake consisting of this macronutrient. The minimum amount of protein provided is 5%, with many schools offering bread to students, containing 1% protein. The sources of protein include beef at 79%, chicken at 52%, and fish at 49%, with eggs having a contribution of 12%.



According to information obtained from Key Informant Interviews (KII) regarding food security and health, it was noted that during the school snack program, the recommended school snack menu from the Ministry of Health has not yet been used. Additionally, many educational stakeholders have produced a new menu list for the school snack program in various schools. This is due to the fact that the menu produced by the Ministry of Health for health programs cannot be effectively implemented due to ongoing difficulties, such as insufficient funding and high costs of local products. Accessing local products in their villages is challenging.

Navigating Challenges and Opportunities by Farmers' Role in Lautem's FSP's Initiatives

The results of the survey conducted by the Local Supplier Group (GFL), focused on the challenges faced by women farmers, reveal that 27% of respondents indicated pressure regarding tender processes, 23% reported high prices for local products, and another 23% reported issues with the road connections between rural areas and local markets. Additionally, 10% highlighted barriers to market access, while 10% stated that the allocation of a 0.25-cent budget per student was insufficient. Finally, 7% mentioned a lack of socialization efforts for farmer groups concerning local product sales to micro and small enterprises (FSPs).

Furthermore, feedback from Focus Group Discussions (FGDs) indicated that agricultural communities face significant challenges due to a lack of information about tenders from local companies, which are essential for FSPs. Farmers are also concerned about the road connections from remote areas to markets, as these connections hinder access to markets and the ability to supply products to schools. Additionally, members of the Local Supplier Group (GFL) expressed concerns about the inadequacy of the 0.25-cent allocation per student, given that local products are increasingly expensive. For example, a basic item may cost around 0.50 cents, while the price of one kilogram of rice is approximately \$1.00.

DISCUSSION AND FINDING

In Lautem Municipality, the implementation of the School Feeding Program (Programa Merenda Eskolar, or FSP) presents a multifaceted approach to enhancing educational outcomes while simultaneously bolstering local agricultural economies. This article explores the extent to which local government policies facilitate the use of local products in the FSP, examines the economic implications for farmers, outlines challenges faced in compliance with FSP requirements, identifies the types of agricultural products supplied, and assesses the satisfaction of beneficiaries including students and farmer groups regarding the program's implementation.

The Impact of Lautem Municipality's School Feeding Program on Farmers and Education As an Harnessing Local Resources

The Lautem Municipality School Feeding Program is designed to improve students' nutrition and educational performance by incorporating locally sourced food products into school meals. Local government policies actively encourage the procurement of these products, establishing agreements between schools and small-scale farmers. This strategy aims to promote economic inclusion and sustainability, ensuring that local agricultural produce supports the nutritional needs of students.

Through targeted initiatives, the FSP emphasizes the importance of using food produced within the community. By prioritizing local sourcing, the program not only enhances food security for students but also fosters a sense of community engagement and responsibility among local farmers. This symbiotic relationship is crucial for the program's success, as it aligns educational goals with agricultural development objectives.

Implementation FSP in Lautem

The recent developments surrounding the management of the Feeding School Program (FSP) in Lautem Municipality signify a pivotal transition towards localized governance and agricultural integration. The issuance of decree law 61/2023 empowers the Municipal Authority President to oversee the FSP, fostering a direct relationship between local governance and community needs. This strategic move aims to enhance local food production by prioritizing the procurement of agricultural products from regional farmers, thereby boosting their incomes and stimulating the local economy. This result aligns with research conducted by the Brazilian National School Feeding Program (PNAE) has implemented policies to integrate family farming with school meals, requiring at least 30% of federal funds to be used for purchasing directly from family farmers (Slater Villar et al., 2013; Machado et al., 2018). This initiative aims to improve menu variety, support local agriculture, and reduce social inequality (Turpin, 2015). A study of São Paulo municipalities found that by 2011, 47% had made local purchases at least once (Slater Villar et al., 2013). Nationwide, 78.5% of municipalities acquired food from family farms by 2018, with

regional variations (Machado et al., 2018). Factors influencing successful implementation include local governance tools, participatory democracy measures, and the presence of school feeding program councils (Duran, 2021). The program has shown potential for promoting local development through support for family farmers, considering regional agricultural vocations and food habits (Turpin, 2015). However, challenges remain in ensuring all municipalities meet the minimum required investment (Machado et al., 2018).

However, the successful implementation of this initiative is contingent upon addressing the critical challenge of insufficient agricultural output in Lautem Municipality. The Director of Agriculture has highlighted the necessity of revitalizing farmer engagement and productivity, as many communities have abandoned their agricultural practices. To counteract this trend, efforts must focus on strengthening local farmer groups, promoting agricultural activities, and ensuring that the FSP budget circulates effectively within the municipality.

Agricultural development in Timor-Leste faces significant challenges, including low productivity, limited resources, and declining farmer engagement. Lundahl & Sjöholm (2013, 2012) identify key factors contributing to low agricultural output, such as scarcity of land and capital, poor technology, and lack of government support. They propose a model to examine how market incentives could improve agricultural outcomes. Gomes et al. (2022) highlight climate change, youth disinterest in farming, and limited investment as major obstacles to sustainable agricultural development in Bobonaro Municipality. Similarly, Correia et al. (2022) report varying levels of agricultural productivity across different municipalities, with factors like education, land use, and market access influencing outcomes. Both studies note a concerning trend of young people's reduced interest in agriculture. Addressing these challenges through targeted interventions, such as strengthening farmer groups, promoting agricultural activities, and improving market access, could help revitalize the agricultural sector in Timor-Leste.

