

Lumbung Mataraman as a Strengthening of Food Security in the Special Region of Yogyakarta

Lumbung Mataraman sebagai Penguatan Ketahanan Pangan di Daerah Istimewa Yogyakarta

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Abstract

This study investigates the role of the *Lumbung Mataraman* program in the Special Region of Yogyakarta (DIY) in enhancing food security and supporting the achievement of Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger). Utilizing a qualitative approach, the research was conducted in Sleman, Bantul, and Gunungkidul regency's regions with active participation in the program and diverse agroecological contexts. Data were collected through participatory observation, in-depth interviews with key stakeholders (including local officials, extension officers, barn managers, and smallholder farmers), and policy documents and reports analysis. The findings reveal that Lumbung Mataraman improves local food availability and resilience and fosters community empowerment, institutional coordination, and the preservation of local wisdom. Moreover, the program supports gender inclusion and sustainable agricultural practices and strengthens the socio-economic fabric of rural communities. Lumbung Mataraman is a replicable model for sustainable, community-driven resilience strategies in other regions by integrating traditional food security mechanisms with contemporary development frameworks.

Keywords: Lumbung Mataraman; Food Security; SDGs; Yogyakarta; Local Food Security.

Abstrak

Penelitian ini mengkaji peran Program Lumbung Mataraman di Daerah Istimewa Yogyakarta (DIY) dalam memperkuat ketahanan pangan dan mendukung pencapaian SDGs, khususnya SDGs 2.. Dengan menggunakan pendekatan kualitatif, penelitian dilaksanakan di tiga kabupaten, yaitu Sleman, Bantul, dan Gunungkidul, yang dipilih secara purposif karena keterlibatan aktif mereka dalam program serta keragaman sistem produksi pangan lokal. Data dikumpulkan melalui observasi partisipatif, wawancara mendalam dengan para pemangku kepentingan (termasuk pejabat pemerintah daerah, penyuluh pertanian, pengelola lumbung, dan petani kecil), serta analisis dokumen kebijakan dan laporan resmi. Temuan penelitian menunjukkan bahwa Lumbung Mataraman tidak hanya meningkatkan ketersediaan dan ketahanan pangan lokal, tetapi juga mendorong pemberdayaan masyarakat, koordinasi kelembagaan, serta pelestarian kearifan lokal. Selain itu, program ini mendukung inklusi gender, praktik pertanian berkelanjutan, dan memperkuat struktur sosial-ekonomi komunitas pedesaan. Dengan mengintegrasikan nilai-nilai tradisional ke dalam kerangka pembangunan modern, Lumbung Mataraman menjadi model strategis yang dapat direplikasi untuk strategi ketahanan pangan berbasis masyarakat di wilayah lain.

Kata kunci: Lumbung Mataraman; Ketahanan pangan; SDG; Yogyakarta; Ketahanan Pangan Lokal

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Introduction

Food security is one of the main pillars of achieving sustainable development (Ecker and Breisinger, 2012; Smith et al., 2001). In the context of the Special Region of Yogyakarta (DIY), the challenge of food security is becoming increasingly relevant during climate change, urbanisation, and economic pressures faced by local communities. Food security is not only related to food availability but also includes aspects of accessibility, stability, and sustainable utilization. In this case, an approach based on local wisdom is becoming increasingly important in designing policies and programs that can effectively answer these challenges.

One form of local wisdom that has great potential for supporting food security in DIY is the concept of the Mataram Barn (Juningsih, 2015; Supriyadi et al., 2012). Barns, which traditionally function as a storage place for crops, are not just physical buildings but also reflect a socio-economic and cultural system based on the principles of solidarity, cooperation, and independence. The Mataram Barn, in its history, has played an important role in maintaining the community's food security in difficult times, such as droughts and crop failures. Therefore, the revitalisation of the Mataram Barn can be one of the most effective strategies for strengthening food security in this modern era.

The revitalisation of the Mataram Barn is also in line with efforts to achieve the Sustainable Development Goals (SDGs) carried out by the United Nations (UN). The SDGs, which consist of 17 global goals, focus on poverty alleviation, environmental protection, and socio-economic well-being. In the context of food security, the second goal of the SDGs, namely zero hunger is very relevant. This goal emphasises not only the elimination of hunger but also the improvement of food security, the promotion of sustainable agriculture, and the improvement of access to nutritious food. In this study, the Mataram Barn will be analysed as one of the local approaches that can support the achievement of the SDGs in Yogyakarta.

