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by Muhammad Ramaditya 2

Analysis of community participation in waste management that supports the agricultural sector in Takalar

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ARTICLE INFO

ABSTRACT

An increase in population with various activities and lifestyles of a community has an impact on increasing volume, type, and characteristics of waste. The increase in the amount of waste needs to be balanced with the government and the ability to manage waste, so it is necessary to involve the community. This study aims to measure community participation in managing household waste that will support the agricultural sector. This study was carried out in Takalar Regency because Takalar is one of Indonesia's regencies that has been successfully awarded the Community-Based Total Sanitation (STBM) from the Indonesian Ministry of Health and the Sustainable STBM Award in waste management. The method used in this study was a descriptive analysis of questionnaire data which was filled by 1011 villages of Takalar Regency. The study found that most of the Takalar citizens have participated in the waste management program initiated by the government of Takalar Regency. However, only a small number of residents process waste into products that support the agricultural sector. This research provides implications for evaluating program effectiveness and finding opportunities for further improvement in regulations.

Introduction

Population growth with various activities, changes in consumption patterns and lifestyles increase waste volume, type, and characteristics (Alqahtani et al., 2022; Bulekova et al., 2022; Cahyani et al., 2022; Handayani et al., 2022). The composition of household solid waste was dominated by food and plastic waste (Sunaryani, 2022). The increase in the amount of waste is not balanced with the government's ability to handle it, so that waste becomes a complex problem faced by all countries, including Indonesia (Alqahtani et al., 2022; Bunditsakulchai & Liu, 2021; Cahyani et al., 2022; Ramaditya et al., 2022 ; Mappau et al., 2022). So far, waste management is still conventional, namely collecting and transporting it directly to the TPA and not implementing optimal waste segregation (Aslam et al., 2022; Kovalenko et al., 2022), burning waste or throwing garbage anywhere, which causes accumulation of waste in various locations. (Rado, 2022). Waste mismanagement occurs due to education level, economic problems, lifestyle, weak regulatory system, and weak supervision of environmental management (Sulistyaningsih, 2022). The government must avoid waste mismanagement because it hurts the environment and public health. The chemical and biological substances produced harm the ground and surface water, air, and soil pollution (Oktariani et al., 2022; Sereda et al., 2022; Ulanova et al., 2022)

Waste management still varies from one region to another. Some have carried out campaigns or counseling and assistance to implement 3R, set up waste banks, compost, decompose organic waste using magot, make regulations on waste, supervise and enforce laws, and provide adequate facilities and infrastructure, efficient transport routes using GPS. There are even areas that have converted waste into energy (Alqahtani et al., 2022; Bulekova et al., 2022; Fauzan et al., 2022; Janetasari & Bokányi, 2022; Ramaditya et al.,

2022; Pratama et al., 2022; Sulistyaningsih, 2022; Sunaryani, 2022; Wahyuni et al., 2022; Xu et al., 2017). However, until now, waste management has not been satisfactory; for example, the 3R activities, namely reuse, reduce, and recycling, have not run optimally (Brotosusilo et al., 2022; Grishaeva et al., 2022; Mwanza et al., 2018; Ramaditya et al., 2021; Oktariani et al., 2022; Sulistyaningsih, 2022; Wahyuni et al., 2022). The obstacles are the low level of citizen participation, weak supervision, low collaboration with various stakeholders, and limited facilities, infrastructure, and budget (Fauzan et al., 2022).

This research is intended to show the level of community participation in waste management that will support the agricultural sector. Organic waste, in particular, has been processed by several communities into organic fertilizer, but such processing has yet to become a massive movement; besides that, several types of an-organic waste can be recycled into equipment that can be used in the agricultural sector. This research focuses on management at the household level so that households can reduce waste as one of the most significant contributors to waste (Grishaeva et al., 2022; Rado, 2022). So far, community participation in waste management is still relatively low due to ignorance of the importance of protecting the environment and the effect of waste on environmental damage (Sulistyaningsih, 2022), and the public has the perception that waste management is the responsibility of the government (Chikowore, 2022; Ramaditya et al., 2022). Therefore the government must focus on informing and building citizen awareness so that they have the initiative and are willing to participate in waste management (Brotosusilo et al., 2022; Syamsari, et al., 2022). Existing research so far focuses on processing organic waste into products that are useful for agriculture, while this research focuses on humans as waste producers.

