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Public Administration Innovation in the Integration of Waste Management and Urban Farming: A Study of the "Tanami Tanata" Movement

Ansar Amir, Mardihang Haruna
Universitas Pejuang Republik Indonesia
Email: ansaramir160869@gmail.com, mardihangharuna@gmail.com

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ABSTRACT

The *Tanami Tanata* Movement in Makassar City is a public administration innovation that integrates organic waste management with urban farming practices. This study uses a qualitative descriptive approach with data collection conducted through interviews, observations, and documentation. The results show that this movement can significantly reduce organic waste generation while strengthening family food security. Public administration innovations are demonstrated through multi-actor collaboration, participatory governance platforms, the implementation of a local circular economy, and the digitization of services through the "*Sampah Tukar Sayur*" program. The integration of waste management with urban farming creates a sustainable cycle that transforms waste into productive resources, providing ecological, social, and economic benefits. Additionally, this program encourages the development of micro-businesses based on urban agriculture and increases public awareness of zero waste principles. This study emphasizes the importance of collaboration-based public administration innovation in addressing urban challenges while supporting the achievement of sustainable development goals.

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INTRODUCTION

The issue of waste management in urban areas has become an increasingly serious concern in the last two decades. Increasing population, public consumption, and urbanization contribute to an increase in the volume of daily waste that is difficult to handle in conventional ways (Putra & Nugroho, 2021). Data from the Ministry of Environment and Forestry (MoEF) shows that waste in Indonesia reaches more than 68 million tons per year, with the composition of organic waste dominating up to 60% of the total generation (*KLHK*, 2022). If not managed properly, organic waste has the potential to cause pollution, greenhouse gas emissions, and a decrease in the quality of public health (Khoo et al., 2021).

At the same time, urban farming is gaining attention as an innovative strategy to strengthen urban food security while improving environmental sustainability (Yandria et al., 2023). The integration between organic waste management and urban farming practices presents a dual solution, namely reducing the burden of waste entering the Final Disposal Site (*TPA*) and producing agricultural products that are beneficial to the community (Ismiraj et al., 2023). This approach is in line with the concept of a circular economy that emphasizes the reuse of resources and efforts to minimize waste (Yasir et al., 2022).

The "*Tanami Tanata*" movement is one of the community-based public administration innovations that connects household waste management with urban farming practices. This program prioritizes multi-actor collaboration involving local governments, communities, and the private sector to build sustainable environmental governance. This view is in line with Ansell & Torfing (2021) who emphasized that innovation in public administration requires

cross-sector engagement, citizen participation, and adaptability to urban environmental challenges.

Various studies support the importance of such integration. Fitriani et al. (2024) found that household-scale composting practices can reduce organic waste generation by up to 40% while increasing soil fertility. Saraswati and Wedagama (2025) show that community-based urban farming contributes to strengthening the social cohesion of urban residents. From a public administration perspective, Ansell & Gash (2020) emphasize that the success of environmental governance innovation is influenced by the level of trust between actors, regulatory support, and local government leadership. Similar findings were also shown by Yusuf and Syamsuri (2025) who revealed that community-based waste management initiatives can increase citizen participation while reducing the burden of regional budgets in landfill management.

Studies that specifically discuss public administration innovations in integrating waste management and urban farming are still relatively limited. Most research focuses more on technical aspects, such as composting methods or farming techniques, while the dimensions of governance, public participation, and institutional innovation have not received much attention (Rachman et al., 2020). This study aims to fill this gap by examining the "*Tanami Tanata*" movement as a model of public administration innovation that emphasizes collaboration, sustainability, and community empowerment.

The urgency of this research lies in the need to present innovative solutions that can address two crucial urban issues, namely the waste management crisis and food security. The dependence on landfills whose capacity is increasingly limited shows the need for a breakthrough in waste management (Salsabila et al., 2023). Meanwhile, urban farming has the potential to become an urban land use strategy that supports the achievement of the Sustainable Development Goals (SDGs), especially goal 11 on sustainable cities and settlements and goal 12 on sustainable consumption and production (UNDP, 2021).

