

INSTITUTIONAL INTERNAL SYNERGY: PARTICIPATION AND SUSTAINABILITY OF WASTE MANAGEMENT

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Abstract

KWT is a group of women farmers engaged in agriculture, usually formed to empower women. Many KWT in urban areas usually farm on limited land to overcome the limitation of area. Meanwhile, the farming carried out by KWT Berkah has strong correlation with a strategy to deal with environmental issues. The activity of urban farming is part of the waste management, effort by KRL Katulampa, a local waste management community, by utilizing processed waste products to increase economic potential and reduce waste production to landfill. This research aims to analyze the correlations between the level of KWT participation and its sustainability in the waste management program. The research method used is a combination of a quantitative approach using questionnaires, and supported by a qualitative data using in-depth interviews. The method used to collect data is through census with all of KWT Berkah members as respondents. The results show that there is correlation between KWT community participation with the sustainability of the KRL Katulampa waste management program. However, urban farming needs to be accompanied by other activities so that waste management activities are not only socially beneficial but also have significant economic benefits for the community.

Keywords: participation, sustainability, waste management, woman farmer group

INTRODUCTION

The agricultural sector is one of the key sectors in boosting Indonesia's economy, as it contributes to national income, employment, and food security (Kusumaningrum, 2019). Women are significantly involved in the agricultural sector and are empowered communally through groups such as Women Farmers Groups (*Kelompok Wanita Tani* or KWT), which serve to expand shared knowledge and insight (Riyansyah et al., 2023). Women's empowerment in agriculture is expected to support the development of housewives' capabilities in sustaining household economies, even from home (Aini, 2020; Istiqomah, 2022). Therefore, KWT can be seen as a platform for women to participate in development efforts. KWT functions as a medium for extension activities and coaching to improve the quality of female farmers' resources (Hermawan et al., 2022). Development must take into account the unique potential and conditions of each location. KWT programs are tailored to the needs and potential of each area both urban and rural to empower women and improve their quality of life. In urban areas, KWT often relies on communal land or farming methods suitable for limited space, as most members do not own personal land (Tunde & Tilakasiri, 2020), and these areas often function as green spaces. KWTs are frequently formed through community initiatives and are later supported by government institutions. The nature of the institutions that support and facilitate KWTs often influences the direction of their activities and empowerment.

Food security depends on environmental conditions that support agricultural success, so environmental damage can affect agricultural sustainability. One factor that can harm environmental health is unmanaged waste. Waste that accumulates over time can become a breeding ground for disease, threatening public health and degrading soil and water quality. As long as human activities continue, the issue of waste will persist (Humaira, 2021). Therefore, waste must be managed to prevent environmental damage and avoid the emergence of new problems. Women play an important role in waste management, as every household is a primary source of waste. Household-level waste management through women's participation has a direct impact on the environment (Nwamaka et al., 2021). Women often carry multiple roles as mothers, homemakers, and the first educators making their empowerment and knowledge in sustainable waste management crucial for environmental health and well-being. Development programs can only succeed

when supported by quality institutional systems within the community. Institutions are needed to create long-term sustainability for social systems, and they become effective when communities and their full potential are involved in development programs (Kurniasih, 2017). Institutional frameworks refer to practices that manage social interactions, including social activities, norms, values, social structures, and role systems within society. These institutions are purposefully established to regulate approaches, formulate rules, processes, and human roles related to the system so that all components can work toward specific goals (Kurniasih, 2017; Aprillia & Barlan, 2020). In densely populated urban areas, waste management needs to be carried out at the local level to reduce the burden on final waste disposal sites. In the Mutiara Bogor Raya (MBR) Housing Complex, local waste management is carried out by a community called the *Kampung Ramah Lingkungan* (KRL) Katulampa. *KWT Berkah*, a part of KRL Katulampa, plays an important role in the community's waste management efforts. KWTs are generally established to empower and improve the welfare of female farmers, promoting better livelihoods (Samudro & Setyowati, 2023), making them important platforms for women's participation in development. The role of women does not stop at household responsibilities, but also includes responsibilities in maintaining environmental cleanliness. *KWT Berkah* was formed to provide a platform for housewives in MBR to engage and expand their knowledge in waste management. Participation can be viewed as the involvement and contribution of individuals in an activity. Through participation in *KWT Berkah* activities, members are expected to contribute to the sustainability of local waste management. Therefore, studying the correlation between the participation of KWT members and the sustainability of waste management becomes an interesting topic to explore. This research aims to capture how participation of women in urban area contributing on agriculture activities as well as urban waste management efforts. Through this research, this study aims to identify the level of participation in KWT Berkah activities, identify the level of sustainability of waste management programs in residential communities, and analyze the relationship between KWT Berkah participation and the sustainability of waste management programs.