Through this study, it is hoped that it can be identified how the concept of Mataram Barn can be adapted and integrated into broader food security policies, which not only involve the government but also local communities and the private sector (Riawanti, 2017). In addition, this study will also explore the role of Mataram Barns in overcoming various food security challenges faced by the people of Yogyakarta, such as dependence on food imports, agricultural

land degradation, and inequality of food access between urban and rural areas (Soemardjan, 2009; Soemaryatmi & Suharji, 2015). Historically, the Mataram Barn has been an integral part of the lives of the Javanese people, especially in the Yogyakarta area. During the Mataram kingdom, barns functioned as food reserves that were used to anticipate difficult times, such as natural disasters or wars (Setiawati, 2021).

This barn is managed collectively by the community with the support of the local authorities. This tradition reflects a collective awareness of the importance of maintaining food security as a form of sovereignty and independence. However, along with modernisation and changes in the economic structure, the role of the Mataram Barn began to *orde baru* (Umar, 2021). Society is increasingly dependent on global food markets and distribution systems, which are vulnerable to price fluctuations and supply disruptions. This condition creates new vulnerabilities, especially for rural communities living off subsistence farming. Therefore, efforts to revitalise the Mataram Barn are not only cultural nostalgia but also an adaptive strategy to face the challenges of contemporary food security.

To understand this phenomenon theoretically, this research uses a socio-cultural food security framework, which emphasizes that food security is not only a technical issue, but also the result of social relationships, cultural practices, and local institutions (Danugroho, 2022; Altieri, 2004). mataram granary is positioned as a social-cultural institution that possesses social capital and the value of mutual cooperation to address food vulnerability in a participatory manner. Amartya sen's capability approach is also employed to explain that food security is not merely a matter of food distribution, but about the ability of individuals and groups to access and control adequate food resources (Sen, 1981). in this context, the mataram grain bank can be understood as an effort to enhance community capacity to ensure sustainable food security.

The revitalisation of the Mataram Barn also has the potential to support other SDG goals, such as poverty alleviation (SDG 1), health and welfare improvement (SDG 3), and environmental conservation (SDG 15). By encouraging sustainable agricultural practices and wise management of food resources, Mataram Barns can contribute to the achievement of these goals. In addition, barns can also be a vehicle for education and empowerment of the community, especially the younger generation, in understanding the importance of food security and environmental

sustainability. To make this happen, close collaboration is needed between various parties, including the government, the community, academics, and the private sector.

Local governments can play a role as facilitators and regulators who create policies and incentives that support the revitalisation of the Mataram Barn. Meanwhile, local communities need to be actively involved in this process, considering that they have valuable knowledge and experience related to traditional practices (Umar, 2021). Academics can contribute through research and innovation, while the private sector can play a role in supporting the financing and marketing of local food products (Anderson, 1972). In the context of policy, the Mataram Barn can be integrated into existing food security programs, such as the Government Rice Reserve (CBP) and the Local Food Diversification Program. Thus, the Mataram Barn not only serves as an emergency food reserve but also as part of a broader food system that supports regional food sustainability and independence. In addition, the Mataram Barn can also be a model for other regions that have a similar tradition of managing food resources collectively.

It is important to note that the success of the revitalisation of the Mataram Barn cannot be achieved instantly. This process requires a long-term approach that involves mindset change, capacity building, and technology adaptation (Yudhistira & Fatmawati, 2020; Yudhistira Saraswati & Pratiwi, 2024). The main challenges that need to be overcome include low public awareness of the importance of food security, limited access to resources, and dependence on the global food system (Rustinsyah, 2019). Therefore, a holistic and inclusive strategy is needed that can answer these challenges. This research is expected to make a significant contribution to the understanding of how Mataram Barns can function as an instrument to strengthen food security in Yogyakarta.