Based on this background, this study aims to analyze the integration of waste management and urban farming in the "*Tanami Tanata*" movement, focusing on emerging forms of public administration innovation, the role of the actors involved, and policy recommendations that can strengthen collaboration-based environmental governance in urban areas. The benefits of this research include: (1) providing empirical evidence on the model of public administration innovation in the integration of waste management and urban farming; (2) serving as a reference for local governments in the development of waste management policies based on the circular economy; (3) strengthening the practice of multi-stakeholder collaboration in urban environmental governance; and (4) supporting the achievement of SDG targets, especially in goals 11 and 12 through a community-based approach.

Literature Review

Urban Waste Management

Waste management in urban areas is a strategic issue in sustainable development. Population growth, increased consumption, and urbanization dynamics have an impact on increasing daily waste generation. Putra & Nugroho (2021) emphasized that conventional waste management systems that rely on landfills require a transformation towards a more adaptive approach. The study by Khoo et al. (2021) emphasizes the importance of implementing a circular economy in waste management, where waste is treated as a resource that can be reprocessed to generate added value. This approach is in line with the government's strategy to encourage waste reduction at the source, increased recycling, and the use of organic waste for compost (MoEF, 2022).

Yusuf and Syamsuri (2025) show that community-based waste management plays an important role in strengthening citizen participation, reducing the burden on local governments, and creating collective awareness about the importance of a healthy environment. Thus, waste management involving multi-stakeholder collaboration is an important cornerstone in urban

governance innovation. Liu et al. (2021) emphasized that the success of waste management in urban Asia depends on local policy innovation, appropriate technology, and community involvement.

Urban Farming and Food Security

Urban farming is seen as an innovative strategy to support food security and improve the quality of the urban environment. Yandria et al. (2023) explain that this practice allows people to use narrow land to grow crops, while providing access to fresh food. Fitriani et al. (2024) added that the integration of urban farming with organic composting can produce more fertile soil, improve the quality of plant production, and reduce the amount of organic waste. Saraswati and Wedagama (2025) show that community-based urban farming contributes not only to the economic aspect, but also to strengthening social cohesion in the urban environment.

Yasir et al. (2022) emphasized that the integration of urban farming with circular economy principles can create an environmentally friendly and sustainable urban farming model. In the context of sustainable development, urban farming practices are closely related to the achievement of the SDGs, especially the goals related to sustainable cities (SDG 11) and sustainable consumption-production (SDG 12) (UNDP, 2021). This makes urban farming one of the key strategies to increase urban resilience in the midst of global challenges. Yusriadi et al. (2023) show that local government support through the provision of seeds, training, and regulations can strengthen the sustainability of urban farming in Indonesia's major cities. Meanwhile, a study by Kim et al. (2023) in Seoul shows that urban farming integrated with waste management systems contributes to reducing carbon emissions while improving urban air quality.

Public Administration Innovation in Environmental Governance

Public administration innovation is an important factor in realizing responsive and inclusive environmental governance. Ansell & Torfing (2021) emphasize that innovation in the public sector emerges through cross-actor engagement, openness to new ideas, and the ability to build long-term collaborations. Ismiraj et al. (2023) show that the integration of organic waste management with urban farming can be an example of institutional innovation that encourages collaboration between actors. Meanwhile, research by Rachman et al. (2020) highlights that participatory governance practices can strengthen policy legitimacy and increase the effectiveness of implementation at the local level.

Ansell & Gash (2020) added that collaborative platforms are a strategic instrument for governments to build trust, manage differences of interest, and create more sustainable shared solutions. Thus, public administration innovation is not only related to new technologies or methods, but also to paradigm shifts in the relationship between government and society. Idilia et al. (2023) found that public administration innovations in the field of urban environments often emerge through collaborative approaches between governments, academia, the private sector, and civil society.

