



Management of organic waste into liquid fertilizer and compost welcoming the blue economy of Rancabungur

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Abstract. *Global waste management is estimated that every year, only 20% can be recycled or recovered. The problem is because of waste that pollutes various ecosystems and has an impact on the decreasing of environmental services value. The blue economy concept of Rancabungur Village is a new discourse of development that accelerates economic growth, community welfare, and environmental health. That concept synergizes with the circular economy (CE) concept, that emphasized the aspects of resource and waste management but is not limited to reducing the use of materials, minimizing waste accumulation, and increasing waste re-utilization. The purpose of this study is to provide an understanding to the target audience about the importance of waste management; to socialize the importance of sorting waste; and provide training on processing organic waste into organic liquid fertilizer and compost so that it can increase family income. This research is a qualitative descriptive study. This study's data is primary data for community service collected via electronic questions and analyzed using frequency distribution analysis. This activity is organized offline and online. After getting material on waste management, the results show that participants who want to manage waste, have wish their surrounding environment to be healthy and beautiful as much as 38.2%, followed by managing waste can produce money as much as 20%, waste management 18.1%, trust management rate 15.6% and need a more detailed explanation 8.1%. This activity will provide solutions to problems that develop in the community, increasing people's income.*

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INTRODUCTION

Everything that is no longer used as a production or consumption goods is called waste or garbage, which, if directly disposed into the environment without prior processing, can burden the environment. The impacts caused by waste are very complex, including causing environmental pollution, decreasing the aesthetic value of the environment, and causing discomfort (Prasetyo and Arifin 2018). Garbage in Bogor Regency increases by 20 percent per year due to population growth. According to the Bogor Regency Environmental Service, in 2018 (Ramdhan and Hermawan 2022), the waste brought to the final disposal site was 450 tons per day, with

60–70% of organic waste originating from households and 30–40% being inorganic waste. On the other hand, in this case, the government's ability to manage waste only covers 112 tons per day or only 25%.

So far, temporary management of household waste in several housing complexes in Rancabungur Village is still being transported by garbage trucks which are taken 1–2 times a week. The frequency of taking the waste for organic waste has caused a bad smell. Therefore, a household-scale organic waste management solution is needed to produce high-added value (Suryandari et al. 2018). Meanwhile, there is no clear regulation on waste management outside the housing complex. Every household wraps their household waste in plastic bags and throws the trash anywhere. It is common to pile them on street corners, in gardens/open lands, or even into river bodies. Society and even industry often consider waste as a useless item. Although waste, if managed properly, will bring added value, on the other hand, it will cause environmental damage if not managed properly. The destruction of forest ecosystems and the depletion of resources and materials resulting from excessive consumption of unsustainable production processes.

One of the results of research in developing countries shows that the results of the company's social funding approach in the strategic environment in managing solid waste have an impact on the circular economy (CE) of the company and related stakeholders, including very influential on local small companies (Thongplew et al. 2022). Globally, it is estimated that every year, only 20% of waste can be recycled or recovered (Song 2015). The rest becomes a problem as waste generation pollutes various ecosystems and decreases the value of environmental services. On the other hand, the blue economy concept, a new direction for development in Indonesia, continues to accelerate economic growth and community welfare while maintaining environmental health.

The blue economy is a concept that aims to generate economic growth but still preserve resources and the environment (Burgess 2018). One of the blue economy concepts is a strategy to minimize waste by eliminating waste from processes and products (Nizar et al. 2016). Several sectors in Indonesia have implemented the blue economy concept in developing the business world, but unfortunately, not many understand the advantages of this blue economy (Sari 2020). The principle of the blue economy is to utilize natural capital and technology while remaining oriented toward nature conservation to reduce production and consumption costs, improve the quality of life for humans and natural creatures, and minimize environmental risks for the sake of harmony in nature and human life (Burgess 2018).