To deal with general research question above, this research focuses on several spesific research questions. First; community participation is a form of involvement in the processes that occur in the community (Tambunan 2022). Several studies on Women Farmer Groups show that women's empowerment has a positive effect on agricultural productivity, strengthening the local economy and helping to empower agricultural areas (Diirro et al. 2018; Aini 2020). Therefore, it is important to measure what the level of participation is to see how involved members are in the activities of KWT Berkah?. Second; the concept of sustainable development is to create a balance of economic, ecological and social dimensionsl (Dzikirillah et al. 2017). So it is important to know how sustainable the Katulampa KRL waste management program is?. Third; the development paradigm in the current era emphasizes the concept of participatory so that development is on target with the needs of the community and can last for a long time. Refer to research developed by Ittaqillah (2019), the level of farmer participation is clearly related to all dimensions of the level of sustainability. So researchers need to examine how the level of participation of KWT members is related to the sustainability of the Katulampa KRL waste management program?.

METHODS

Research Design

This study employs a quantitative method supported by qualitative data. Quantitative data was collected through a census using a research instrument in the form of a questionnaire distributed to respondents. The questions are developed from selected concepts which are then translated into special variables according to the required information. This quantitative approach is important to find out the correlation between variables. Qualitative data was obtained through field observations, in-depth interviews with informants, and literature review. Field observations were carried out by observing social realities regarding the participation of KWT members, environmental conditions and the sustainability of waste management programs in social, economic and ecological dimensions. In-depth interviews were conducted with informants using a interview question guide. Meanwhile, literature studies are carried out through searching for scientific articles related to research topics. The research was conducted at KRL Katulampa, located in the Mutiara Bogor Raya (MBR) Housing Complex, East Bogor District, Bogor Regency, West Java. The location of the research was purposively determined with the consideration that this housing is one of the housing in Bogor City which has a waste management program that is administratively managed by the local community and consists of many divisions, namely agriculture, livestock, fish farming and maggots breeding.

Sampling Technic

The unit analysis of this research is individual members of *KWT Berkah*. The sampling method applied is census whereas the total population of *KWT Berkah* consist of 20 members who were all selected as respondents. In-depth interviews were conducted with informants to obtain qualitative data. Informants were individuals involved with *KWT Berkah* and *KRL Katulampa*, and who were able to provide relevant information. The selection of informants is carried out purposively by snowball sampling technique.

Research Procedure

Data collection in the research location involved the following steps:

1. Identifying the population based on preliminary data gathered during initial exploration in the Mutiara Bogor Raya housing complex;
2. Establishing contact with informants, including the KRL Katulampa field supervisor, the head of KRL Katulampa, and KRL operators;
3. Distributing questionnaires and conducting interviews using the questionnaire with respondents namely, members of *KWT Berkah* to gather data regarding member participation and the sustainability of the waste management program;
4. Conducting in-depth interviews with informants, housing community leaders, and local residents to collect qualitative data regarding the sustainability of the waste management program.