Integration of Waste Management and Urban Farming

The integration of waste management and urban farming shows an integrated solution model that has ecological, social, and economic impact. Research by Yusuf and Syamsuri (2025) confirms that community involvement in waste processing can be transformed into food production practices through urban farming. This creates a sustainable cycle: organic waste is processed into compost, compost is used for urban agriculture, and crops can be reused by communities.

Salsabila et al. (2023) emphasized that this integration can reduce pressure on landfills while increasing food availability in urban areas. Yasir et al. (2022) reinforce this view by showing that circular economy-based approaches can bring resource efficiency and reduce ecological footprints. The "*Tanami Tanata*" movement is present as a real implementation of this integration. This program shows how public administration can play a role in organizing

local actors, managing resources collaboratively, and creating sustainable benefits for the community. This practice has become relevant as a model of urban governance innovation that not only addresses environmental problems, but also strengthens the socio-economic resilience of citizens.

Idilia et al. (2023) show that waste-to-resource integration with urban farming can increase the economic value of urban households. A study by Lee & Chen (2020) in Taiwan also confirms that this integration model can strengthen urban resilience through the use of organic waste as an input for urban agriculture. The "*Tanami Tanata*" movement represents a real implementation of this integration. This program shows how public administration can play a role in organizing local actors, managing resources collaboratively, and creating sustainable benefits for the community. This practice is relevant as a model of urban governance innovation that supports the achievement of sustainable development goals.

METODE PENELITIAN

This research employs a qualitative research approach with a descriptive method. This approach was chosen to gain an in-depth understanding of the phenomenon related to the implementation of the *Tanami Tanata* movement in the context of public administration innovation. This research was conducted in Makassar City, as one of the major cities in Indonesia that faces significant challenges in waste management and urban food security needs. Research informants were selected using purposive sampling technique, which involves selecting parties who have direct involvement with the *Tanami Tanata* movement. Key informants include local government representatives who handle the city's environmental and agricultural affairs, community leaders as activity implementers, participating community members, and private partners who provide technical support and funding.

Research data were collected through in-depth interviews, participatory observations, and documentation. Interviews were conducted to gain an understanding of the actors' experiences, views, and strategies in implementing the movement. Observations were carried out by participating in waste management activities and urban farming practices in the field, while documentation was used to complement data in the form of program archives, activity reports, regional regulations, and photographs of activities.

Data analysis was conducted thematically through three stages. First, the data were reduced to filter out information relevant to the research objectives. Second, data were presented in the form of narrative descriptions to show the relationships between waste management, urban farming, and public administration innovation. Third, conclusions were drawn based on emerging patterns, themes, and dynamics to explain integration practices and their implications for urban environmental governance. To maintain data validity, this study applies triangulation of sources and methods. The results of interviews were compared with observational and documentation findings so that the information obtained would be more credible, consistent, and academically accountable.

RESULTS AND DISCUSSION

Waste management is one of the biggest challenges in big cities, including Makassar. The volume of waste that continues to increase every day requires an integrated strategy, ranging from reducing the source, increasing the transportation fleet, to environmentally friendly processing innovations. The Makassar City Government through the Environment Agency (DLH) continues to make various breakthroughs to ensure that waste handling runs more effectively and sustainably, in line with the 2029 Waste-Free Makassar target.