In addition, the results of this study are also expected to provide practical recommendations for policymakers and field actors in implementing the concept of Mataram Barn effectively. Thus, DIY can be an example of a region that has successfully integrated local wisdom into sustainable development strategies, especially in the field of food security. The revitalisation of the Mataram Barn not only aims to preserve cultural heritage but also to create a more sustainable future for the people of Yogyakarta. By combining traditional values with innovative approaches, Mataram Barn can become an important pillar in achieving resilient and sustainable food security, in line with the spirit of the SDGs.

Research Methods

This research adopts a qualitative approach to explore the role of Lumbung Mataraman in strengthening food security and supporting the achievement of the Sustainable Development Goals (SDGs) in the Special Region of Yogyakarta (DIY). The qualitative method is most appropriate because it enables a deep and holistic understanding of the socio-cultural context, community participation, and institutional dynamics surrounding implementing the Lumbung Mataraman program (Moelong, 2016). The study aims to understand how the program is implemented, how the community perceives it, and its measurable and perceived impacts on food resilience in the region.

The research was conducted in three regencies in Yogyakarta: Sleman, Bantul, and Gunungkidul, which were chosen purposively based on their active involvement in the Lumbung Mataraman initiative and the diversity of local food production systems. These areas represent geographical variations, agricultural potential, and community involvement, making them ideal for comparative and contextual analysis within the same province. Primary data were collected through participatory observation, in-depth interviews, and document analysis. The participatory observation occurred in various program locations, particularly at community barns (lumbung pangan masyarakat) and during official and informal gatherings related to food security programs. These observations provided insight into everyday practices, social interactions, and institutional routines within the program.

In-depth interviews were conducted with fifteen informants who were directly involved or had expert knowledge of the program. These included five officials from local government institutions, particularly the Food Security Agency and the Regional Development Planning Agency, who were responsible for policy planning and oversight. Additionally, three agricultural extension officers provided perspectives on technical support and farmer engagement. Four interviews were conducted with barn managers and community leaders at the forefront of local implementation. At the same time, the remaining three informants were smallholder farmers who participated directly in barn activities. Informants were selected using purposive sampling to ensure their relevance and ability to provide rich information about the program's structure, implementation, challenges, and impact.

Secondary data were gathered from relevant policy documents, annual reports from the Food Security Agency, statistical data on food availability, and SDG-related progress reports published by the regional government. These documents were analyzed to identify the formal structure of the program, policy objectives, and quantifiable outcomes linked to food security and sustainable development. The collected data were analyzed using thematic analysis. This involved identifying key patterns and emerging themes from interview transcripts, observation notes, and policy documents. The study focused on several interrelated aspects, including the program's influence on local food security, the extent of community participation, institutional coordination, and the alignment of program outcomes with selected SDG targets, especially SDG 2 (Zero Hunger). By synthesizing these findings, the research seeks to comprehensively understand how Lumbung Mataraman functions as a strategic model of food resilience and sustainable development in the context of Yogyakarta.

Results and Discussion

Food Conditions in the Yogyakarta Region

Food availability in Yogyakarta is highly dependent on local agricultural production, which involves agricultural land in districts such as Sleman, Bantul, and Kulon Progo (Umar, 2021). These areas are the main support to produce rice, vegetables, fruits, and crops. However, the rapid urbanisation in the region has resulted in the conversion of agricultural land into residential and commercial areas, which ultimately reduces local food production capacity. This change in land use has a significant impact on food security in Yogyakarta. The dwindling agricultural land makes food production unable to keep up with the increasing needs of the population, especially with the increasing population growth (Danugroho, 2022). In addition, the challenge of maintaining agricultural land amid development pressure is an urgent problem to be overcome.

In addition to land use changes, climate conditions also affect food production in Yogyakarta. Changes in rainfall patterns and erratic planting seasons due to global climate change have an impact on agricultural productivity (Pham & Turner, 2020). This results in uncertainty in crop yields, which then affects the availability of food in the local market. Yogyakarta also experiences dependence on food supplies from outside the region. To meet food needs, the region had to import large quantities of food from other regions in Java and outside Java. This

dependence poses a risk to the stability of food availability, especially in the event of distribution disruptions or price fluctuations in the national market (Schermer, 2015).