Moreover, the Director of Health emphasizes the importance of ensuring that the meals provided through the FSP are nutritious and hygienic, with effective monitoring systems in place to uphold these standards. It is crucial that collaboration among the ministries of Education, Agriculture, Health, and Food Security is enhanced to create a cohesive framework for supporting local farmers and ensuring food security within the community.

The research highlights the importance of multi-sectoral collaboration between agriculture and health sectors to improve nutrition and food security. In Ethiopia, a study revealed limited awareness of national nutrition programs and identified barriers to effective coordination, such as lack of resources and competing priorities (Girmay Ayana et al., 2017). The School Meals Planner Package in Ghana demonstrated how locally-sourced, nutritious meals could be successfully implemented in school feeding programs, reaching over 320,000 children (Fernandes et al., 2016). However, there is generally a lack of integration between agriculture and health sectors, with policies typically addressing sector-specific goals (Bos, 2006). To enhance synergies, a comprehensive policy framework is essential, focusing on strategic issues and recognizing the bidirectional nature of agriculture-health links. This framework should be implemented at national and international levels to promote effective collaboration and improve nutritional outcomes (Bos, 2006).

Despite the promise of the FSP to prioritize local agricultural products, market dynamics pose significant challenges. The disparity in prices between Lautem and neighboring municipalities, like Baucau, illustrates the need for policies aimed at increasing local agricultural production and reducing dependency on external sources. These policies should not only facilitate better market access for local farmers but also encourage sustainable farming practices that can lead to long-term food security.

Agricultural development in Timor-Leste faces significant challenges, including low productivity, poor product quality, and inadequate infrastructure (Rola-Rubzen et al., 2011). Farmers struggle with limited access to inputs, poor farm management practices, and insufficient storage and transportation facilities (Rola-Rubzen et al., 2011). The agricultural sector, which employs about 80% of the working population, requires substantial investment to stimulate economic growth (Costa & Piggin, 2004). Key crops with potential for development include coffee, vegetables, and rice (Correia et al., 2023). To improve agricultural output and farmer incomes, interventions should focus on modernizing production methods, enhancing market access, and providing extension services (Correia et al., 2023; Costa & Piggin, 2004). Additionally, addressing land and capital scarcity, improving technology and education, and increasing off-farm earning opportunities could contribute to raising living standards for rural households (Lundahl & Sjöholm, 2013). A comprehensive approach addressing these challenges is crucial for sustainable agricultural development in Timor-Leste.

Furthermore, the concerns raised by parents regarding the clarity of information and communication about the FSP highlight the need for transparent engagement strategies. Strengthening the relationship between parents and schools is essential for fostering a collaborative environment that supports the infrastructure and operational needs of the FSP.

Research highlights the importance of effective communication and engagement strategies between schools and parents, particularly for children with special needs or during transition periods. Parents often feel alienated due to poor communication, citing issues such as formal language, lack of prompt responses, and inconvenient meeting times (Davies et al., 2023). For parents of children with autism, concerns about staff competence and information distribution affect their engagement (Stokes & Macfarlane, 2011). While schools adopt various engagement strategies, their effectiveness varies, with parents of color reporting lower perceived helpfulness (Chang et al., 2022). Top-rated strategies include making time for parents' questions and clear communication. In healthcare settings, a "top-down, bottom-up" approach involving various stakeholders can improve communication and collaboration (Lei et al., 2014). These findings underscore the need for transparent, inclusive, and culturally sensitive engagement strategies to foster strong parent-school relationships and support children's educational needs.

In light of these findings, further research is recommended to explore effective agricultural practices that can be adopted by local farmers, as well as the development of comprehensive communication strategies that can enhance stakeholder involvement in the FSP. Additionally, addressing logistical challenges, such as transportation and road conditions, will be vital for successful implementation and monitoring of the program.

Recent studies highlight the importance of effective communication and stakeholder involvement in agricultural development. Farmer-to-farmer communication networks play a crucial role in knowledge

sharing and adoption of sustainable practices, though challenges like limited technology access and funding persist (Adamaagashi Izuchukwu et al., 2023). Multi-stakeholder linkages for innovative agricultural development (MSLIAD) initiatives can address community challenges, but face coordination issues and resource wastage (Justus et al., 2013). Stakeholder communication in participatory development planning is influenced by local characteristics and aspirations, with a need for improved interaction with regional government organizations (Adhi Iman Sulaiman et al., 2023). While participatory communication approaches are recognized as valuable for improving rural livelihoods, implementation challenges remain, including insufficient interaction between farmers and development agents, and predominantly top-down communication from higher-level experts (Hailemeskel Zewedie Gebeyehu & Yohannes Shiferaw Jira, 2023). These findings underscore the need for enhanced stakeholder engagement and improved communication strategies in agricultural development initiatives.