Concept of the blue economy was preceded by the concept of a green economy, where the business world is still focused on policies to avoid negative impacts on the surrounding environment. Then the continuation of the blue economy, the business world is challenged to use waste for new added value (Suryandari et al. 2018). This means that in the green economy concept, economic activity is pro-environment, while in the blue economy concept, how to utilize waste into something with new added value. Waste is recycled with one noble goal, namely to improve the economy, support development, and empower the poor to be more independent (pro-growth pro-poor pro-development).

The blue economy concept collaborates with the CE concept by combining the market and solid waste (Romero-hernández and Romero 2018). The term "CE" itself is a concept that describes the flow of resources and waste in an economic system in a way that prevents material problems and pollution while promoting economic growth and sustainability (Winans et al. 2017). CE describes replacing a linear economic system of production and consumption with a basis for reducing, reusing, recycling, and recovering materials in the product life cycle, which useful for sustainability and sustainability. In fact, CE can be adopted from the micro level (e.g. product and company) to the macro level (Kirchherr et al. 2017).

The creativity of the business world in recycling production in the practice of a green economy still faces many obstacles, and this is a challenge for the development of a blue economy. The investment aspect is a separate consideration, although it will be more beneficial in the long term. For example, a country in the northern part of the African continent called Morocco has successfully implemented the blue economy as an important reference. Moroccan people have increased the benefits of natural resources to more than double. We must apply the blue economy to increasing economic growth, including in Rancabungur Village.

Therefore, this study aims to provide an understanding to the target audience about the importance of waste management, socialize the importance of sorting waste, and provide training on processing organic waste into organic liquid fertilizer and compost so that it can increase family income.

METHODS

Study Area

The workshop was conducted offline and online for approximately 4 hours, between 13.00 to 17.00 WIB, Friday, 28 May 2021. Offline activities were conducted at the Sulaiman Mosque, Ambar Telaga Residence 1 Housing Complex, RW 011, Rancabungur Village, Rancabungur District, Bogor Regency. The workshop location survey was carried out with one of the Rancabungur Village officials. The criteria for the place of activity must meet the capacity according to health protocol standards (half of the maximum capacity) and have an internet network.

Data Collection

This research is a qualitative descriptive study. This study's primary data for community service collected via electronic questions and analyzed using frequency distribution analysis. The series in the implementation of community service is carried out in stages consisting of surveys, training, and evaluations. Each stage of the series of activities correlates with one another and the content of the discussion (Rahmawati et al. 2018). Especially in the implementation of community service, the type of equipment or technology used can be included in the writing of the method (Setiawan et al. 2019).

The activities are carried out directly (offline) and online (online) with the aim that the target audience can maximally accept the understanding of the material. To minimize the transmission of the Covid-19 pandemic, the activity is planned to be carried out after the majority of the community has received the vaccination. The activity was carried out at the Rancabungur Village Office Friday, May 28, 2021. After the activity is carried out, an evaluation of the material provided is carried out. The evaluation aims to see the response and interest of partners to apply the knowledge gained in managing household organic waste in their respective environments as a solution to waste problems. Tool for evaluation data using an online questionnaire.

A total of 120 participants attended the workshop. As many as 50 people attended in person, and the rest listened online at 70. Participants who attended in person were the Village Head of Rancabungur and village government staff, representatives of the Bogor Regency Environmental Service, as well as other village apparatus institutions such as the Community Empowerment Institute (LPM), the Village Consultative Body (BPD), Village Credit Institutions (LPD), Family Skills Center Cadres (PKK), Integrated Health Center and Youth Organizations.

Data Analysis

The implementation of activities is carried out with a socialization and demonstration approach. The stages carried out are as follows; (1) The initial stage of waste management is to provide an understanding of the importance of managing waste, (2) The second stage is to disseminate the information so that people sort waste at the household level, between organic waste and non-organic waste, (3) Provide training to process organic waste into liquid (organic) fertilizer and compost that provides direct economic value and environmental aesthetic value.