Types of Data, Research Instruments, and Data Collection Techniques

The data used consists of primary and secondary data. Quantitative data was collected through the distribution of questionnaires to respondents, while qualitative data was gathered through in-depth interviews with both respondents and informants. Primary data was obtained through a census and in-depth interviews conducted directly with respondents and informants. Interviews with respondents were conducted based on the questionnaire and interview guidelines. In-depth interviews for qualitative data collection were carried out using a pre-designed interview guide. Secondary data was obtained from literature review, documents, and previous research findings relevant to the research topic.

Data Processing Techniques

Quantitative data was processed using SPSS 25.0 for Windows and Microsoft Excel 2016. The data is presented in frequency tables and cross-tabulation to see the relationships between variables. The results of the analysis were then interpreted to answer the research hypothesis, namely that there is a correlation between the level of member participation and the level of sustainability of the waste management program. Qualitative data was analyzed through stages of data reduction, data presentation, and data verification. Data reduction is carried out by selecting and simplifying the results of the reduced interviews in thematic writing. The presentation of data is carried out by compiling all the information and data obtained into a series of easy-to-read words into a report in the form of citations or typologies. The data verification stage is carried out by drawing conclusions and results that have been processed to strengthen the quantitative analysis.

RESULT

General Overview of KRL Katulampa

Bogor City, one of the densely populated cities in West Java, experiences an increase in waste generation each year. Waste management is regulated by the Bogor City Regional Regulation and managed by the Environmental Agency (Dinas Lingkungan Hidup) of Bogor City. The TPS 3R Mutiara Bogor Raya (MBR) is a waste management facility located in the Mutiara Bogor Raya Housing Complex and operates under the supervision of the Environmental Agency. Therefore, the waste management activities carried out by the Kampung Ramah Lingkungan (KRL) Katulampa are also under the oversight of this agency.

Prior to 2019, waste management at the TPS 3R facility could not rely solely on TPS workers and required community involvement. Representatives from the MBR community then joined the management team of TPS 3R, which led to improvements in the system and management of TPS 3R, including the development of waste sorting systems and reuse practices that benefited the surrounding community. KRL Katulampa is located in RT 04 RW 16, within the Mutiara Bogor Raya Housing Complex, approximately 850 meters from the housing entrance, with access via smooth, paved roads. The TPS 3R facility and KRL activities operate daily, except on Fridays, from 8 a.m. to 4 p.m.

TPS 3R has evolved into a center for waste sorting, organic waste processing, and the utilization of waste byproducts, which has become known as KRL Katulampa. TPS 3R manages waste from the MBR community which amounts to 1000 families and one school. As of January-April 2023, the amount of waste entering the TPS has reached 137.5 tons, with details of 84.1 tons of organic waste, 11.4 tons of non-organic waste and 42 tons of residue (as shown in Table 1). The waste that will then be processed by maggots is just food waste, and can reach 8-10 tons per month. Maggot cultivation can process 41% of organic waste, or around 26% of the total waste that comes in every month.

Table 1 Monthly waste management achievement of TPS 3R MBR

Month	Waste (ton/month)	Waste Categorisation		
		Organic (ton)	In-organic (ton)	Residue (ton)
January	34.503	21.751	2.644	10.107
February	31.544	19.885	2.622	9.037
March	35.199	21.135	3.548	10.516
April	36.276	21.313	2.576	12.387
Total	137.521	84.084	11.390	42.047

Source: TPS 3R Waste Management Monthly Report of January - April 2023

KRL Katulampa reuse (by applying certain technology) waste materials for the development of agricultural activities, poultry farming, and fish cultivation. TPS 3R plays a key role in collecting and sorting household waste from the residents of Mutiara Bogor Raya. Waste is sorted by operators under the supervision of KRL Katulampa management into three categories: organic waste, inorganic waste, and residual waste. Inorganic waste is generally collected at the waste bank for recycling or sold to waste collectors, while organic waste is processed into compost using maggots from the Black Soldier Fly (BSF). Some of the maggots from this cultivation are then processed into feed for poultry and fish, which are also part of the integrated system in KRL Katulampa.

