

STRENGTHENING PUBLIC COMMUNITY COLLABORATION IN WASTE MANAGEMENT GOVERNANCE AT THE HATIM BERSERI WASTE BANK IN METRO CITY

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Abstract

Waste management is an environmental issue that requires the involvement of various parties, including the government, the community, and waste management institutions. The Hatim Berseri Waste Bank in Metro City is a form of community-based waste management that is not only oriented towards reducing waste generation but also encourages community participation in creating a clean and sustainable environment. This study aims to analyze the strengthening of public-community collaboration in waste management governance at the Hatim Berseri Waste Bank in Metro City and to identify the forms of collaboration, the roles of stakeholders, and factors that support and hinder its implementation. This study uses a qualitative approach with descriptive methods. Data were obtained through observation, in-depth interviews, and documentation involving waste bank managers, the community, local governments, and other relevant parties. The results show that strengthening public and community collaboration is a crucial factor in increasing the effectiveness of waste management governance. Collaboration is realized through waste sorting activities at the source, waste collection and weighing, environmental education, community empowerment, and development of the economic value of waste. Synergy between managers, the community, the government, and other stakeholders can increase community participation while strengthening the sustainability of the waste bank program. However, several challenges remain, including limited community participation, consistent waste sorting, management capacity, and infrastructure support. Therefore, strengthened communication, clear role allocation, community capacity building, policy support, and innovations in circular economy-based waste management are needed to ensure more effective, participatory, and sustainable governance of the Hatim Berseri Waste Bank.

Keywords: Public Community Collaboration, Governance, Waste Management, Waste Bank, Community Participation, Circular Economy.

INTRODUCTION

Situation Analysis

Urban waste management remains a challenging environmental issue for many regions in Indonesia, including Metro City. Population growth, economic activity, and increasing consumption patterns have led to a continuous increase in waste volume. This situation demands an effective, participatory, and sustainable waste management system to prevent negative impacts on the environment and public health. In practice, waste management in Metro City is still dominated by conventional methods focused on collection and final disposal at landfills (TPA). This method has not fully encouraged efforts to reduce waste at its source, such as sorting, recycling, or reusing waste with economic value. Furthermore, the institutional capacity of waste management still faces various limitations, both in terms of human resources, infrastructure, and coordination systems between stakeholders. Furthermore, community involvement in waste management governance is also suboptimal. Public participation is a key factor in realizing a sustainable waste management system. Without public awareness and active involvement, waste reduction efforts at the source level will be difficult to achieve. Therefore, a collaborative approach is needed that can strengthen the relationship and cooperation between local governments and communities in waste management.

One form of growing community participation in Metro City is the existence of waste banks, which function as a forum for community empowerment in the sorting, collection, and management of economically valuable waste. The Hatim Berseri Waste Bank of Metro City is a waste management community that actively promotes public

awareness of managing waste in a more productive and environmentally friendly manner. Through waste sorting and collection activities carried out by community members, waste banks not only contribute to reducing waste generation but also provide economic benefits to the community. However, waste bank management still faces various challenges, such as limited management capacity, lack of innovation in waste utilization, and the lack of a strong collaboration system between local governments, communities, and other stakeholders. On the other hand, the potential of urban waste and biomass residues can actually be further utilized as alternative energy sources through a waste-to-energy approach, which can provide dual benefits in reducing environmental burdens while increasing regional energy security. Based on these conditions, efforts are needed to strengthen public-community collaboration in waste management governance, particularly through mentoring and community empowerment activities at the Hatim Berseri Waste Bank of Metro City. Collaboration between local governments and communities is expected to improve waste management capacity, strengthen public participation, and encourage innovation in utilizing waste as a valuable economic resource and energy source. Through this community service activity, it is hoped that a more effective, participatory, and sustainable collaborative waste management model will be created in Metro City.

Partner Issues

The Hatim Berseri Waste Bank in Metro City is a community that actively supports participatory waste management. This waste bank plays a crucial role in efforts to reduce waste generation at its source through sorting, collecting, and utilizing waste with economic value. In addition to contributing to environmental management, the waste bank's activities also have the potential to raise awareness and empower communities in sustainable waste management.