Literature Review

The 3R (reduce, reuse and recycle) is the basis for handling to reduce waste generation. 3R what is meant is: Reduce: efforts to reduce the formation of waste, including savings or selection of materials that can reduce the quantity waste and hazardous nature of the waste (limitation of waste generation). Reuse: efforts made when the waste is utilized returns without undergoing a process or without a new transformation. Recycle: residue or waste that remains or cannot be utilized directly, then processed or processed to be able to utilize, both as a raw material and as a source of energy (Sulistyaningsih, 2022). Waste can be defined as all work activities that are not provide added value in the process of transforming inputs into outputs along the value stream mapping. From a lean perspective, all types of waste that exists along the value stream process, which transforms inputs into outputs must be removed in order to increase the value of the product (goods or services) and further increase customer value (Grishaeva et al., 2022). The seven wastes can be grouped into 3 related main categories towards man, machine, and material. The man category contains the concept of motion, waiting, and over production. The machine category includes over process, meanwhile Material categories include transportation, inventory and defects (Grishaeva et al., 2022).

Research and Methodology

This research was conducted in September 2022 in Takalar Regency. Takalar Regency is a research location because it has a waste management program involving the community through the Tangkasa (Clean) and Gammara (Beautiful) Community Movement, abbreviated as Gema Tasamara, in 2018 and the Free Garbage Movement in 2022. This movement seeks to encourage the community to participate in sorting between organic and organic waste at the household level. The results of this movement include Takalar District winning the Community-Based Total Sanitation (STBM) Award in two consecutive years, namely in 2021 and the sustainable STBM Award in 2022. The STBM assessment is based on the achievement of output indicators, one of which is household involvement or participation in managing waste properly. Maintaining the award as a sustainable STBM Award requires creativity in waste management and waste handling. Therefore, research is needed to determine residents' participation in processing waste to support the agricultural sector as one of the creations in maintaining the sustainable STBM Award. Data was collected via Google form and sent via What App to residents in the four sub-districts that the Takalar district environmental service has served. Five percent of the total population filled out and sent back the questionnaire. Google forms that residents have filled in are collected and processed, then analyzed using descriptive analysis.

The result from respondent's education was dominated by bachelor's degrees (54%), high school graduates (26%), diplomas (7%), elementary school graduates (5%), master's degrees (4%), and junior high schools (4%). The composition of residents based on education level is shown in Figure 1. According to (Brotosusilo et al., 2022; Ramaditya et.al., 2022), education level influences community involvement in waste management. Another factor is the involvement of residents in social activities and the level of spending per capita. Nevertheless, informal trash education is more successful than formal education. According to Romano et al. 2022, the sorting of waste is influenced by the level of education; the level of a Diploma or Bachelor's education has a habit of sorting waste. The same result was also stated by Lestari (2018) and Ramaditya et al., (2022) that education is a factor that influences good waste management at the household level. According to Chung and Lo (2022) and Syamsari et al., (2022), education and income are the main factors influencing the behavior of throwing garbage and potentially avoiding waste.

Findings and Discussions

The result from respondent's education was dominated by bachelor's degrees (54%), high school graduates (26%), diplomas (7%), elementary school graduates (5%), master's degrees (4%), and junior high schools (4%). The composition of residents based on education level is shown in Figure 1. According to (Brotosusilo et al., 2022; Ramaditya et.al., 2022), education level influences

community involvement in waste management. Another factor is the involvement of residents in social activities and the level of spending per capita. Nevertheless, informal trash education is more successful than formal education. According to Romano et al. 2022, the sorting of waste is influenced by the level of education; the level of a Diploma or Bachelor's education has a habit of sorting waste. The same result was also stated by Lestari (2018) that education is a factor that influences good waste management at the household level. According to Chung and Lo (2022), education and income are the main factors influencing the behavior of throwing garbage and potentially avoiding waste.

Employee and Household section may be divided by subheadings. Discussions should cover the key findings of the study: discuss any prior research related to the subject to place the novelty of the discovery in the appropriate context, discuss the potential shortcomings and limitations on their interpretations, discuss their integration into the current understanding of the problem and how this advances the current views, speculate on the future direction of the research, and freely postulate theories that could be tested in the future.

Community Behavior Against Garbage that supports the agricultural sector

The Takalar Regency Environmental and Sanitation Service have carried out its duties to transport the waste produced by the community. The waste is transported around residents' homes using garbage trucks and three-wheeled motorbikes. Each fleet has a specific service area with transport hours starting from 8 to 12 hours. Based on the results of filling out the questionnaire, 53 percent of respondents considered that the garbage fleet had transported residents' waste every day. As many as 47% considered that waste was not transported every day. The community responds to the accumulation of garbage in different ways. As much as 25 percent process organic waste into organic fertilizer, 25 percent allow the waste to accumulate until cleaning officers come to the location to transport the pile of waste and 50 percent of the community burns all organic and inorganic waste. Processing organic waste into compost at the household level was carried out in response to the delay in the cleaning and environmental service transportation fleet. Processing waste into compost is a behavior that supports the agricultural sector, but this processing has yet to become a movement for all households.