Agricultural activities in KRL Katulampa are managed by the Kelompok Wanita Tani (KWT) Berkah, whose members consist of housewives from the MBR community. KWT activities are independently conducted by its members, who frequently visit and manage the KRL area. KWT also serves as a liaison between KRL and the wider MBR community, and functions as a learning platform for its members in agricultural practices. Additionally, KWT Berkah plays a frontline role in educating the public on waste management within KRL. Currently, KWT's daily activities focus on organic farming, hydroponic farming, and hosting visitors to KRL. The voluntary nature of KWT membership reflects the community's active participation in waste management initiatives.

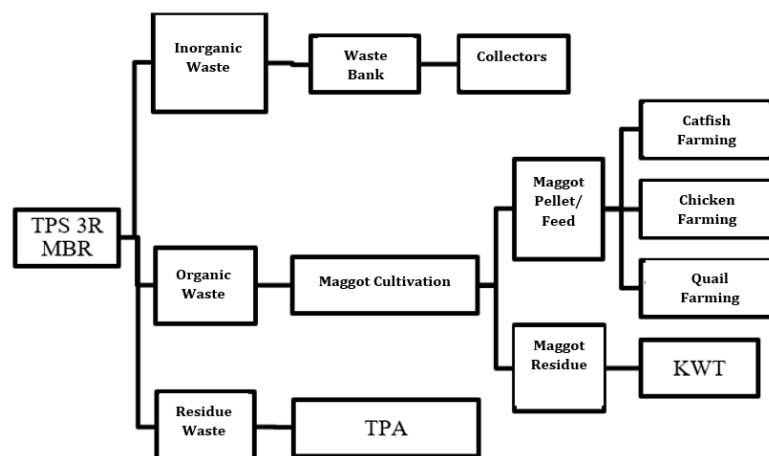


Figure 1. Waste management flow of TPS 3R MBR

The KRL Katulampa area spans 2,800 square meters, including 300 square meters allocated to the TPS 3R facility, which comprises a waste sorting room, an office and storage area, a Black Soldier Fly (BSF) maggot cultivation zone, and BSF breeding cages. In addition, the area houses a quail shed accommodating 1,500 birds, a chicken coop for 40 chickens, and 40 catfish farming ponds. Other facilities include a screen house,

the KWT garden, a seedling nursery, a drying area for coasters, a prayer room (mushola), toilets, parking spaces, and other infrastructure and supporting facilities.

Participation and Sustainability of KWT Members

Participation is a strategy that provides opportunities for those with limited power to take part in decision-making regarding development efforts and other shared needs (Arnstein, 1969). Community participation in waste management can enhance public awareness about the importance of maintaining a clean, healthy, and green environment, while simultaneously strengthening community initiatives to protect, sustain, and improve environmental functions (Sulistiyorini et al., 2015). According to Cohen and Uphoff (1980), in the context of rural development activities, participation often involves four stages: planning, implementation, benefit utilization, and evaluation.

Table 2 shows the participation of KWT members at all stages of participation. At the planning stage, it appears that the pattern varies. The dominant members are moderately involved in the planning stage. Although the frequency of attendance varies between frequent and infrequent attendance, all KWT members have attended meetings to discuss KWT activity plans. There is an interesting fact that there is a tendency to decrease the participation of members in the field of planning. The majority of respondents are increasingly rarely involved in discussions and the preparation of activity plans. WhatsApp groups tend to be used more often as a means of sharing information and reports, thus reducing the frequency of physical presence. Unlike agricultural activities, the reception has a patterned plan to prepare for the activity. So respondents tend not to do many stages for event planning, and only need to make preparations following the previous event format while continuing to report via WhatsApp. The existence of group chats facilitates accessibility and flexibility of communication, but reduces the urgency of members to gather.