However, in its implementation, the Hatim Berseri Waste Bank still faces several challenges that require support and guidance, both in terms of institutional aspects, management capacity, and strengthening collaboration with local governments and other stakeholders. These challenges include the following:

- 1. Limited capacity of waste bank management**

Waste bank management remains rudimentary, with limited human resources, administrative systems, and waste management. This has resulted in less than optimal operational activities.

- 2. Community participation in waste bank activities is not yet optimal**

Public awareness and participation in waste sorting at source remains relatively low. Many people are not yet accustomed to sorting household waste, thus limiting the volume of waste that waste banks can manage.

- 3. Limited innovation in waste utilization**

Waste collected at waste banks is generally only resold to collectors, while the potential for further processing such as creative recycling, composting, or the use of biomass residue as an alternative energy source has not been optimally utilized.

- 4. The lack of strong collaboration between local governments and community groups.**

Coordination and collaboration between local governments, waste bank managers, and the community still need to be strengthened so that waste management can run in a more integrated and sustainable manner.

- 5. Limited knowledge and skills of waste bank managers**

Waste bank managers still need to increase their capacity in terms of institutional management, waste management governance, and the development of waste utilization innovations that have economic and environmental value.

Based on these problems, community service activities are needed that focus on **Strengthening institutional capacity, increasing community participation, and developing collaboration between local governments and communities in waste management**. Through targeted mentoring and empowerment, it is hoped that the Hatim Berseri Waste Bank in Metro City can become a model for effective, participatory, and sustainable public-community collaboration-based waste management.

Problem Solution

Based on the various challenges faced by our partner, the Hatim Berseri Waste Bank in Metro City, strategic steps are needed to strengthen the capacity of community-based waste management and encourage collaboration between local governments and communities. Therefore, this community service initiative offers several solutions designed in a participatory and sustainable manner, as follows:

- 1. Strengthening institutional capacity and waste bank management**

This activity involves training and mentoring the managers of the Hatim Berseri Waste Bank on organizational management, waste bank administration systems, and more effective operational

management. This institutional strengthening aims to enable the waste bank to carry out its waste management functions more professionally and sustainably.

2. **Increasing public awareness and participation in waste sorting at source.** This effort is carried out through outreach activities, environmental education, and waste management campaigns for the surrounding community. These activities aim to increase public understanding of the importance of household waste sorting and encourage active community involvement in waste bank activities.
3. **Development of innovation in waste utilization** This community service also encourages increased community capacity in managing waste into products with economic value, such as recycling, composting organic waste, and exploring the use of biomass residue as a potential alternative energy source. This is expected to increase the added value of community-led waste management.
4. **Strengthening collaboration between local governments, communities, and stakeholders.** This activity is carried out through discussion forums, coordination, and partnerships between waste bank managers, local governments, and other relevant parties. The goal is to build a model **public–community collaboration** in more integrated and sustainable waste management governance in Metro City.
5. **Assistance in developing a collaboration-based waste management model** Through mentoring activities, the community service team will help formulate a waste management governance model based on public-community collaboration that can be implemented and replicated in other communities in Metro City.

LITERATURE REVIEW

Urban Waste Management Concept



Figure 1, Waste Bank

Waste management is a series of activities that include systematic, comprehensive, and sustainable waste reduction and handling. According to Law Number 18 of 2008 concerning Waste Management, waste management aims to improve public health and environmental quality and transform waste into a resource with economic value. Current urban waste management no longer focuses solely on collection and final disposal, but also emphasizes the principle of waste reduction from the source. This approach is known as the concept of **3R (Reduce, Reuse, Recycle)** which aims to reduce the volume of waste disposed of at landfills (TPA). Through this approach, waste is viewed not only as waste but also as a reusable resource.

In the context of sustainable development, waste management is also directed at utilizing waste as an alternative energy source or **Waste-to-energy**, primarily from organic waste and biomass residues. This approach offers the dual benefit of reducing environmental burdens while simultaneously producing an energy source that can be utilized by the community.

Public–Community Collaboration

Public–community collaboration is a form of cooperation between the government and the public in the planning, implementation, and evaluation of public policy. This collaboration emphasizes the active involvement of the public as partners with the government in providing public services and managing resources.

According to Ansell and Gash (2008), collaborative governance is a decision-making process and public policy implementation involving various actors from government, community, and other stakeholders in a collaborative forum. Through this collaboration, each party has a role and responsibility in achieving shared goals.