RESULT AND DISCUSSION

The activity attracted a diverse range of participants from various segments of society. According to the evaluation results, the majority of participants who attended both online and offline were micro, small, and medium-sized enterprises (MSMEs), accounting for 82.4% of the total respondents. This translates to 56 participants out of the total 86 who filled out the questionnaire. In addition to MSMEs, other participants came from different backgrounds such as Posyandu Cadres (volunteers in integrated health posts), Youth Organizations, and LPM (a local community development organization), among others. The evaluation results also shed light on the age demographic of the interested participants. The majority of individuals showing interest in attending the workshop were young people in the productive age range of 15 to 30 years. This age group constituted 82.4% of the participants, which corresponds to 56 individuals. These statistics indicate that the activity successfully attracted a diverse group of participants, primarily comprising MSMEs and young individuals eager to engage in the workshop.

The benefits of this waste management workshop are adding insight for participants and increasing public awareness so that they can manage waste properly. It can be shown that 77.9% of participants know the classification of waste based on organic, inorganic, and B3 (Hazardous and Toxic Materials), and 22.1% do not. Based on the results of the evaluation, participants who do not know the classification of waste are considered high enough, so it is hoped that from this activity, participants who do not know the classification of waste can understand and utilize waste properly.

Knowledge of waste classification should be followed by concrete actions that can be carried out with the smallest scope first, such as at home. The analysis in this activity reveals that CE does not have a good reflection on the political and socio-cultural aspects, so further analysis needs to be carried out in the future (Zwiers et al. 2020). However, in reality, from the evaluation results, 55.9% of participants answered "Sometimes", 22.1% answered "Yes" and 22.1% answered "No". This shows that there is an imbalance in waste classification knowledge with the real actions of the participants. In addition, there are still many participants who do not separate their waste. Therefore, with this activity, it is hoped that along with increasing knowledge of waste management both from an economic and environmental perspective, it can also increase the awareness of both participants and the community to be able to separate waste based on its category.

The existence of an imbalance of knowledge and concrete actions to separate household waste is also followed by the disposal of the waste itself. The results of the evaluation were also proven by the fact that 91.2% of household waste was placed in front of the house to be transported by the garbage officer. The fact that 91.2% is very high due to the unknown economic and environmental value of the participants. Of the waste officers, the Government only manages 25% of household waste. This is a very small number compared to the total household waste in Indonesia. Fifty-two-point nine percent of participants did not know about this, and 47.1% knew about waste management from the Government. Based on the description above, it is hoped that with this activity participants can independently manage their household waste to produce economic value and the environment becomes more beautiful.

Good waste management can generate economic value that can increase the income of participants and the community. Eighty-point nine percent of participants know that managing waste can make money and 19.1% of participants do not know it. The evaluation results show that participants who want to manage waste want the environment around them to be healthy and beautiful as much as 38.2%, followed by managing waste can make money as much as 20%, waste management 18.1%, and trustworthy management figure 15.6 % and need a more detailed explanation 8.1%. This activity provides awareness for the community to be able to manage waste, with the result of increasing income and maintaining a clean and healthy environment. In addition, related parties can also continue to socialize with the community in managing waste in order to create a sense of initiative and social responsibility towards the environment. So the strategy for solid waste can form a linear flow of solid waste to realize a CE through analysis of returns on social investment throughout society (Thongplew et al. 2022).

CONCLUSION

Based on the results of community service to community elements in Rancabungur Village related to household waste management, it can be concluded that all participants expressed interest. The participants' interest in practicing it has become one of the activities that generate family income. The evaluation results show that participants who want to manage waste want the environment around them to be healthy and beautiful as much as 38.2%, followed by managing waste can make money as much as 20%, waste management 18.1%, and trustworthy management figure 15.6 % and need a more detailed explanation 8.1%. This activity can provide solutions to problems that develop in the community, which in turn can increase people's income, therefore, it is suggested to participants and the general public to increase awareness of managing waste so that later it can increase income and maintain a healthy and beautiful environment. And also to related parties to be able to continue to invite the community to waste management activities.

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