Food distribution in Yogyakarta is also an important factor in ensuring food availability. Adequate transportation infrastructure is the key to ensuring the smooth supply of food from production areas to consumption centers. However, challenges in terms of distribution arise when there are transportation disruptions due to natural disasters or other logistical problems (Tweeten, 1999). Dependence on food imports from outside the region makes Yogyakarta vulnerable to price fluctuations and supply disruptions at the national level. If there is an increase in prices or food scarcity at the national level, this region can experience a food availability crisis that has an impact on people's welfare.

According to data from the Dinas Pertanian dan Ketahanan Pangan Daerah Istimewa Yogyakarta (2023), the average rice production in Yogyakarta reached 627,000 tons in 2022, with a consumption requirement of approximately 592,000 tons. While this shows a surplus, the situation is different for other food commodities such as vegetables and horticultural products, which show a deficit of around 15% annually. Moreover, in some districts like Gunungkidul, food insecurity is still observed due to uneven distribution and challenging topographical conditions. Another factor that affects food availability in Yogyakarta is the efficiency of the agricultural system (Aji, 2014). The use of modern agricultural technology is still limited in some areas, so land productivity is not optimal.

In fact, the right application of agricultural technology can increase production yields and reduce dependence on supplies from outside the region. The availability of labour in the agricultural sector is also a challenge in Yogyakarta. Many young people are reluctant to work in the agricultural sector, preferring to work in the non-agricultural sector or migrate to cities (Hidayat, 2017). This leads to a lack of productive labour in the agricultural sector, which ultimately affects food production capacity. The irrigation system in the agricultural area of Yogyakarta also needs attention. In recent years, the availability of water for irrigation has declined due to climate change and inefficient water use (Arip, 2003). Poor irrigation systems can hinder food production, especially in the dry season. In addition to technical factors, local government policies also play an important role in determining food availability in Yogyakarta.

Proactive policies supporting the agricultural sector and protecting agricultural land from conversion to non-agricultural land are urgently needed to maintain sustainable food availability (Octaria et al., 2021). In an interview conducted with Mr. S, a local farmer in Sleman (March 2022), he stated:

"Sekarang lahan pertanian makin sempit, banyak yang dijual untuk pembangunan. Kami petani jadi kesulitan memperluas lahan, dan hasil panen kadang tidak mencukupi kebutuhan pasar lokal." (Local Farmer Kulon Progo, 2022).

This aligns with field data showing that more than 1,200 hectares of agricultural land in the province were converted between 2020-2023 (BAPPEDA DIY, 2023). On the other hand, food diversification efforts are important to maintain food availability in Yogyakarta. In addition to rice, there needs to be the development of other food commodities that can be an alternative food source. This diversification not only increases food availability but also supports the sustainability of the agricultural sector (Awang; et al, 2016). Traditional and modern markets in Yogyakarta are the main channels for food distribution to the community. The existence of a market that is easily accessible to the population is an important factor in maintaining the stability of food availability.

However, market accessibility is still a challenge in some remote areas. The role of non-governmental organisations (NGOs) and local communities in supporting food availability cannot be ignored (Ngoasong, 2014). Several NGOs and communities are actively developing community-based food security programs, such as urban farming and family food garden programs, which help increase local food availability (Danugroho, 2022). In the context of food security, Yogyakarta also faces challenges in terms of economic policies that affect food prices. Policies that encourage the liberalisation of the food trade can have an impact on food prices and availability, especially for low-income groups. Cooperation between local governments, the private sector, and the community in maintaining food availability is an important key.

The government needs to act as a facilitator that integrates various stakeholders to support food production, distribution, and accessibility in the region. Institutional strengthening efforts at the farmer level are also important to maintain food availability. Strong institutions can help farmers access technology, capital, and markets, so they can increase food production in a sustainable

manner (Greenberg, 2017). A key official from the Dinas Ketahanan Pangan Bantul mentioned during an interview (March 2022):

“Kami sudah mendorong petani untuk tidak hanya mengandalkan padi, tetapi juga menanam hortikultura dan palawija. Program diversifikasi pangan harus terus didorong agar ketahanan pangan tetap stabil meskipun ada gangguan iklim atau pasar.” (Dinas Ketahanan Pangan Bantul, 2022).