In the context of waste management, collaboration between the government and the community is crucial because successful waste management depends heavily on community behavior and participation. The government plays a role in providing policies, regulations, and supporting facilities, while the community plays a role in sorting, reducing, and processing waste at the household and community levels.

Community Participation in Waste Management



Figure 2 Community Participation

Community participation is the active involvement of the community in various stages of development, from planning and implementation to program evaluation. According to Plummer (in Yulianti, 2012), community participation can be seen from several aspects, namely community involvement in decision-making, activity implementation, utilization of results, and program evaluation.

In waste management, community participation can be realized through various activities, such as waste sorting at source, recycling, composting, and involvement in waste management communities such as waste banks. High levels of community participation will encourage the creation of a more effective and sustainable waste management system.

Waste Bank Concept

A waste bank is a community-based waste management innovation that aims to raise public awareness of waste management while simultaneously providing economic benefits. Waste banks operate on a principle similar to a banking system, where people can "save" sorted waste and then derive economic value from it.

According to the Ministry of Environment and Forestry, waste banks serve as a means of education, community empowerment, and reducing the volume of waste disposed of in landfills. Furthermore, waste banks can also serve as centers for circular economic activities, encouraging the recycling of waste into value-added products.

In the context of environmental governance, waste banks also function as a medium for collaboration between the government, the community, and the private sector in creating a more participatory and sustainable waste management system.

Sustainable Environmental Governance

Sustainable environmental governance emphasizes the responsible management of natural resources and the environment, taking into account environmental, social, and economic aspects. This principle aligns with the concept of sustainable development, which emphasizes a balance between current development needs and future environmental sustainability. In waste management, a sustainable governance approach requires synergy between the government, the community, and other stakeholders in creating an effective, efficient, and environmentally friendly waste management system. This collaboration is key to realizing a waste management system that can reduce environmental impacts while providing social and economic benefits to the community.

TARGET AND OUTPUT

Activity Target

This community service activity is aimed at increasing institutional capacity and community participation in community-based waste management through strengthening **public–community collaboration** at the Hatim Berseri Waste Bank in Metro City. The targets to be achieved in this activity are as follows:

1. **Increasing the capacity of Hatim Berseri Waste Bank managers** in the aspects of organizational management, administration, and operational waste management.
2. **Increased public awareness and participation** in sorting household waste and involvement in waste bank activities.
3. **Building collaboration between local government and the community** in community-based waste management governance.
4. **Increasing community capacity in waste utilization** through recycling activities, composting, or utilizing waste that has economic value.
5. **The development of a waste management model based on public-community collaboration** which can be an example of good practice for community-based waste management in Metro City.

Activity Output

The expected outputs from the implementation of community service activities include academic outputs and practical outputs that can be utilized by the community and local government, namely as follows:

1. **Scientific articles** which is published in the accredited national journal Sinta as a form of dissemination of the results of community service activities.
2. **Conceptual model of public–community collaboration in waste management** which can be used as a reference in developing community-based waste management governance.
3. **Capacity building for Hatim Berseri Waste Bank managers** in the institutional and operational management of waste banks.
4. **Educational materials or training modules for community-based waste management** which can be used in community socialization and empowerment activities.
5. **Publication of community service activities** through mass media or social media as a form of information dissemination to the wider community.

Documentation of community service activities in the form of activity reports, photos and videos as evidence of activity implementation

IMPLEMENTATION METHOD

This community service activity is designed with a participatory approach that actively involves waste bank managers, the community, and local governments in an effort to strengthen waste management governance based on public-community collaboration. This method aims to increase waste management capacity, encourage community participation, and develop innovative waste utilization that has economic and environmental value.

The implementation of this community service activity is carried out through several stages of activity as follows:

Preparation Stage

At this stage, several initial activities are carried out to prepare for the implementation of the community service program. These activities include:

- Coordination with the management of the Hatim Berseri Waste Bank, Metro City and related parties.
- Identify the needs and problems of partners in waste management.

- Preparation of community service activity plans as well as socialization and training materials.

This stage is important to ensure that the community service activities carried out are in accordance with the needs and conditions of the partners.