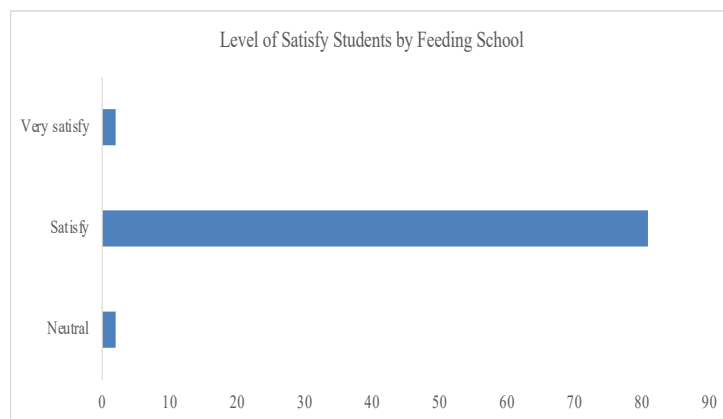
Ultimately, the transition to a locally-managed School Meal Program presents a significant opportunity for Lautem Municipality to enhance food security, support local agriculture, and improve the nutritional health of its students. By prioritizing local production and fostering a collaborative approach among various stakeholders, Lautem can lay the groundwork for a sustainable and self-sufficient food system that benefits both the community and its agricultural producers.

This result align with statement provided by Feeding school programs (SMPs) offer significant opportunities to enhance food security, support local agriculture, and improve student nutrition. In Brazil, regionalizing school meals based on local agri-food systems has shown positive impacts on student access to healthy meals and local agricultural development (Joele, 2023). Similarly, in the Pacific Islands, integrating local and traditional foods into school meals can support food security, local livelihoods, and food literacy (Burkhart, 2024). However, challenges exist, including the preference for ultra-processed foods due to modernization and colonization of food systems (Burkhart, 2024). In Ghana, the School Meals Planner Package was successfully implemented to design nutritious, locally-sourced menus for over 320,000 children (Fernandes et al., 2016). This tool, along with behavior change communication campaigns, helped promote healthy diets and strengthen links between schools and local agriculture (Fernandes et al., 2016). These experiences demonstrate the potential of SMPs to foster sustainable food systems and improve community well-being.

Assessing Satisfaction Lautem's Students and Farmers Reaping the Benefits of the FSP Initiative

Assessing the satisfaction of beneficiaries students and farmer groups regarding the FSP is crucial for understanding the program's effectiveness. Preliminary surveys indicate that students generally express satisfaction with the quality and variety of meals provided through the FSP. The incorporation of local foods not only enhances their nutritional intake but also fosters a greater appreciation for local produce among the younger generation.

Farmer groups, on the other hand, report mixed feelings regarding their participation in the FSP. While many acknowledge the economic benefits derived from consistent contracts with schools, some express concerns about the challenges faced in meeting program standards. Addressing these challenges through targeted support and resources can enhance farmers' experiences and further improve their satisfaction with the FSP.



School feeding programs (SFPs) have demonstrated beneficial effects on various educational and socioeconomic aspects. Research suggests that SFPs can enhance student enrollment and attendance, especially among girls. These initiatives also hold the potential to improve nutritional health, although the impact on health outcomes varies. By incorporating local producers into food supply chains, SFPs can support local economic growth, fostering stronger microeconomies and elevating the income levels of community members. Nevertheless, obstacles such as parental perceptions, resource scarcity, and infrastructure challenges can hinder the effectiveness of these programs. Although SFPs show potential in meeting several developmental objectives, further investigation is necessary to evaluate their cost-effectiveness and possible connections to agricultural development. In summary, SFPs seem to be effective instruments for enhancing educational achievements and aiding local communities in developing nations. Therefore the School feeding programs (SFPs) in developing Timor-Leste countries have shown positive impacts on various outcomes. They consistently increase school enrollment and attendance, particularly for girls. SFPs also improve micronutrient status and energy intake among participants. However, their effects on growth, cognition, and academic achievement are less conclusive. Take-home rations have demonstrated positive spillover effects on younger children's nutrition (Kazianga et al., 2009). While SFPs can influence child labor allocation, they do not eliminate it entirely argue that SFPs are best viewed as transfer programs that provide social safety nets and promote human capital investments. Despite their popularity, challenges remain in assessing SFP effectiveness due to their multifaceted impacts on education and health. Further research is needed to evaluate cost-effectiveness and potential links to agricultural development.

Feedback from student representatives across schools reveals that a significant number of students are pleased with the school feeding program, with around 80% endorsing the initiative implemented by the Ministry of Education. This program provides students with meals daily from Monday to Friday, with no provisions made for Saturdays. The School feeding programs (SFPs) have shown positive impacts on various aspects of student performance and well-being. Studies indicate that SFPs contribute to improved academic achievement, increased attendance rates, and reduced dropout rates. The implementation of SFPs has also been associated with enhanced student discipline and psychological readiness to learn. Research suggests that effective SFP implementation involves timely food provision, community participation, and regular monitoring. The nutritional content of meals served in SFPs has been found to improve with increased budgets. Parents generally support the continuation of SFPs, recognizing their role in preventing hunger among children from low-income families during school hours.

Overall, these studies highlight the multifaceted benefits of SFPs and emphasize the need for ongoing evaluation to enhance program effectiveness.

The data suggests that the school feeding program can positively influence local farmers in the Lautem Municipality. When the local government establishes an effective monitoring system, it can oversee production quantity and quality, as well as the marketing processes, ensuring equitable access from village to municipal levels. This strategy can bolster community groups' interests in enhancing production and improving economic performance within the Lautem Municipality.

As an impact from this program the School feeding programs can positively impact local communities and economies. These programs can increase student enrollment, attendance, and nutritional status while supporting local farmers and food producers. Community-based approaches involving multiple stakeholders and local food sources have shown success, even during economic crises. The implementation of Local Productive Arrangements can boost income levels for local producers and service. However, challenges exist in the procurement process, including issues with public calls for proposals, sales proposals, and quality standards. Effective monitoring systems and menu planning can help overcome these challenges and ensure a regular supply of produce. When properly implemented, school feeding programs can serve as a safety net for communities, improve parental participation, and contribute to finding solutions for education service delivery in rural areas.