To support food availability in the future, education and training for farmers also need to be improved. Increasing the capacity of farmers to manage land and use modern technology will have a significant impact on increasing food production. In addition, the development of innovations in agriculture, such as the application of organic farming and sustainable agriculture, can help increase food availability in Yogyakarta. Eco-friendly agriculture not only contributes to environmental sustainability but also produces healthier and higher-quality food. Furthermore, a holistic and inclusive approach that involves synergy between government institutions, educational institutions, NGOs, and local communities is essential to build a resilient food system. By fostering innovation, strengthening farmer institutions, and ensuring the sustainability of local food sources, Yogyakarta can achieve food sovereignty that is not only sufficient in quantity but also just, equitable, and culturally appropriate for its people. In the face of future climate, demographic, and economic uncertainties, investing in human capital, ecological balance, and local wisdom will be the cornerstone for securing long-term food availability and regional resilience.

Lumbung Mataraman Program

The Mataraman Barn Program is an initiative launched by the Special Region Government of Yogyakarta (DIY) as an effort to strengthen food security in the region (Yudhistira Saraswati & Pratiwi, 2024). The program focuses on the development of traditional food barns that serve as a food reserve for the community in the face of various situations, including natural disasters or food supply instability. As a region that has a strong cultural heritage, Yogyakarta raises the concept of "Mataraman" which refers to local values and traditional wisdom in managing food (Kota Yogya, 2023). The program not only aims to provide food reserves for the community, but also to revive agrarian practices and social solidarity that have become part of the local culture.

Community participation is central to the program's success. As evidenced in the field, villagers are re-engaging with collective agricultural practices. One prominent informant, Mr. SJ, a community leader in Nglanggeran village, stated:

"Sejak Lumbung Mataraman diperkenalkan, warga desa kembali menanam jagung dan padi secara kolektif. Sebagian dari setiap panen disimpan di lumbung desa sebagai cadangan pangan bersama" (Chair of Farmer Group, March 2022).

The Mataraman Barn adopts a traditional food barn system that used to function as a storage place for rice crops and other food commodities. With this program, it is hoped that every village or community group will have a food barn that is managed independently. Empirical evidence supports this narrative. As shown in Table 1, there has been a marked increase in the number of operational food barns and the level of household participation across several districts:

Table 1. Growth of the Lumbung Mataraman Program in Three Districts (2022–2024)

District	Active Barns (2022)	Active Barns (2024)	Participating Households (2024)
Bantul	12	27	1,320
Gunungkidul	9	24	950
Sleman	15	31	1,850

Source: Dinas Pertanian dan Ketahanan Pangan Daerah Istimewa Yogyakarta, 2024

In its implementation, the Mataraman Barn Program invites the community to revive the pattern of cooperation and togetherness (Yakob & Tolo, 2013). Every citizen who is a member of this program is expected to contribute to the management of the barn, both through participation in food production and in storage and distribution (Amalia & Marta, 2018). This concept strengthens social cohesion in the community and makes food security a shared responsibility. The Mataraman Barn also functions as an instrument in maintaining food price stability at the local level. With food reserves that are managed collectively, people can avoid price spikes that often occur when food supply is limited. This is important, especially in times of crisis or when there is a disruption in food distribution due to natural disasters. This program also plays a role in increasing local food production. The community is encouraged to plant food crops on available land, both in the yard of the house and on larger agricultural land.

That way, dependence on food supplies from outside the region can be reduced, and food availability at the local level can be maintained (Berchin et al., 2019). The Yogyakarta Regional

Government, through this program, also provides training to farmers and the community in the management of food barns. This training includes good food storage techniques, food stock management, and risk management related to food security (Prastowo et al., 2023). With this training, it is hoped that the management of food barns can run effectively and sustainably. On the other hand, the Mataraman Barn Program also seeks to develop food diversification in the community. In addition to rice, this food barn also stores various local food commodities such as corn, sweet potatoes, and beans. This diversification is important to reduce dependence on one type of food and enrich people's nutrition. This program is also a means to strengthen the local economy. With the existence of food barns, people can sell part of their crops to barns at stable and fair prices.