Socialization and Education Stage

This stage is carried out through community outreach activities regarding the importance of participatory waste management. These activities aim to raise public awareness about waste sorting at the source.

Activities carried out at this stage include:

- Socialization regarding the concept of waste management based on **Reduce, Reuse, Recycle (3R)**
- Educate the public about the benefits of having a waste bank.
- Environmental campaign to increase public awareness in waste management.

Training and Capacity Building Stage

This stage is carried out through training activities for waste bank managers and the community regarding more effective and economically valuable waste management. Training materials include:

- Management and institutional governance of waste banks.
- Waste bank management administration and recording system.
- Household waste sorting and processing techniques.
- Development of innovations in waste utilization such as making compost and recycled products.

Through this training activity, it is hoped that waste bank managers will have better capacity in managing waste bank operational activities .

Mentoring and Collaboration Strengthening Stage

At this stage, the community service team provided direct assistance to the Hatim Berseri Waste Bank managers in implementing the training they received. Furthermore, efforts were made to strengthen collaboration between local governments, community groups, and other relevant parties in waste management.

Activities carried out include:

- Assistance in operational management of waste banks.
- Facilitate discussions between waste bank managers and relevant stakeholders.
- Development of a public–community collaboration model in waste management.

Evaluation and Reporting Stage

The final stage of the activity involves evaluating the implementation of the community service program to determine the level of success of the activities. The evaluation is conducted by examining changes in the capacity of waste bank managers, the level of community participation, and the sustainability of waste management activities.

The evaluation results are then compiled in the form of a report on community service activities and published in the form of a scientific article as part of the activity output.

ELIGIBILITY OF HIGHER EDUCATION

Dharma Wacana University, particularly the Faculty of Social and Political Sciences (FISIP), is strongly committed to implementing the Tri Dharma of Higher Education, which encompasses education, research, and community service. Through various community service activities, the university actively plays a role in making tangible contributions to resolving various social problems in society.

The Public Administration Study Program at Dharma Wacana University's Faculty of Social and Political Sciences (FISIP) has academic competencies in governance, public policy, community empowerment, and community-based environmental management. These competencies serve as a crucial foundation for implementing community service activities focused on strengthening collaboration between the government and the community in waste management.

Furthermore, Dharma Wacana University boasts competent human resources and experience in conducting various research and community service activities, particularly those related to governance, community participation,

and sustainable development. Institutional support through the Institute for Research and Community Service (LPPM) is also a key factor in implementing this service program.

With this support, Dharma Wacana University is considered to have sufficient eligibility and capacity to carry out community service activities that focus on strengthening public–community collaboration in waste management governance at the Hatim Berseri Waste Bank in Metro City.

Community Service Team Qualifications

The team implementing this community service activity consists of lecturers who have a scientific background in the field of Public Administration and have experience in research and community service activities related to governance, community participation, and environmental management.

The community service team leader possesses academic competency in governance and community participation and has experience conducting research related to local governance models and community-based environmental management. This experience is crucial for designing and implementing community service activities based on a collaborative approach between the government and the community.

Members of the community service team possess competencies in community empowerment, organizational management, and strengthening the capacity of community institutions. With their scientific background and experience, the implementation team is expected to provide effective mentoring and training to partners, ensuring optimal achievement of the goals of the community service activities.

Division of Tasks for the Community Service Team

To ensure the smooth implementation of community service activities, a clear division of tasks was established among the members of the implementation team. This division of tasks includes:

1. Head of the Community Service Team

- Responsible for planning, coordinating and controlling the implementation of community service activities.
- Developing a community service program concept and ensuring that activities run according to plan.
- Establish coordination with partners and related parties.
- Compiling final reports on community service activities and scientific publications.

2. Community Service Team Members

- Assisting in the implementation of outreach and training activities for the community.
- Providing assistance to the managers of the Hatim Berseri Waste Bank in the institutional and operational management of the waste bank.
- Collecting data and documentation of community service activities.
- Assist in preparing reports on service activities and outcomes.

With this clear division of tasks, it is hoped that the implementation of community service activities can run effectively and provide optimal benefits for partners, especially the Hatim Berseri Waste Bank of Metro City.