Moreover, students from EBF Luro have raised concerns regarding food provision, stating that their school does not supply adequate meals. They reported frequently receiving meals late, which poses challenges for them. Consequently, students' parents have suggested that the school feeding program should be transparent and necessitate an open tender process for GFL in each school. This would ensure that GFLs are accountable for the entire school feeding process. Additionally, they advocated that the decision-making power regarding food selection should not lie solely with the school or local authorities, as this could adversely impact the quality of the school feeding program.

School feeding programs in developing countries aim to improve enrollment and child development, but face challenges in implementation and sustainability. Issues include problematic school selection, often influenced by political patronage rather than need. Parental involvement is crucial, but recruitment processes lack transparency, and parents are not adequately empowered to take ownership or hold suppliers accountable. Integrating family farming into school feeding programs presents difficulties in coordinating between agricultural and educational sectors, with challenges in local food production, logistics, and quality of school meals. To address these issues, strategies should focus on investing in agricultural policies, organizing family farmers, and improving logistics. Despite challenges, school feeding programs have shown positive impacts on enrollment in pilot schools. Ensuring transparency, accountability, and local stakeholder involvement is essential for the programs' success and sustainability.

Empowering Farmers and Students by The Dual Impact of Lautem's School Feeding Program on Local Economies

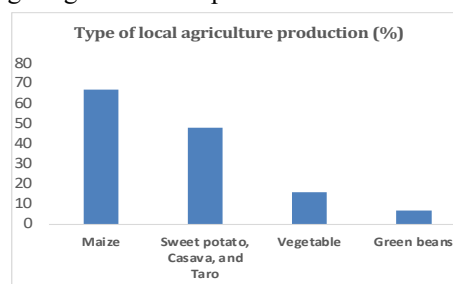
Farmers in Lautem Municipality are well-positioned to supply a diverse array of agricultural products to the FSP. Commonly produced items include staple foods such as rice, corn, and legumes, which form the foundation of many school meals. Additionally, farmers cultivate a variety of fruits and vegetables, including leafy

greens, tomatoes, and bananas, which enhance the nutritional quality of meals served to students.

The inclusion of local livestock products, such as eggs and poultry, further diversifies the offerings available to the FSP. By leveraging the region's agricultural diversity, the program can provide balanced and nutritious meals that cater to the dietary needs of students.

Livestock production in Timor-Leste primarily centers around subsistence farming, where smallholder farmers raise animals for food, income, and cultural significance. The livestock sector of the country includes a variety of species such as poultry, goats, cattle, pigs, and fish. According to the Ministry of Agriculture and Fisheries (MAF, 2021), animal husbandry is essential for rural livelihoods, with more than 60% of households participating in some form of livestock farming.

Lautem Municipality, situated in the eastern region of East Timor, is noted for its diverse agricultural methods and various livestock production types. The livestock industry in this region is crucial for the residents, aiding in food security, income generation, and cultural traditions. This report intends to deliver a detailed examination of livestock production in Lautem Municipality, concentrating on the prevalence of local chicken, goats, cattle, pigs, and aquaculture. The analysis will utilize pertinent data, statistics, and contextual information to offer practical recommendations aimed at improving livestock production in the area. As reported by the National Directorate of Statistics (NDS, 2022), agriculture constitutes approximately 24% of the nation's GDP, with livestock production being a significant component of this sector.

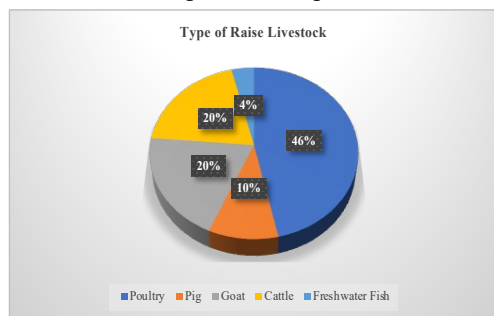


Livestock plays a crucial role in the economic, social, and cultural well-being of rural communities in Timor-Leste. The main livestock species include chickens, pigs, goats, cattle, horses, buffaloes, and sheep. These animals contribute to food supply, income generation, asset saving, employment, soil fertility, transportation, and agricultural diversification. Despite the prevalence of livestock ownership, the consumption of animal-source foods (ASF) remains low, contributing to high malnutrition rates. Gender relations significantly influence livestock production and ASF acquisition. While joint livestock ownership and decision-making are common, women often require their husband's consent for selling livestock or purchasing ASF, reflecting unequal bargaining positions shaped by social norms and gendered division of labor. Livestock policies should consider not only economic aspects but also the social and cultural roles of livestock in rural Timorese communities.

Research on agriculture in Timor-Leste reveals a diverse landscape of farming practices and challenges. Subsistence agriculture is prevalent, with households relying on staple crops, livestock, and poultry for food and income. The country's varied topography supports different agricultural livelihoods, from coffee-covered mountains to lowland rice cultivation. Common crops include rice, maize, cassava, and vegetables, while livestock farming is also significant. However, agricultural productivity remains low, with farmers facing issues such as pests, soil fertility, and limited market access. The sustainability of small-scale farms is a concern, with

environmental practices scoring particularly low. To improve food security and attract investment, there is a need for agricultural modernization, including the use of high-quality seeds and better farm management techniques.