Table 2. Participation rate on four stages of KWT Berkah members in Katulampa KRL Bogor City in 2023

Level of Members' Participation of KWT Berkah	Planning		Implemen Tation		Benefit Utilization		Evaluation	
	N	%	N	%	N	%	N	%
Low	4	20	4	20	0	0	3	15
Moderate	13	65	14	70	12	60	10	50
High	3	15	2	10	6	40	7	35
Total	20	100	20	100	20	100	20	100

At the implementation stage of the program, most of the members showed a moderate level. Organic farming and hydroponics are KWT's daily programs, which consist of nurseries, maintenance and daily garden cleaning. Just like the planning stage, the implementation of the agricultural program is carried out simultaneously. At the stage of utilization of the results, it can be seen that the majority of members have medium and high levels and there are no members at low levels. This shows that the majority of members feel that agricultural activities provide added value in the form of agricultural products that can be accessed by members. At the evaluation stage, half of the members stated that they were at a moderate level because the evaluation was usually carried out only on incidental activities such as visits.

Meanwhile, the level of sustainability is analyzed from three dimensions, namely social, economic, and ecological. Table 3 shows the level of sustainability in these three dimensions.

Table 3. Sustainability level of three dimension of the waste management program at KRL Katulampa, Bogor City, in 2023

Sustainability Level of KRL Katulampa	Social Dimension		Economic Dimension		Ecological Dimension	
	n	%	n	%	n	%
Low	2	10	2	10	0	0
Moderate	8	40	13	65	2	10
High	10	50	5	25	18	90
Total	20	100	20	100	20	100

According to Table 3, it immediately appears that the sustainability of the social and economic dimensions is at a high level, while the sustainability of the economic dimension is at a medium level. In the social dimension, as many as 50% of respondents were at a high level. KWT Berkah activities in the agricultural sector are considered to have benefits in building solidarity between residents. Only 10% stated that sustainability in the social dimension is low. Attributes used to measure the sustainability of the social dimension include conditions that are able to provide social justice and prevent conflict, equal understanding between members regarding environmental issues, and the dynamics of working in groups. The same thing is also found in sustainability in the ecological dimension. A total of 90% of respondents stated that ecological sustainability is high. This cannot be separated from the purpose of establishing KWT Berkah as part of utilizing products produced from organic waste management. A basic understanding of waste management is understood by members. The prohibition of burning garbage and prioritizing sending garbage to TPS 3R is a mandatory rule for members. Activities gathered in formal institutions also allow KWT to receive visits from agencies and receive training on agriculture and waste management. On the other hand, sustainability in the economic dimension shows a moderate level, which indicates that members have not really felt the economic benefits of KWT activities.

The Relationship Between KWT Participation and the Sustainability of the Waste Management Program

In order to see the relationship between participation rates and sustainability levels, Table 4 shows the correlation between the two variables.

Table 4. Level of participation among KWT Berkah members and the level of sustainability of the waste management program at KRL Katulampa, Bogor City, in 2023

Participation Level	Sustainability Level							
	Low		Moderate		High		Total	
	n	%	n	%	n	%	n	%
Low	0	0	3	75	1	25	4	100
Moderate	0	0	8	57	6	43	14	100
High	0	0	0	0	2	100	2	100

There is a positive correlation between the level of participation of KWT members and the sustainability of the program. The majority of respondents demonstrated a moderate level of participation alongside moderate program sustainability. Participation levels are strongly influenced by involvement during the planning and implementation stages. Respondents' attendance during these stages is often followed by participation in the utilization of results and evaluation stages, as these four stages are frequently conducted in conjunction. In a study by Tarigan (2020) on community participation in waste management, community involvement was found to have a strong and significant correlation with waste production. Based on the table above, while the level of participation does not have a major direct impact on the sustainability of the waste management program, there is a positive correlation between the two, where higher participation tends to be followed by increased sustainability. However, lower levels of participation do not necessarily result in low sustainability, even though a slight decrease may occur. This is because KWT activities occur at the final stage of KRL's waste management process, namely, utilizing compost produced from maggot residue for agricultural purposes. Therefore, the program tends to continue operating even when KWT participation declines. Nonetheless, the existence of KWT adds value to KRL's waste processing outputs, expands its network, and enables more stakeholders to benefit from the waste management outcomes. As such, KWT plays a critical role in strengthening the sustainability of KRL's waste management program.