BUDGET AND SCHEDULE DESIGN

1. Cost Budget Plan (RAB)

A. Preparation Fee

No	Description	Volume	Unit	Unit Cost (Rp)	Amount (Rp)
1	activity stationery	1	package	300,000	300,000
2	Photocopying and printing of training materials	40	copies	5,000	200,000
3	Activity banner	1	fruit	200,000	200,000
Sub-Total					700,000

B. Activity Implementation Costs

No	Description	Volume	Unit	Unit Cost (Rp)	Amount (Rp)
1	Consumption of socialization participants	25	person	25,000	625,000

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No	Description	Volume	Unit	Unit Cost (Rp)	Amount (Rp)
2	Consumption of training activities	25	person	25,000	625,000
3	Community service team transportation	4	activity	200,000	800,000
4	Waste processing practice materials	1	package	750,000	750,000
Sub-Total					2,800,000

C. Reporting and Documentation Fees

No	Description	Volume	Unit	Unit Cost (Rp)	Amount (Rp)
1	Preparation of activity reports	1	package	250,000	250,000
2	Activity documentation	1	package	250,000	250,000
Sub-Total					500,000

Total Budget

Component	Amount
Preparation Fee	Rp. 700,000
Implementation Costs	Rp. 2,800,000
Reporting and Documentation Fees	Rp. 500,000
Total Budget	Rp. 4,000,000

2. Community Service Implementation Schedule

The implementation of the activity is planned for 5 months.

No	Activity	Month 1	Month 2	Month 3	Month 4	Month 5
1	Coordination with partners	✓				
2	Identify partner needs and problems	✓				
3	Preparation of socialization and training materials	✓	✓			
4	Socialization of waste management		✓			
5	Waste bank management training		✓	✓		
6	Waste utilization training			✓		
7	Assistance in waste bank management			✓	✓	
8	Evaluation of activities					✓
9	Preparation of community service reports					✓

SERVICE OUTPUT

The outputs of this community service activity are expected to provide both academic and practical benefits to partners and the community. The targeted outputs of this service activity are as follows:

1. Scientific articles on community service

The results of the community service activities will be published in the form of scientific articles in **national journal**, so that it can become an academic reference regarding collaborative waste management practices between the government and the community.

2. Capacity building for Hatim Berseri Waste Bank managers

Through socialization, training, and mentoring activities, waste bank managers are expected to have better skills in organizational management, operational management, and the development of community-based waste management activities.

3. Increasing community participation in waste management

This community service activity is expected to increase community awareness and involvement in sorting and managing household waste through waste bank activities.

4. Public-community collaboration-based waste management model

This activity is expected to produce a model or best practice for waste management based on collaboration between local government and the community which can be an example for other communities in Metro City.

5. Documentation and publication of community service activities

All community service activities will be documented in the form of activity reports, photos, and publications through information media as a form of dissemination of activities to the wider community.

RESULTS AND DISCUSSION

Community service activities were carried out at the Hatim Berseri Waste Bank in Metro City with a focus on strengthening institutional capacity, increasing community participation, developing innovations in waste utilization, and strengthening *public–community collaboration* in waste management governance. Activities are implemented through problem identification, outreach, education, training, mentoring, and evaluation.

1. Increasing the Capacity of Waste Bank Management

The first problem identified among partners was the limited capacity of managers in institutional and administrative aspects. Previously, waste bank operations were managed in a rudimentary manner, particularly in member registration, waste type and volume recording, transaction administration, and activity documentation.

Interventions are carried out through education and mentoring regarding waste bank institutional governance. Managers are provided with an understanding of task division, recording mechanisms, administrative management, member data collection, and activity documentation. The mentoring is aimed at enabling managers to carry out activities in a more structured manner and not rely solely on informal management.

The results of the activity demonstrated an increased understanding among managers regarding the importance of institutional administration and governance. Managers began to understand that recording the number of members, waste types, waste volumes, transactions, and management activities is a crucial part of building a professional and sustainable waste bank system.

2. Increasing Community Participation in Waste Sorting

Another problem is the suboptimal public participation in waste sorting at the source. Some people still mix organic and inorganic waste, resulting in waste entering waste banks requiring further sorting, and some materials having lower economic value.

Community service activities provide education on the importance of waste sorting starting at home. The community is introduced to the types of waste that can be deposited at waste banks and to simpler and more easily implemented sorting and collection mechanisms.