Generally, the research team found from the respondents that agriculture in Lautem focuses primarily on staple crops (such as rice and tubers), livestock, and poultry, which they consider as primary sources (still important) or processes for other products, especially for local consumption. The specific results are as follows.



Agriculture in Timor-Leste is characterized by diverse farming practices, with households relying on subsistence agriculture for food and income. The country's varied topography supports different agricultural livelihoods, from coffee-covered mountains to lowland rice cultivation. Common crops include rice, maize, and cassava, while livestock farming is also significant. However, agricultural productivity remains low, with farmers facing issues such as pests, soil fertility, and limited market access. The sustainability of small-scale farms is a concern, with environmental practices scoring particularly low. To improve food security and attract investment, there is a need for agricultural modernization, including the use of high-quality seeds and better farm management techniques. Despite low productivity, a large proportion of food produced is shared informally across households, likely due to the absence of formal markets and lack of cash income.

Agricultural productivity in Timor-Leste and Mozambique encounters numerous obstacles. In Timor-Leste, key crops such as maize, cassava, and various horticultural products show potential for export. Nevertheless, farmers face challenges with low yields and quality, stemming from inadequate farm management, insufficient inputs, and poor post-harvest practices. Additionally, marketing efforts are impeded by inadequate infrastructure and a lack of standardization. In Mozambique, it is primarily labor shortages, rather than land constraints, that restrict agricultural output and food self-sufficiency in maize-centric farming systems. Farm sizes differ across both nations, with smaller operations often relying on hired labor, which can lead to diminished productivity on their own plots. Enhancing agricultural productivity necessitates modernization, improved farm management practices, and investment in high-quality seeds. Tackling these issues could greatly improve food security and stimulate economic development in these areas.

Agricultural productivity in Timor-Leste and Mozambique faces significant challenges. In Timor-Leste, horticultural farmers struggle with low productivity and quality due to poor farm management, insufficient inputs, and inadequate post-harvest practices. Marketing is hindered by poor infrastructure and lack of standardization. In Mozambique, labor shortages, rather than land constraints, limit agricultural production and food self-sufficiency in maize-based farming systems. Smaller farms often hire out labor, leading to reduced productivity on their own plots due to delayed weeding. Mozambique's maize sector is dominated by smallholder farmers who rely minimally on external inputs and technologies. The country

struggles to meet domestic and regional maize targets, with yields lagging behind neighboring countries. Addressing these challenges requires improved farm management, investment in inputs, and infrastructure development to enhance agricultural productivity and food security.

The majority of community groups in the villages highlight that maize is the most productive crop in Lautem Municipality, achieving a 68% success rate. Other crops, such as cassava, potato, and taro, have a productivity rate of 49%, while horticultural products account for 18%, and forestry contributes 8%. Data from Key Informant Interviews (KII) with school directors and the Local Supplier Group (GFL) indicate that local production levels are often insufficient, with outputs typically collected during specific periods. Further research in Timor-Leste uncovers a variety of livestock production methods across different municipalities. In rural settings, many households keep multiple livestock species, with decision-making and ownership often shared between genders. However, women's influence in livestock management is frequently constrained by societal norms and the perception of men as primary income earners. Small-scale aquaculture also plays a role in household income and nutrition, with annual fish yields ranging from 628 kg to 1,014 kg per district. Agricultural productivity fluctuates by municipality, with rice and maize production peaking in Covalima. Subsistence farming is widespread, with 80-90% of pig farmers utilizing this model. Local pig productivity metrics include an average of 4-6 piglets per litter, a birth weight of 0.97 kg, and an average weaning age of 3.94 months. These findings underscore the significance of livestock and aquaculture in supporting rural livelihoods and ensuring food security in Timor-Leste.

Livestock plays a crucial role in rural Timor-Leste, contributing to food security, income, and socio-cultural functions. Most rural households own multiple livestock species, with ownership and decision-making often shared between genders. However, women's influence in livestock management is frequently constrained by societal norms and men's perceived role as primary income earners. Subsistence farming is widespread, with 80-90% of pig farmers utilizing this model (Gomes, D. & Mali Code, 2020). Local pig productivity metrics include an average of 4-6 piglets per litter, a birth weight of 0.97 kg, and an average weaning age of 3.94 months. Despite the importance of livestock, animal-source food intake remains low in rural areas, with rice security prioritized over purchasing animal products. These findings underscore the significance of livestock in supporting rural livelihoods and ensuring food security in Timor-Leste.

Community groups in the villages report that livestock production rates are notably higher in Lautem Municipality, with local chicken accounting for 46%, goats and cattle at 20%, pigs at 10%, and freshwater fish (aquaculture) at 4%. Insights gathered from KII and discussions with school directors, APP leaders, and local supplier groups reveal difficulties in accessing local chicken. The market in Lospalos presents challenges due to budget constraints and elevated prices, limiting purchasing capabilities. Requests for assistance have been made to the government and the Ministry of Education to help alleviate this problem in the future.

Livestock plays a crucial role in the wellbeing of rural communities in Timor-Leste, providing food, income, and cultural significance. Chickens, pigs, goats, and cattle are among the main species raised, with aquaculture also contributing to food security and income. However, challenges persist in small-scale aquaculture, including shortages of technical skills, seed, feed, and markets. Gender relations significantly influence livestock production and animal-

source food (ASF) consumption. While joint livestock ownership and decision-making are common, women often require their husband's consent for selling livestock or purchasing ASF. Social norms and men's role as income generators affect women's bargaining power. In rural Timor-Leste, ASF are often considered non-essential and unaffordable, contributing to low intake and high malnutrition rates (Bonis-Profumo et al., 2022).