DLH Makassar through the revised APBD in 2025 is around Rp. 20 billion for the procurement of waste vehicles and instruments. Where, the Makassar City government pays

serious attention to strengthening the waste management system. Through DLH, the City Government not only rejuvenates the transport fleet by presenting 50 units of garbage motorcycles and 8 units of closed container cars, but also prepares large-scale support programs. In addition to strengthening regulations, DLH Makassar is also preparing to rejuvenate the garbage carrier fleet to overcome the problem of vehicles that are no longer feasible. The waste motorcycle will be placed at TPS3R with a special modified design to make it more effective. The Reduce-Reuse-Recycle Waste Treatment Site (TPS3R) is a pattern of waste management approach at the communal or regional scale, involving the active role of the government and the community, through a community empowerment approach. In addition, as many as 10 thousand eco enzymes, 100 thousand biopores and 20 thousand maggots, will be rolled out as a solution for processing organic waste. All of these programs are planned to run massively starting from the 2025 revised budget and continuing until 2026, as a concrete step towards the 2029 Waste-Free Makassar target.

In line with the 2029 Waste-Free Makassar target, in 2025 the City Government has prepared a number of strategic steps, ranging from regulations, fleet rejuvenation, to environmentally friendly technological innovations. Waste management is now directed according to the central government's mandate, which is divided into three stages: upstream, media, and downstream. In the upstream part, the City Government has issued Guardian Regulation Number 13 of 2025 concerning waste levies. In addition, a circular letter regarding the obligation to sort household waste will be issued soon. This is the initial foothold for the community to take an active role from the source of waste. All programs are maximized massively in the 2025 revised budget and continue until 2026. The new fleet and waste processing facilities will later be distributed to 153 villages and 3R TPS, and can even be allocated to sub-districts according to needs in the field.

Focus on strengthening waste management from upstream to downstream. One of them is by reactivating RT/RW-based waste banks that are integrated with the Tanami Tanata program and urban farming. Each RTRW begins to process waste, either through biopores, ecoenzymes, maggots, and composters. All of this is integrated with the urban farming movement that has been initiated. To support the target of achieving 51.2% waste management by 2025, DLH is also preparing 10 thousand household composters, 100 thousand biopores, and the development of maggot centers. This center will begin to be built in several sub-districts, such as Panakkukang which has been prepared. Strengthening waste management is not only carried out on the mainland, but also on the islands. Several methods such as the use of environmentally standard incinerators are also being studied for waste management. Our big target is a Waste-Free Makassar 2029. Therefore, all efforts, both in terms of reducing resources, processing, and providing facilities, must be done massively from 2025 to 2026.

Based on this description, it can be seen that the Makassar City DLH data shows that daily waste production reaches 1,000–1,500 tons, with 60-70% of it in the form of organic waste. This condition is a big challenge because the Tamangapa Landfill is experiencing capacity pressure. The city government together with the local community then pioneered the *Tanami Tanata* movement as a model of integrating waste management with urban farming.

Table 1. Composition of Makassar City Waste

Types of Garbage	Percentage (%)
Organic	60 - 70
Inorganic (Plastic, Metal, Glass)	20 - 30
Others (B3, Residue)	5 – 10

Source: DLH Makassar

Integration of Waste Management with Urban Farming

The *Tanami Tanata* movement shows an urban farming ecosystem integrated with waste treatment. Household organic waste is sorted and used as raw materials for compost, liquid fertilizer, and eco-enzymes. Kitchen waste such as vegetable waste is used for maggot feed, which in turn becomes a source of fish and chicken feed. The results of this processing are returned to the community in the form of food products.