Waste management cannot be fully addressed by a single sector alone. KRL Katulampa cannot manage waste effectively by relying solely on TPS 3R. Cohesion and collaboration between government bodies and the community play an essential role in the success of waste management. The same applies to KWT Berkah: the agricultural activities they carry out cannot fulfill their waste management or farming agendas without external support. KWT's activities are sustainable only when they receive adequate support from the institutions that oversee them. The sustainability of KWT Berkah may be hindered if their operational needs are not met, for example, support for compost supply from maggot farming, consumer purchases of agricultural products, and backing from governmental agencies or companies that support KWT programs and other KRL divisions. When KWT receives adequate support, they are able to fulfill their role in reinforcing the sustainability of KRL. KWT Berkah has the potential to represent KRL and serve as a model for other KWTs and waste management communities, provided their needs are supported. KRL itself was

founded on religious and community trust values, which create a spiritual motivation among local residents and KRL managers to comply with the rules and processes of waste management at KRL Katulampa.

DISCUSSION

The participation analysis covers four stages: planning, implementation, utilization of results, and evaluation (Cohen and Uphoff 1980). Overall, the participation of KWT Berkah members in waste management activities at KRL Katulampa is at a moderate level, accounting for 70% of the total respondents (as shown in Table 5).

Table 5. Participation rate of KWT Berkah members in Katulampa KRL Bogor City in 2023

Level of Members' Participation of KWT Berkah	Number (n)	Percentage (%)
Low	4	20
Moderate	14	70
High	2	10
Total	20	100

This participation involves activities such as farming and welcoming guests, with the general level of member involvement being moderate to low. Comparing in detail the four stages of participation can be described as follows; The planning stage focuses attention on member involvement in the initial process of developing program activities that aim to give members the opportunity to assess their own needs and become self-reliant. At the planning stage, participation is limited due to members' lack of time to attend meetings. Although a WhatsApp group helps facilitate communication and establish routines, interactions among members remain minimal, which in turn reduces opportunities for members to express opinions and engage in discussions.

The implementation phase includes involvement in the form of resource contributions, participation in administrative and coordination affairs, and participation in project activities. In the implementation stage, participation is also at a moderate level, with members actively participating in gardening according to a duty roster. However, the KWT leader often substitutes for absent members. Members play a significant role in hosting visitors, even though event invitations are typically addressed only to the management team.

Participation in the utilization of results can be felt at least in the form of material benefits, social benefits and personal benefits (Cohen & Uphoff, 1980). During the utilization of results stage, participation is mostly moderate with a tendency toward high, as members benefit from KWT activities, including knowledge, experience, and networking opportunities. However, the purchase of harvested products at discounted prices is not always considered as part of result utilization.

The evaluation stage in participation can usually be seen directly or indirectly, involving the community in assessing and supervising the implementation of planning results. Participation usually comes in the form of opinions of satisfaction or dissatisfaction regarding the program. It is important to observe participation at this stage because of its correlation with input for the project's subsequent development. Participation in the evaluation stage is also moderate, due to members' limited time to gather and conduct regular evaluation activities. KRL Katulampa frequently receives visitors, and as representatives of KRL in welcoming guests, KWT has developed a structured routine to prepare for these visits. As a result, the involvement of KWT members in guest reception preparations has decreased. The main factor affecting participation is the limited availability of free time, which means not all members are able to attend KWT meetings consistently. The less frequently a member participates in KWT activities, the lower their level of participation tends to be.