Moreover, the program encourages food diversification, a shift that is crucial for both nutritional adequacy and ecological sustainability. As described by Mrs. SL, a resident and food barn committee member in Dlingo:

"Lumbung pangan kita tidak lagi hanya menyimpan beras. Lumbung pangan kita juga menyimpan jagung, singkong, dan kacang hijau. Bahkan anak-anak sudah belajar untuk mengonsumsi berbagai sumber karbohidrat, tidak lagi hanya bergantung pada beras."
(Resident and Food Barn Committee Member in Dlingo, 2022).

This provides incentives for farmers to continue to increase their production, while creating healthy economic circulation at the village level (Fox, 1972). In addition, Lumbung Mataraman also supports the development of sustainable agriculture. The community is invited to adopt environmentally friendly agricultural practices, such as the use of organic fertilizers and efficient water management. Thus, the sustainability of food production can be maintained without damaging the surrounding environment. This program is also part of efforts to maintain local wisdom. Traditional food barns that used to be an inseparable part of the life of the Javanese people are now revived with adjustments that are relevant to current conditions. That way, the agrarian culture that is the identity of the people of Yogyakarta remains sustainable. The Mataraman Barn also functions as a food reserve in times of emergency.

When a natural disaster occurs, such as the eruption of Mount Merapi or an earthquake, this food barn can be a temporary source of food for the affected community (Yusrifa & Agus Danugroho, 2022). This accelerates the post-disaster recovery process and reduces dependence on outside

assistance. The success of the Mataraman Barn Program also depends heavily on the support of various parties. In addition to local governments, the role of non-governmental organizations (NGOs), academics, and the private sector is very important in supporting the sustainability of this program (Viale Pereira et al., 2017). This collaboration between various stakeholders ensures that the program can run well and provide broad benefits to the community. Monitoring and evaluation of this program is also carried out periodically to ensure its effectiveness.

Through this monitoring, the government can identify the obstacles faced by the community in managing food barns and find the right solutions. The evaluation is also important to see the extent to which this program has an impact on food security in Yogyakarta. Although the Mataraman Barn Program has been running well, challenges still exist. Some of the challenges faced include the lack of public awareness of the importance of food barns, the limitation of agricultural land, and challenges in effective barn management. However, with continuous efforts, these challenges can be overcome. The Mataraman Lumbung Program is a concrete step in strengthening community-based food security in Yogyakarta. By directly involving the community, this program not only provides food reserves, but also builds collective awareness of the importance of food security. In addition, this program also supports the preservation of local culture that has been a part of the life of the people of Yogyakarta for centuries.

Implications of the Mataraman Barn for Realising Food Security and SDGs

The Mataraman Barn Program has important implications for realising food security and supporting the achievement of the Sustainable Development Goals (SDGs) in Yogyakarta. One of the main contributions of this program is to overcome hunger and food shortages (Oliver-Smith, 2019). With the existence of food barns in each village, the community has food reserves that can be used in times of crisis, both due to natural disasters and fluctuations in food prices. Based on interviews with local farmers and community leaders, the program has been pivotal in mitigating hunger and ensuring food availability during crises. One farmer from Bantul shared:

“Semenjak bergabung dengan Lumbung Padi Mataraman, desa kami tidak lagi khawatir kekurangan pangan saat musim kemarau. Stok beras lumbung padi telah menyelamatkan banyak keluarga” (Farmer Bantul, 2022).

This testimony reflects a wider trend captured in survey data collected from 120 households across five villages, showing that 85% of respondents reported improved food availability during crisis periods (Table 1).

Table 1. Community Perceptions and Impacts of the Mataraman Barn Program (N=120 households)

Indicator	Positive Response (%)	Description
Food availability during crisis	85	Households reporting sufficient food in emergencies
Stable food prices	78	Perception of price stability due to barn activities
Increase in local food production	82	Households growing and storing local crops
Women's participation in food management	65	Women actively involved in barn management and decisions
Adoption of sustainable farming practices	59	Farmers applying organic/environmentally friendly methods
Improved household income	70	Farmers reporting income growth from barn crop sales
Enhanced community resilience to disasters	75	Perceived improvement in recovery after natural disasters

Source: Field survey and interviews conducted by the author in 2022 in villages implementing the Mataraman Barn Program, Special Region of Yogyakarta.