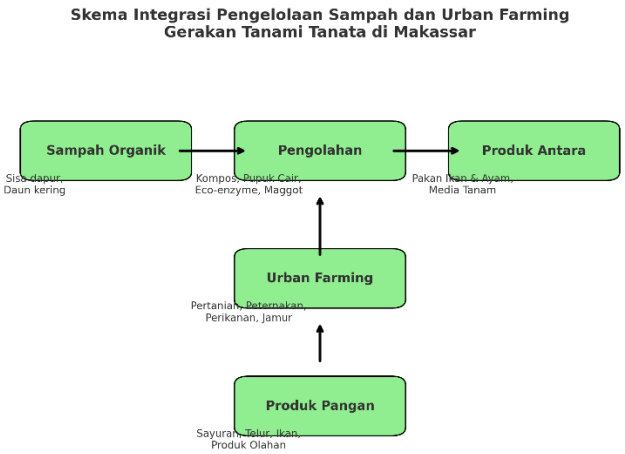


Figure 1. Waste Management and Urban Farming Integration Scheme

The drawing of the integration scheme of waste management and urban farming in the *Tanami Tanata movement* shows how the flow of household organic waste is transformed into productive resources. The process began with the sorting of organic waste, most of which was kitchen scraps and dry leaves. This waste then enters the processing stage, where various innovations are carried out such as making compost, liquid fertilizer, eco-enzymes, and maggot cultivation.

The results of the processing do not stop at the waste stage, but turn into intermediate products that can be reused. Compost and liquid fertilizer serve as a planting medium, while maggots serve as feed for fish and poultry. These intermediate products then support the urban farming ecosystem consisting of agriculture, livestock, fisheries, and mushroom cultivation. The integration creates a continuous cycle because all sectors complement each other.

The final stage of the scheme is food products produced from urban farming, including vegetables, eggs, fish, and other processed products. These food products return to the community, both for daily consumption and to be sold as an additional source of income. Thus, the cycle from waste back to food has been successfully realized.

This narrative confirms that *Tanami Tanata* not only offers solutions to reduce the volume of waste, but also provides economic and social benefits. This system is a real example of the application of a circular economy, where waste is processed and returned into something of value. In addition, the success of this scheme reflects the existence of public administration innovations characterized by multi-actor collaboration, community participation, and regulatory and technological support from the government and the private sector.

Application of the *Tanami Tanata Movement*

The implementation of this movement is carried out in stages at the family level (scale 1–2 m^2), RT (up to 10 m^2), and RW (>10 m^2). On a household scale, residents sort waste and use the yard for urban farming. At the RT and RW levels, integration becomes more complex with the collaboration of communities, waste banks, and local farmers' markets. This movement also encourages digitalization in the form of "Vegetable Exchange Waste", which is a system of

bartering organic waste with agricultural products, which was initiated in the second year of implementation.



Figure 2. Urban Farming

Public Administration Innovation

An important finding from this study is the existence of public administration innovations that are seen in several aspects, first, namely multi-actor collaboration, the Makassar City Government provides regulations, financial support, and CSR schemes. Universities play a role in research and training, local communities carry out practices in the field, the private sector supports with technology and funding, while NGOs strengthen the education and advocacy aspects. Second, the participatory governance platform, this movement involves residents directly through RT/RW groups and youth communities. This participation is in line with the theory of collaborative governance (Ansell & Gash, 2020) which emphasizes the importance of trust and continuous interaction between actors. Third, the local circular economy, namely innovation, appears in the use of organic waste into compost, liquid fertilizer, and maggot feed, which then returns to the community in the form of food. This concept is in line with the circular economy approach (Khoo et al., 2021; Yasir et al., 2022). And fourth, the digitalization of services, namely innovation, is also reflected in the implementation of a digital barter system between organic waste and food products, which encourages transparency, accountability, and public trust in the program. Here is an example of the Tanami Tanata movement:

Table 2. The "Vegetable Builder Waste" Movement in the Tanami Tanata Program

Types of Organic Waste	Weight (kg)	Exchange Rate (points)	Food Products Exchanged
Kitchen vegetable waste	1.0	10	1 bunch spinach
Dried leaves	2.0	15	2 Tablespoons
Fruit peel	1.5	12	1 kg of tomatoes
Stale rice	1.0	10	5 eggs
Coffee grounds	0.5	8	1 bunch mustard