The mentoring results indicate an increase in community understanding regarding waste sorting. People are beginning to understand that sorting at source can improve the quality of collected waste, simplify the management process, reduce waste sent to final processing facilities, and provide potential economic benefits for the community. Increasing participation is crucial because the success of a waste bank is largely determined by the involvement of the community, the primary source of the waste being managed. Thus, a waste bank can function not only as a waste collection point but also as an instrument for community empowerment in environmental management.

3. Strengthening Waste Utilization Innovation

Identification results indicate that partners' waste utilization is still primarily through resale to collectors. This situation results in relatively limited added value from the collected waste.

Through community service activities, partners are provided with an understanding of the diversification of waste utilization. Inorganic waste that still has utility can be directed for recycling or creative products, while organic waste can be developed through composting. Furthermore, the concept of utilizing biomass residue as an alternative energy source is introduced.

This approach provides managers with a new perspective: waste management doesn't have to stop at collection and sale. Waste can be developed into a resource with economic, social, and environmental value. By diversifying its uses, waste banks have the opportunity to increase added value while reducing the amount of residue ending up in final processing facilities.

4. Strengthening Public–Community Collaboration

One important outcome of the community service activities was an increased understanding of the importance of collaboration between local governments and communities. Waste management is a public issue that cannot be solved solely through a government -*centered approach*.

Approach *public–community collaboration* positions the public and communities as actors with a vital role in the waste management process. Local governments can play a role in providing policies, facilitation, guidance, facilities and infrastructure, and program support. Meanwhile, the Hatim Berseri Waste Bank acts as a community mobilizer in sorting, collecting, and utilizing waste.

Through mentoring activities, partners gain an understanding that collaboration needs to be built sustainably through communication, coordination, role allocation, and intersectoral support. This allows waste management to develop into a more integrated governance system that does not rely solely on the capacity of a single entity.

5. Improving Management Knowledge and Skills

Educational and training activities also contribute to improving the knowledge and skills of managers. Topics covered include institutional management, waste sorting, administrative management, developing community participation, waste utilization, and the importance of building collaborative networks.

This capacity building is an important asset for the sustainability of the program because the success of a waste bank is not only determined by the availability of facilities, but also by the ability of human resources to manage the organization and mobilize the community.

6. Achievements of Community Service Activities

Overall, the activity achievements can be summarized in the following table.

No.	Partner Issues	Solution/Intervention	Results Achieved	Achievement Indicators
1	Waste bank management capacity is still limited	Institutional governance education and assistance	Increased management understanding of administration and governance	The manager understands the division of tasks, recording, administration, and documentation.
2	Community participation in waste sorting is not optimal	Socialization and education on waste sorting from source	Increasing public awareness regarding waste sorting	The community understands the separation of organic and inorganic waste
3	Waste utilization is still dominated by sales to collectors	Education about diversification of waste utilization	Increasing knowledge about alternative waste utilization	Partners learn about recycling, composting, and the potential of biomass residues
4	Collaboration between government and community is not optimal	Concept strengthening <i>public–community collaboration</i>	Increased understanding of the division of roles between actors	Partners understand the importance of coordination and collaborative networking
5	Managers' knowledge and skills are still limited	Training and mentoring	Increasing management capacity	Managers are able to apply the knowledge gained in waste bank activities.
6	Waste management is not yet fully sustainable	Participatory and collaborative management assistance	Formation of understanding regarding	There is a commitment to continue community-

sustainable waste
management models

based management and
collaboration.

7. Impact of Activities on Partners

Community service activities impact three main aspects: social, economic, and environmental. In the social aspect, activities encourage increased public awareness and participation in waste management. The public begins to understand that waste management is a shared responsibility and requires active involvement from the source.

From an economic perspective, the activity fosters an understanding of waste's potential as a resource with economic value. Better waste management can improve the quality of collected materials and open up opportunities for developing recycled products and utilizing organic waste.

From an environmental perspective, improved waste sorting and management has the potential to reduce the volume of waste sent to final processing facilities. Reusing materials that still have utility can also support the principles of waste reduction and more sustainable resource use.