Sustainability in this study is in line with the main concept of sustainable development, which is to create a balance between economic growth, environmental conservation and equity (Dzikarillah et al., 2017; Ittaqillah, 2019). This concept refers to the three dimensions that are the pillars of sustainable development, namely the social dimension, the economic dimension and the ecological dimension. Table 6 shows the level of sustainability in waste management in KWT.

Table 6. Sustainability level of the waste management program at KRL Katulampa, Bogor City, in 2023

Sustainability Level of KRL Katulampa	Number (n)	Percentage (%)
Low	0	0
Moderate	11	55
High	9	45
Total	20	100

The overall sustainability of the waste management program is at a moderate level, with no respondents indicating a low level of sustainability. In addition, the sustainability of KWT is evaluated in two aspects: as an independent unit and as a part of the KRL Katulampa system. In the economic dimension, sustainability is at a moderate level. This is due to the limited agricultural output, making it difficult to rely solely on agricultural and waste management activities to generate economic profit. Meanwhile, social and ecological dimensions show a high level of sustainability. There is strong social trust placed in KWT and KRL Katulampa for handling residential waste. This trust is reflected in the high level of ecological sustainability. The presence of KWT supports KRL's waste management efforts by serving as a liaison between KRL and external stakeholders, which contributes to the positive perception of KRL Katulampa among surrounding residents and partners.

It is essential for KWT to receive continued support from partners and institutional stakeholders to meet its operational needs. This support ensures that KWT can fulfill its role in supporting the sustainability of development programs. Research by Suyitman et al. (2009) emphasizes that institutional enforcement and compliance with legal frameworks can promote the sustainability of development systems, especially when supported by strong regulatory frameworks and respected local leaders. KWT Berkah, operating under the umbrella of KRL Katulampa along with units such as TPS, maggot cultivation, catfish farming, and poultry farming, adheres to the same rules as KRL Katulampa. These are based on the waste management regulations set by the Bogor City Government. KRL Katulampa was established by residents of the Mutiara Bogor Raya (MBR) housing complex, who were concerned about increasing waste accumulation. The initiative received guidance and support from the Bogor City Environmental Agency, and was formed in accordance with Government Regulation of the Republic of Indonesia No. 81 of 2012 and Bogor City Regional Regulation No. 9 of 2012. The TPS 3R MBR facility functions to reduce the quantity and alter the characteristics of household waste before it is sent to the Galuga landfill. Over time, this system has evolved into KRL Katulampa, which is now responsible for environmental education and waste management within the community.

The concept of sustainable development generally focuses on the integration of social, economic and ecological dimensions. However, there are a number of studies that include additional dimensions such as the legal-institutional dimension. The institutional dimension in sustainable development refers to the condition that the institutional structure is created to facilitate and support the implementation of the concept of development activities. This includes regulations, policies, legal frameworks as well as institutions and/or organizations involved in decision-making and implementation regarding development activities. Research by Suyitman et al. (2009) on the sustainability status of livestock-based areas found that the legal-institutional dimension can be seen from the extent to which enforcement and compliance with institutions and legal tools can encourage the sustainability of livestock development systems. Attributes that can encourage this dimension are adequate laws and regulations, customary rules and beliefs recognized by the community, legal counseling, the presence of law enforcement officials and respected traditional leaders.

Table 4 shows the positive relationship between the level of participation of KWT Berkah members and the level of sustainability of waste management of the Katulampa KRL. Moderate and sustainable participation rates are due to the declining frequency of KWT meetings due to reduced leisure time for members, while limited agricultural yields do not provide significant benefits. The level of participation is greatly influenced by the planning and implementation stages. This is because the presence of respondents at these two stages tends to be followed by attendance at the stage of utilization of results and evaluation. This is due to the meeting of members that can only be done occasionally, so KWT tends to do all four stages at once in one meeting. In the study, the sustainability of the program is not only influenced by participation through KWT. The participation of KWT members does not have a major impact on economic and ecological sustainability. KWT activities are at the end of the waste management process carried out by KRL, namely utilizing the results of used maggot fertilizer for agricultural activities. Therefore, the level of KWT participation does not affect the KRL waste management series much. However, the existence of KWT increases the value of

KRL waste processing, expands the scope of who can feel the results of waste management and strengthens KRL's support to be able to continue to manage local waste sustainably.