The data presented in Table 1 reveal that the Mataraman Barn Program has substantially contributed to enhancing food security in the Special Region of Yogyakarta. A significant majority of respondents (85%) reported improved food availability during crises, underscoring the barn's crucial role as a local food reserve that mitigates the adverse impacts of natural disasters and market fluctuations. This aligns with the program's objective to reduce community vulnerability to hunger by maintaining sufficient food stocks at the village level. Additionally, the program has effectively stabilized food prices, as 78% of households perceived more predictable and affordable food costs. Price stability is particularly important for low-income families, facilitating better access to essential nutrition and reducing economic stress in vulnerable populations.

Beyond immediate food security benefits, the program has stimulated local agricultural production and strengthened sustainable farming practices. The majority of respondents (82%) actively participate in cultivating staple crops such as rice, corn, and tubers, which are stored collectively in the barns to reduce dependence on external food supplies. This approach supports greater food sovereignty and long-term sustainability, consistent with the goals outlined by

Sarjiyah et al. (2016). Furthermore, 59% of farmers have adopted organic and environmentally friendly techniques promoted by the program, reflecting an increased awareness of ecological conservation and climate resilience. Importantly, the program also fosters gender inclusion; 65% of respondents acknowledged women's active roles in managing the barns and making decisions, thereby enhancing women's empowerment and participation in local food security governance.

Economically, the Mataraman Barn Program has provided stable income opportunities for farmers and contributed to poverty alleviation. Seventy percent of households reported increased income through selling surplus crops to the barn at guaranteed prices, encouraging agricultural productivity and economic growth at the village level. Moreover, 75% of participants felt that the program strengthened community resilience in the face of frequent natural disasters such as volcanic eruptions and earthquakes, by ensuring the availability of critical food reserves and facilitating rapid recovery efforts. These multifaceted benefits demonstrate that the Mataraman Barn not only addresses immediate nutritional needs but also supports broader Sustainable Development Goals related to poverty reduction, gender equality, environmental sustainability, and disaster resilience.

This directly helps reduce vulnerability to hunger, especially for the most vulnerable groups. In addition, Lumbung Mataraman also strengthens food security at the local level by encouraging more stable and sustainable food production (Sarjiyah; et al, 2016). This program encourages the community to plant local food crops, such as rice, corn, and tubers, which are then stored in barns. Thus, dependence on food supplies from outside the region can be reduced, and sufficient food availability at the local level can be maintained (Harper et al., 1986). This program also has a positive impact on poverty alleviation. With food barns, farmers and local communities can sell some of their crops to barns at stable prices, which helps increase their income. In addition, the stability of food prices produced by food barns also helps the poor access food at affordable prices (Harper & Benton, 2001). Another implication of the Mataraman Barn is the public health aspect. With the availability of sufficient and quality food, this program supports efforts to improve community nutrition. Diversifying food stored in barns, such as vegetables, fruits, and nuts, helps meet the nutritional needs of the community, especially in providing essential sources of protein and vitamins (Hirawan, F. B., & Verselita, 2020).

Lumbung Mataraman also supports the achievement of SDGs related to quality education. In some programs, food barns not only function as food storage but also as a centre for community education (Ashari et al., 2016). Farmers and the community receive training on good agricultural techniques, barn management, and how to increase food productivity. This knowledge not only increases their capacity for farming but also strengthens overall food security. In the context of gender equality, this program opens opportunities for women to be actively involved in the management of food barns. In many villages, women play an important role in family food management and participate in food barn activities, both in the production and distribution processes (Kuspriyantono, 2020). This helps increase women's participation in decision-making related to food security and economic empowerment at the local level.

From an environmental point of view, Lumbung Mataraman encourages more sustainable agriculture. This program invites the community to apply organic farming practices and the use of environmentally friendly technology in food production. In this way, the program supports the achievement of the SDGs related to climate change and environmental conservation by reducing the negative impact of agriculture on local ecosystems (Wattimena et al., 2021). This program also strengthens social cohesion and solidarity in the community. By reviving the tradition of food barns, the community is encouraged to work together to maintain food security (Rachmawati, 2020). This not only strengthens social ties between citizens but also helps to create a more inclusive and resilient social system. In the economic aspect, the Mataraman Barn also contributes to the development of the local economy.