Currently, the communities lack the ability to sell their fresh produce by weight; instead, they typically sell in units, such as whole local chickens rather than by the kilogram. Moreover, the government has yet to establish a standardized pricing system for these products. Effective government oversight is also absent concerning local production outcomes, which could otherwise be leveraged for school snack programs, thereby providing economic benefits to the village groups and communities.

Research indicates that smallholder farmers in developing countries face challenges in selling their produce effectively and accessing markets. In Papua New Guinea, a government-led Market Development Project aimed to link farmers to markets but failed to address key supply chain issues (Chang et al., 2012). In Senegal, introducing weight-based sales and quality labeling for onions led to increased use of quality-enhancing inputs by farmers, but implementation was hindered by wholesale intermediaries (Bernard et al., 2016). In Zambia, poultry interventions improved productivity and income for farmers, but they preferred selling chickens rather than consuming them (Dumas et al., 2016). In the Caribbean, barriers to effective community-based feeding school programs include lack of communication between farmers and program administrators, low acceptance of fresh vegetables by children, and limited intersectoral coordination (Fair et al., 2023). These studies highlight the need for improved market systems, government oversight, and community engagement to support local producers and enhance food security.

Evaluating the Economic and Nutritional Benefits of Lautem's FSP Initiative from Farm to School

The economic implications of the FSP on farmers in Lautem Municipality are significant. By creating a consistent demand for local agricultural products, the program generates revenue for small-scale farmers, thereby supporting their livelihoods. The formalization of contracts between schools and farmers ensures a reliable market for locally produced goods, which enhances farmers' financial stability.

Furthermore, the FSP facilitates the development of cooperative structures among farmers, allowing them to pool resources, share knowledge, and collectively market their products. This cooperative approach not only improves individual economic outcomes but also strengthens the agricultural sector as a whole in Lautem Municipality. As a result, local farmers can invest in better farming practices, contribute to community development, and enhance the overall resilience of the local economy.

The goals of the school feeding initiative are aimed at alleviating chronic malnutrition, boosting enrollment and attendance rates in primary education, reinforcing local institutions for the program's sustainability, and generating substantial economic advantages for nearby communities (PDHJ, 2017). Feedback from student representatives in the administrative regions of Lospalos, Iliomar, Tutuala, Lautem, and Luro indicates that during the program, students predominantly consumed local food products, with 57% affirming their use of such items in school meals, while 43% reported they did not partake in local food options during the initiative.

School feeding programs have gained prominence as a strategy to address multiple development goals in low-income countries. These initiatives aim to improve student enrollment and attendance, particularly for girls, while also enhancing nutritional status. Studies have shown mixed results, with positive impacts on micronutrient levels and school attendance, but less conclusive effects on health outcomes and cognitive abilities. In Tanzania, parents and teachers viewed school feeding as effective for increasing enrollment, while students did not perceive it as a significant factor (Oganga, 2013). The Pacific Islands face unique challenges, with transitioning food systems leading to poor diet quality among children (Burkhart et al., 2021). To address these issues, the Pacific School Food Network was established to improve school food environments and support children's health through collaboration among various stakeholders, including government agencies, UN organizations, and NGOs (Burkhart et al., 2021).

Insights derived from Key Informant Interviews (KII) concerning food security and health revealed that the school feeding program has not fully utilized local products, as shown by monitoring results from numerous schools. Participants, including school directors, APP presidents, and local supplier collectives, noted that their institutions acquire food from local farmers for school meals at least biweekly. Many school directors expressed challenges related to sourcing nutritious food from rural regions, citing the limited quantity and variety available in local markets, which complicates access to larger supply sources. Notably, while improvements in capital access within the municipality and administrative regions have been observed over the years, reaching rural and remote areas continues to be problematic, especially during the rainy season.

Key informant interviews and focus groups reveal several challenges in implementing school feeding programs that utilize local family farm products. Rural schools face issues like limited administrative capacity, staff retention, and infrastructure constraints. Sourcing local produce can be difficult due to limited quantity and variety, especially in remote areas. However, using local family farm products has shown positive effects on school menus, increasing the frequency of vegetables, fruits, and legumes while reducing concentrated foods. Nutritionists report that purchasing from family farms improves food quality in schools and increases rural visibility, but challenges persist in product availability and infrastructure for production and delivery. Despite these obstacles, strategies like purchasing cooperatives, community collaboration, and innovative serving methods have been effective in overcoming barriers to successful rural feeding school programs.

A critical concern is whether the cost of local food, which surpasses the daily budget of \$0.25 allocated for each student's meals, can be maintained. Due to inadequate funding for purchasing products from farmers, there is a desire to acquire local food, but logistical isolation complicates this effort. The allocation of \$0.25 per day proves insufficient for sourcing local food, making it difficult to provide meals for the large student population. Consequently, reliance on the market becomes necessary, which poses challenges since many schools are distanced from food sources (coordinators noted that schools do not purchase directly from local farmers but opt for market transactions). There is a lack of access to all vendors for direct sales to schools, necessitating purchases from the market due to the absence of connections with various suppliers.