CONCLUSION AND SUGGESTION

Conclusion

The study shows that the participation of KWT Berkah members is at a moderate level. This is primarily due to the limited availability of members' free time, which results in infrequent involvement and occasional attendance at KWT activities. The lack of available time affects all stages of participation, from planning to evaluation since participatory activities are usually conducted during scheduled face-to-face meetings. Nevertheless, the day-to-day operations of KWT Berkah continue to run with the available resources.

Meanwhile, the sustainability of the program is also at a moderate level. Despite the decline in active involvement, members continue to fulfill their roles, allowing KWT to function as an integral part of KRL Katulampa. The good relationship between MBR residents and KRL members supports KRL's reputation in continuing its waste management program. KRL remains consistent in managing waste due to the support from local residents and partners. As an institution, KRL Katulampa contributes to supporting KWT by guiding its empowerment efforts to address waste issues. This enables the waste management program to be sustainable and encourages synergy across divisions to achieve community goals. KRL also plays a role in facilitating collaborative cooperation among the community, government, and management, making the waste management program more effective and impactful.

The participation of KWT Berkah members has a positive correlation with the sustainability of the KRL Katulampa waste management program. Program sustainability increases as member participation grows. Waste management at KRL is not solely dependent on KWT, but also involves other divisions such as poultry farming, maggot cultivation, fish farming, and TPS 3R operations run by paid staff. KWT's involvement enhances KRL's relationship with the community and supporting institutions, ensures the sustainability of waste management, and strengthens the community's reputation. Research on participation and its relationship to sustainability in waste management is important, as in this case, KWT participation plays a key role in the effectiveness of the program. KWT's engagement in the planning, implementation, utilization of results, and evaluation stages of the waste management program not only improves program effectiveness but also brings positive impacts across economic, social, and ecological dimensions. The empowerment of women in waste management contributes to improving family and community well-being, strengthening social solidarity, and protecting environmental sustainability. This study demonstrates how active participation can be optimized to achieve sustainability goals, while also highlighting the broad benefits that can be derived from such participation.

Suggestion

Recommendations are directed to several parties. **First**, for organizations, an internal strengthening strategy is needed for KWT members to increase the level of participation in KWT. This can be done by improving management in the KWT division and opening up opportunities for other communities to join KWT membership. This is important to increase the level of KWT participation so that routine activities do not depend on several members and at a time. **Second**, for the wider community, the Katulampa KRL as a community that manages housing waste is not only responsible for MBR housing. It is important to expand the usefulness of the Katulampa KRL so that the existence of the KRL can be enjoyed by more people. The Katulampa KRL has succeeded in absorbing labor from the Katulampa village around the KRL through the use of organic waste produced by housing. The development of a Waste Bank to address the problem of inorganic waste can provide opportunities for more villagers and housing residents to join local waste management. KWT should not stand alone. There needs to be help from other institutions as partners, consumers and/or supporters. In addition, institutional support tends to strengthen the vision and mission of the establishment of KWT, as well as support the empowerment direction for KWT. To increase the closeness between MBR residents and the Katulampa KRL, it can re-create new forms of participation for other residents to follow, such as cooperation with local youth organizations in training on agriculture, livestock and waste management, as well as business development to become a medium for young people to learn. **Third**, waste management is not solely an activity in the upstream sector, but also provides social and economic benefits. Proof that this activity has cut residue by up to 75%, for policymakers, this activity needs to be facilitated in the form of downstreaming waste management products. **Fourth**, for other researchers, sub-activities other than urban farming need attention, especially through research related to

waste management efficiency and channels from organic waste processing activities for large-scale agricultural purposes.

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