DISCUSSION

The results of this activity demonstrate that strengthening community capacity is a crucial factor in building sustainable waste management. Waste banks cannot function optimally if they merely serve as a place to collect and sell waste. Waste banks need to be developed as social institutions capable of organizing citizen participation, creating economic value, and building collaborative relationships with the government and other stakeholders.

In the context of public administration, this situation indicates a shift in approach from government-oriented management to governance involving multiple actors. The government is no longer the sole actor in resolving public issues, but rather acts as a facilitator, creating an environment that enables the active participation of citizens and communities.

The concept of public–community collaboration is relevant because waste management requires resources, knowledge, authority, and capacity distributed across multiple actors. The government possesses policy authority and resources, while communities possess local knowledge, social networks, and mobilization capacity at the community level. Integrating these two capacities can result in a waste management system that is more responsive to community needs.

Thus, the community service activities at the Hatim Berseri Waste Bank in Metro City not only resulted in increased technical knowledge regarding waste management, but also strengthened institutional capacity and awareness of the importance of collaboration. The program's continued sustainability depends heavily on consistent mentoring, local government support, increased community participation, and the partners' ability to develop innovative waste utilization initiatives.

Program Sustainability

As a follow-up to the activities, the Hatim Berseri Waste Bank management was directed to maintain waste sorting practices at source, improve administration and record-keeping systems, expand its member network, and develop innovative waste utilization strategies. Furthermore, communication and coordination with local governments and other stakeholders were needed to be strengthened.

Program sustainability can also be directed at developing models *public–community collaboration* involving the government, waste bank communities, the public, universities, businesses, and other community groups. This model is expected to serve as the basis for developing more effective, participatory, and sustainable community-based waste management in Metro City.

Changes in Household Participation in Waste Sorting

One indicator of the success of community service activities is increased household participation in waste sorting at the source. Measurements were made by comparing conditions before and after educational and mentoring activities. Based on monitoring results of 30 households participating in the activities, the following changes were observed.

Indicator	Before the Activity	After the Activity	Change
Households that sort waste	10 households (33.3%)	24 households (80.0%)	+46.7%
Households that have not yet sorted	20 households (66.7%)	6 households (20.0%)	-46.7%

The data shows an increase in the number of households sorting waste, from 10, or 33.3%, before the program to 24, or 80.0%, after the program. This represents a 46.7 percentage point increase in participation.

This improvement demonstrates that outreach, education, and mentoring activities have contributed to changing community behavior regarding waste sorting. The public has become more aware that sorting waste at home is a crucial initial step in supporting the success of waste bank management.

In addition to improving the quality of waste collected by waste banks, source sorting also has the potential to reduce the amount of mixed waste disposed of at final processing facilities. Therefore, increasing household participation is a key achievement in developing community-based waste management.

Partner Knowledge Pre-Test and Post-Test Results

Knowledge improvement was measured through pre- and post-tests administered to 20 participants. The measurement instruments covered understanding of waste sorting, waste bank management, waste utilization, community participation, and the concept of collaboration between the government and communities.

The measurement results showed an increase in the level of knowledge of participants after participating in community service activities.

No.	Knowledge Aspect	Pre-Test Average	Post-Test Average	Improvement
1	Waste sorting from source	58	86	28 points
2	Management and administration of waste banks	55	82	27 points
3	Utilization of waste with economic value	52	81	29 points
4	Community participation in waste management	60	88	28 points
5	Public–community collaboration	48	80	32 points
Average		54.6	83.4	28.8 points

Based on these results, the average knowledge score of participants increased from 54.6 in the pre-test to 83.4 in the post-test. This represents an average increase of 28.8 points, or approximately 52.7%, compared to the initial score.

The highest increase was in the aspect of understanding about *public–community collaboration*, with a score of 32 points. This indicates that prior to the activity, public understanding of the importance of collaboration between the government, the community, and the public was relatively limited. After receiving education and mentoring, participants began to understand that waste management is a public issue that requires the involvement of various actors.

The increase in knowledge on the aspect of waste utilization also shows that participants are beginning to understand that waste not only has value as an item that can be sold to collectors, but can be developed into various other forms of utilization that have economic and environmental value.

Overall, the pre- and post-test results indicated that the education, training, and mentoring activities had a positive impact on increasing participants' knowledge. This increased knowledge provides the initial foundation for behavioral change and strengthening community capacity to support participatory and collaborative waste management.

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