Garbage management in Takalar Regency is dominated by more than just the Environment and Sanitation Service. However, it has encouraged citizen participation in one community, for example, the Neighborhood Association or the Citizens Association. Community service is one of the social activities that affect citizen participation in properly managing waste (Brotosusilo et al., 2022). Residents' participation in managing waste in the environment around their homes is shown in Figure 7. As many as 43 percent of respondents stated that waste management had been carried out at the Rukun Tetangga or Rukun Warga level. As many as 57 percent of respondents stated that they did not process waste at the Rukun Tetangga or Rukun Warga level where they live. The processing initiated at the RT/RW level still needs to be higher on sustainability because of the 43 percent who stated that waste processing had been carried out; only 38 percent is still running now. The low level of sustainability of waste management at the lower levels is a phenomenon that occurs in almost all regions. However, citizen participation in managing waste at the RT/RW level is an undercurrent which is the social capital needed to encourage better waste management. Waste management will be successful if community movements or bottom-up are combined with top-down government policies (Nisaa, 2020).

Garbage collected through community service activities will be transported by the Department of Cleaning and the Environment, and part of it will be burned. This community service has not supported the agricultural sector because an organic waste, particularly, has yet to be directed to produce valuable products for garden plants or other agricultural cultivation. Some of the products that the Wagga community service should produce are compost or liquid organic fertilizer. Such processing can reduce the burden on the cleaning and environmental services, which have limitations in the transportation fleet. The government of Takalar Regency is trying to encourage better waste management from year to year. The Takalar yang Tangkasa (Clean) and Gammara (Beautiful) movement programs have started since 2018. This movement seeks to foster community participation and all stakeholders to be more involved in waste management, including sorting organic and inorganic waste at the household, school, market, and workplace, establishing a cleaning task force and forming cleaning cadres at the sub-village level. The central government also supports this movement by establishing a Waste Recycling Center, assistance of a new garbage transport fleet, and a three-wheeled garbage collection motorbike. In 2022 the Free Garbage Movement was launched to welcome the commemoration of The 77th Independence Day of the Republic of Indonesia. Residents' responses to the program are shown in Figure 9. As many as 82 percent of respondents said they had heard of and knew about the program, and 18 percent said they had not heard of the program.

Based on the results and discussion above, several managerial implications can be developed that will support the success of waste management which will support the agricultural sector and will support the achievement of a sustainable STBM Award which aims to encourage successful waste management, especially in waste sorting and processing activities:

i. The Environmental Service and other stakeholders must carry out massive and continuous outreach to residents through offline and online media so that the level of knowledge of residents about the waste management program increases.

ii. Local governments need to intensify the involvement of village or sub-district governments in educating the public to actively participate in the waste management program and continue to carry out community service activities so that the involvement of the bottom line is maintained.

iii. The regency government must cooperate with universities and the private sector to assist the community in carrying out 3R (reduce, reuse, recycle) activities, including processing waste into products that support the agricultural sector. This step will be proof of the creation of the Takalar regency government so that the Sustainable STBM Award can be maintained.

Conclusions

Socialization and education about the importance of processing waste from the source must continue through the media so that it is well instilled in every citizen that sound waste management starts from the source (Adi & Rarasati, 2022). The willingness of residents to participate in waste management programs initiated by the government is a social capital that allows the waste to be processed into products that support the agricultural sector. Organic waste can be processed into products, including compost, magot, and liquid organic fertilizer. Organic waste, including plastic bottles, plastic bags, wood, and iron, can be used as equipment to support the agricultural sector. Waste management that supports the agricultural sector is a creation so that Takalar Regency can continue to maintain the Sustainable STBM Award. Citizen participation in waste management has grown. This is evidenced in the participation of residents in sorting organic and inorganic waste in each household, monitoring the performance of the Sanitation and Environmental Services, participating in waste management in their community, and willingness to participate in every government program in waste management. However, only a small number of residents process waste into products that support the agricultural sector. Therefore counseling and assistance are needed from the local government and all stakeholders to increase citizen participation in converting waste into products that support the agricultural sector.

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