Farm to school programs aim to increase local food consumption in schools, but face significant challenges. Cost is a major barrier, with school meal budgets often insufficient to purchase local products. Logistical issues, including underdeveloped distribution channels

and schools' distance from food sources, further complicate local food procurement. The lack of direct connections between schools and farmers often necessitates market-based purchases. Additionally, farmers and school food service directors have different approaches to food production and handling, creating social barriers to collaboration. Other challenges include inadequate local food production, legislative constraints, and coordination difficulties. To address these issues, potential solutions include increased investment in agricultural policies, better organization of family farmers, and enhanced involvement of extension services to facilitate networking between schools and farms.

According to respondents who reported from student representatives at each school in the administrative positions of Lospalos, Iliomar, Tutuala, Lautem, and Luro, students consume food that provides nutrition and protein, which is supported by the school snack program in their schools. The types of food mentioned include those with nutritional value, which consist of carbohydrates at 53%, protein from sources such as beef at 36%, and fish at 11%. Students consume a significant amount of carbohydrates, with 94% of their food intake consisting of this macronutrient. The minimum amount of protein provided is 5%, with many schools offering bread to students, containing 1% protein. The sources of protein include beef at 79%, chicken at 52%, and fish at 49%, with eggs having a contribution of 12%.

School food programs play a crucial role in providing nutrition to students, but face challenges in ensuring balanced diets. Studies in various contexts have shown that carbohydrates often dominate school meals, with rice, noodles, and bread being common sources. While protein intake varies, chicken, eggs, and tofu are frequently consumed. However, the adequacy of macronutrient intake remains a concern, with many students not meeting recommended levels. In France, sweet pastries were found to be significant contributors to macronutrient intake among high school students. The Pacific Islands face particular challenges, with a transition from traditional diets to ultra-processed foods leading to poor quality diets and high rates of malnutrition. Efforts like the Pacific School Food Network aim to improve school food environments and children's nutrition in these regions (Burkhart et al., 2021).

According to information obtained from Key Informant Interviews (KII) regarding food security and health, it was noted that during the school snack program, the recommended school snack menu from the Ministry of Health has not yet been used. Additionally, many educational stakeholders have produced a new menu list for the school snack program in various schools. This is due to the fact that the menu produced by the Ministry of Health for health programs cannot be effectively implemented due to ongoing difficulties, such as insufficient funding and high costs of local products. Accessing local products in their villages is challenging.

Research on feeding school programs highlights various challenges and opportunities. Key informant interviews reveal that implementing recommended menus can be difficult due to insufficient funding and high costs of local products. However, sourcing from local family farms can increase the variety of fresh, natural, and organic foods in school menus, leading to healthier meals. Food service directors report barriers such as increased food and labor costs, sourcing challenges, and decreased student participation, but creativity in menu planning can facilitate success. Students and caregivers emphasize the importance of freshness and quality in school meals, with taste and limited availability of fresh, healthy foods being significant barriers to participation. Despite challenges, school health and nutrition programs can have positive

impacts on students, schools, and communities when stakeholders coordinate effectively.

Challenges and Opportunities of The Role of Local Products in Lautem Municipality's School Feeding Program

Despite the potential benefits of the FSP, farmers in Lautem Municipality face several challenges in meeting the program's requirements. One of the primary difficulties is the lack of access to agricultural inputs, such as quality seeds, fertilizers, and irrigation systems. These limitations hinder farmers' ability to produce sufficient quantities of food that meet the nutritional standards set by the FSP.

Additionally, farmers often encounter logistical challenges in transporting their products to schools, particularly in rural areas where infrastructure may be inadequate. The lack of transportation options can lead to delays in food delivery, potentially compromising the freshness and quality of the meals provided to students.

Moreover, farmers may struggle with varying market prices, which can affect their ability to maintain stable production levels. Fluctuations in demand and supply can create uncertainty, making it difficult for farmers to plan their production cycles effectively.

The results of the survey conducted by the Local Supplier Group (GFL), focused on the challenges faced by women farmers, reveal that 27% of respondents indicated pressure regarding tender processes, 23% reported high prices for local products, and another 23% reported issues with the road connections between rural areas and local markets. Additionally, 10% highlighted barriers to market access, while 10% stated that the allocation of a 0.25-cent budget per student was insufficient. Finally, 7% mentioned a lack of socialization efforts for farmer groups concerning local product sales to micro and small enterprises (PMEs).

Women farmers in developing countries face numerous challenges in agricultural production and market access. These include limited access to resources like land, credit, and technology as well as difficulties in processing and marketing local products. Poor road connections between rural areas and markets hinder information exchange and product distribution. Women's agricultural development groups play a crucial role in promoting local products and integrating rural women into territorial development (N. Ounalli et al., 2020). Farmers rely on diverse support networks, including employees, customers, and other farmers, to address challenges in local food systems (K. Schreiber et al., 2022). These support actors provide knowledge sharing, emotional support, labor assistance, and consumer education (K. Schreiber et al., 2022). However, political desires to encourage local food systems are sometimes poorly matched with resources to address specific farmer challenges (K. Schreiber et al., 2022).

Furthermore, feedback from Focus Group Discussions (FGDs) indicated that agricultural communities face significant challenges due to a lack of information about tenders from local companies, which are essential for FSPs. Farmers are also concerned about the road connections from remote areas to markets, as these connections hinder access to markets and the ability to supply products to schools. Additionally, members of the Local Supplier Group (GFL) expressed concerns about the inadequacy of the 0.25-cent allocation per student, given that local products are increasingly expensive. For example, a basic item may cost around 0.50 cents, while the price of one kilogram of rice is approximately \$1.00.