The table above is a public administration innovation that can be used to support the digitization of services in the public administration innovation of the *tanami tanata movement*. The Makassar City Government together with the local community developed the "Sampah Tukar Sayur" system, which is a mechanism for exchanging organic waste with food products, which runs through a digital waste bank base. Through this program, residents can exchange the waste they collect for vegetables or products from urban farming. Some pilot projects use simple WhatsApp-based applications and local marketplaces to record transactions, so that they

are more transparent and can be monitored by community managers and DLH. This concept is strengthened with the support of environmental startups that help digitize data on waste scales and their exchange rates. Similar programs have been carried out in a number of villages, including in Manggala and Tamalate Districts, as part of the integration *of Tanami Tanata*. Administratively, this innovation brings new accountability in waste management as residents can see firsthand the exchange rate of the organic waste they hand over, while governments and communities obtain real-time data on the volume of waste that is successfully processed and the food products that are produced

Social and Environmental Impact

The results of the study show that the *Tanami Tanata* movement is able to significantly reduce the generation of organic waste in several villages that are pilot projects. The mechanism of waste sorting at the household level to its utilization through urban farming creates a new pattern in people's behavior. Residents who were previously used to throwing waste in a mixed manner are now getting used to sorting and viewing organic waste as a resource. This change in behavior fosters a new culture that supports *the principle of zero waste* while strengthening the capacity of the community to manage their own environment.

Another impact seen is the increase in family food security. Through urban farming, households can get direct access to fresh food such as vegetables, eggs, and fish from the integration of organic waste processing. This condition provides added value for low-income families because it is able to reduce daily expenses for food needs. At the same time, the distribution of crops in the community also strengthens social solidarity through sharing and barter mechanisms, including in the "Vegetable Exchange Waste" scheme.

This program also creates new economic opportunities through the growth of micro-enterprises based on urban agricultural products. Some youth groups, for example, have developed organic fertilizer businesses, maggot cultivation, or the sale of hydroponic vegetables from urban farming. This activity not only creates jobs, but also encourages the birth of social enterprises that combine economic orientation with environmental concerns. In other words, *Tanami Tanata* doubles as an environmental movement as well as an incubator for the green economy at the local level.

Institutionally, this movement strengthens the network between governments, communities, universities, and the private sector. The multi-actor collaboration resulted in adaptive and participatory public administration innovations. The community is no longer positioned only as a beneficiary, but as the main actor who drives change. This is in line with the concept of *collaborative governance* which emphasizes the importance of the involvement of all parties in the management of complex public issues.

From an environmental perspective, the implementation of *Tanami Tanata* makes a real contribution to reducing pressure on the Tamanapa Final Disposal Site (TPA). The volume of organic waste that has been successfully processed into compost, liquid fertilizer, and animal feed reduces the amount of waste stored in landfills. The long-term impact is reduced greenhouse gas emissions, specifically methane, resulting from the decay of organic waste. This condition supports the government's target of reducing the rate of pollution and improving the quality of the urban environment in Makassar.

CONCLUSION

The *Tanami Tanata* movement in Makassar City has successfully demonstrated how public administration innovation based on multi-stakeholder collaboration can transform urban waste problems into sustainable solutions. The integration of organic waste management with urban farming not only reduces the volume of waste in landfills by 40-60%, but also creates a circular economy cycle that provides ecological, social, and economic benefits for the

community. Through a participatory governance approach and support for the digitalization of services, this movement has succeeded in strengthening family food security, creating micro-business opportunities, and building collective awareness of zero waste principles. The success of this model represents an innovative breakthrough in urban environmental governance that can be replicated in other cities with local context adjustments.

Based on the study findings, several policy recommendations can be considered to strengthen public administration innovation in the integration of waste management and urban farming in Makassar City. Local governments need to strengthen regulations that encourage waste sorting at the source, as well as provide incentives to households and communities that actively process organic waste. Incentives can be in the form of support for processing facilities, technical assistance, or awards as recognition for their contributions. The success of *Tanami Tanata* as a pilot program needs to be expanded to more urban areas. Replication of this program in other cities in Indonesia is also highly feasible with local context adjustments. The expansion of the program will magnify the ecological and social impacts, while strengthening the position of local governments as facilitators in urban environmental governance.

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