By creating a stable market for agricultural products, the program encourages economic growth at the village level (Ritonga et al., 2015). Farmers get incentives to increase their production, while the community gets access to food at more affordable prices. This program also has implications for increasing community resilience to natural disasters. Yogyakarta is an area that is prone to disasters, such as the eruption of Mount Merapi and earthquakes (Ma'arif, S., & Hizbaron, 2015). With food reserves in barns, people have resources that can be used to survive in times of emergency, which ultimately accelerates the post-disaster recovery process.

In the United States, through the global humanitarian development organization PLAN International, there is a program similar to "Lumbung Mataram" called "Buffalo Banks." This program aims to support farmers in impoverished communities by providing access to buffalo as

a vital resource in agriculture. The program establishes a “communal bank” that enables farmers to borrow or lease buffalo without having to purchase them outright. Buffalo play a crucial role in soil cultivation, organic fertilizer production, and crop transportation (Riordan & Sarkar, 1998). With this access, farmers who would typically face financial barriers can improve their agricultural productivity. Buffalo Banks also promotes community cooperation and shared responsibility, as community members collaborate in the care of the buffalo, fostering a strong sense of solidarity and trust among them.

Buffalo Banks is prioritized in developing countries facing economic and infrastructure challenges, such as India and several other Asian countries. In comparison, the “Lumbung Mataraman” program in the Special Region of Yogyakarta (DIY), Indonesia, also utilizes a collective approach to food security. Both Buffalo Banks and Lumbung Mataraman demonstrate the importance of community-based approaches in addressing food and economic challenges. These programs strengthen food security by empowering communities to support each other and share resources. Buffalo Banks supports agriculture by providing labor and natural fertilizer, contributing to the sustainability of organic farming. Meanwhile, Lumbung Mataraman focuses more on food supply stability by reducing reliance on external food distribution. Both reflect the adaptation of local traditions to achieve sustainable development goals, including poverty reduction and food security.

In addition, Lumbung Mataraman also plays a role in supporting local government policies to achieve food security. This program is an example of how a community-based approach can be effective in addressing food security challenges at the local level. The success of this program can be a model for other regions in Indonesia that are facing similar challenges. This program also supports efforts to preserve local culture. By reviving the practice of food barns that has existed for a long time in Javanese culture, this program not only maintains local wisdom but also provides added value to food security efforts. The Mataraman Barn is a testament to how traditional values can be adapted to face modern challenges. From a global perspective, Lumbung Mataraman also contributes to the achievement of the SDGs more broadly. The program shows how local initiatives can support the global agenda to address issues such as hunger, poverty, and climate change. In this way, Yogyakarta contributes to the achievement of

the SDGs in Indonesia and around the world. Institutional strengthening is also one of the implications of this program.

Through Lumbung Mataraman, the community learns to manage their resources collectively and sustainably. This strong institution is an important capital for facing various challenges in the future, both in terms of food security and in broader development efforts. Overall, the Mataraman Lumbung Program has a wide impact on realising food security and supporting the achievement of the SDGs. This program not only provides practical solutions to food security problems but also builds stronger and more sustainable social, economic, and environmental systems. With continued support, this program has great potential to continue to grow and provide wider benefits for the people of Yogyakarta and its surroundings.

Conclusion

The Mataraman Lumbung Program in the Special Region of Yogyakarta has a strategic role in strengthening local food security and supporting the achievement of the Sustainable Development Goals (SDGs). Through a community-based approach and local wisdom, the program not only provides reliable food reserves in times of crisis but also encourages sustainable food production, local economic empowerment, and strengthening social cohesion. By involving all levels of society, including women, in the management of food barns, this program also contributes to improving social and economic welfare at the village level. Overall, Lumbung Mataraman shows that an approach that combines local traditions with global development goals can have a positive and sustainable impact. This program not only helps to overcome hunger and poverty but also supports environmental conservation and social inequality reduction, all of which are key elements in achieving the SDGs. Therefore, Lumbung Mataraman can be used as a model for other regions to realise community-based food security that is in line with the global development agenda.

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