School feeding programs (SFPs) have the potential to support local agriculture and improve child nutrition, but face significant challenges in integrating family farming. Key barriers include lack

of communication between farmers and SFP administrators, limited child acceptance of fresh vegetables, and poor intersectoral coordination (Fair et al., 2023). Logistical issues, such as inefficient food distribution and inadequate investment in family farming, can negatively impact meal quality (Chaves et al., 2023). Financial constraints, like delayed disbursements and mismatches between budgeted and actual food expenditures, further complicate implementation (Gelli et al., 2021). To address these challenges, strategies promoting agricultural policies, farmer organization, and improved stakeholder communication are needed (Chaves et al., 2023). Information systems could play a crucial role in facilitating communication between value chain stakeholders, including link-to-link, peer-to-peer, and end-to-end information flows (Parikh et al., 2007). However, increasing the accessibility and effectiveness of these systems for small producers remains a challenge.

CONCLUSIONS AND RECOMMENDATION

Conclusions

1. To effectively harness local agricultural resources, the Lautem Municipality must implement robust FSP policies that prioritize the sourcing of local products for school meals. These policies should encompass a variety of strategies, including:
 - Stakeholder Engagement: It is essential to involve local farmers, educational institutions, and government officials in the policy-making process. Regular consultations can ensure that the needs and capacities of local producers are adequately represented.
 - Training and Support Programs: Farmers should receive training on food safety, quality standards, and the logistical aspects of supplying schools. This could include workshops on sustainable farming practices that align with the nutritional requirements of feeding school programs.
 - Incentives for Local Sourcing: The municipality may consider financial incentives or grants to encourage schools to prioritize local sourcing. This could stimulate demand for local products and promote a circular economy within the community.
 - Monitoring and Evaluation Frameworks: Establishing clear metrics to assess the success of FSP policies is crucial. Regular evaluations can help identify areas for improvement and ensure that the objectives of local sourcing are being met.
2. The implementation of feeding school programs can have a profound impact on local farmers, particularly in terms of income generation and agricultural productivity. This impact can be observed through several lenses:
 - Increased Demand for Local Produce: Feeding school programs can create a consistent and reliable market for local farmers. By establishing contracts with schools, farmers can anticipate demand and plan their production schedules accordingly, leading to increased agricultural output.
 - Economic Stability for Farmers: With a guaranteed market, farmers can enjoy improved financial stability. This reliability can encourage farmers to invest in their operations, whether through the acquisition of better seeds, equipment, or sustainable farming practices.
 - Diversification of Crops: The nutritional requirements of feeding school programs may necessitate a diversification of crops grown by local farmers. This can lead to a more varied

agricultural landscape, minimizing risks associated with monoculture and enhancing food security.

- Educational Opportunities: Schools can partner with local farmers to provide educational programs that highlight the importance of local agriculture. This engagement can foster a sense of community and encourage students to appreciate and support local food systems.
3. Despite the numerous benefits, farmers in Lautem Municipality may encounter several challenges when engaging with feeding school programs:
 - Access to Information: Many farmers may lack access to information about school meal program requirements, procurement processes, or nutritional standards. Providing resources and support can bridge this gap.
 - Infrastructure Limitations: In some cases, inadequate infrastructure for transportation and storage can hinder farmers' ability to supply fresh produce to schools. Investments in local infrastructure are essential to facilitate this supply chain.
 - Quality Standards Compliance: Farmers may struggle to meet the quality standards set by schools, particularly if they are not familiar with the necessary regulations. Training programs can alleviate these concerns and enhance product quality.

Finally, the successful implementation of FSP policies in Lautem Municipality, coupled with the strategic integration of feeding school programs, has the potential to create a thriving agricultural ecosystem. Focusing on local sourcing, enhancing farmer income, and addressing the inherent challenges, Lautem can set a precedent for other municipalities striving to support local agriculture while promoting student nutrition. Through collaboration, education, and innovation, farmers and schools can work together to build a sustainable future for the community.

Recommendations for the Ministry of Agriculture (MAP)

1. Extension Personnel Guidance: The Ministry of Agriculture (MAP) should guide extension personnel to identify community groups in each village that are engaged in local product production. This will help alert local supplier groups and schools to utilize products produced in the village and surrounding areas.
2. Support for Agricultural Production: The Ministry of Agriculture (MAP) and the Ministry of Tourism, Commerce, and Industry (MTCI) should continue to provide support to community groups engaged in agricultural production based on the needs of micro and small enterprises (FSP).

Recommendations for the Ministry of Education and Municipal Authority

1. Monitoring Activities: The Ministry of Education and the Municipal Authority should conduct regular monitoring activities in all schools within the Lautem Municipality, using an integrated monitoring team that has already been established in the municipality.
2. Tendering for Food Collections: The Ministry of Education should open tender opportunities for companies that can collect food from agricultural groups and distribute it to schools.

3. School Snack Menu Presentation: There is a need to present a school snack menu recommended by the Ministry of Health to local supplier groups at each school. This ensures that they can provide the recommended menu items.
4. Regular Monitoring of School Snack Programs: There should be ongoing monitoring of all schools implementing the school snack program by the established integrated team in Lautem Municipality.
5. Hygiene and Local Products in School Uniforms: It is essential to revise the recommendations from the Ministry of Health to ensure that school uniforms are maintained with hygiene standards and also incorporate local products that are predominantly produced in each municipality.
6. Budget Allocation Review: A review of the budget allocation of 0.25 cents per student is necessary, as it is insufficient for meeting the needs of the schools.

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