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Go Green Around Campus: Environmental Management Collaboration With the Household Waste Disposal Association

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Abstrak

Environmental management related to the handling of household waste in the RW 08 area is still shared homework. If not managed properly, the increasing number will cause problems, including environmental pollution, and affect public health problems. One of the efforts to reduce waste generation at Temporary and final Waste Disposal Sites, a Community Service activity (PKM), is carried out "Go Green Campus Circle: Environmental Management Collaboration with the Household Waste Disposal Association ."Through deliberation approaches, counseling, training, mentoring, and collaboration in waste management activities, the activity method is through deliberation. This activity is carried out by collaborating with the garbage disposal association, RW management, Kelurahan, and local government to deal with the Kukutu TDS's environmental management and sustainably manage household waste. The activity results showed a very good response from waste managers, RW administrators, Kelurahan, and Regional Governments during the implementation of PKM activities. Likewise, the youth waste management response was enthusiastic about participating in counseling and training on waste management and maggot cultivation. Furthermore, the community's response around the TDS, posyandu cadres, and PKK cadres when attending counseling and training on making handicrafts made from inorganic waste showed a good answer. Activities that receive funding assistance for the independent policy research program to study independent campuses and community service based on research results and prototype PTS Ditjen Diktiristek This 2021 fiscal year can increase public awareness and waste management in handling household waste. In addition, the establishment of collaboration in environmental management between communities and local governments reduces the impact of environmental pollution.

Keywords: Go green, Environment, Community, Garbage, TDS.

A. Introduction

The problem of household waste is still a global issue, as is the problem of waste in Bogor, whose volume continues to increase. Based on information from the Bogor City Environment Agency, the waste generation in Bogor City is 4.2 liters/person/day. This pile of garbage comes from around 60% of settlements/households, while 10% from the market and the rest from several illegal landfills or rivers (Interview Results, 2021). In 2019, the amount of waste generated by residents of Bogor City reached 600 tons per day, around 475 tons were disposed of at the Galuga Final Disposal Site, the remaining 125 tons were processed in Temporary Disposal Sites), TDS with the principle of Reduce, Reuse and Recycle (TDS3R). Waste Banks used goods stalls; some are still scattered, thrown into the river, or burned.

Likewise, household waste in Cibadak Village is still a major problem because its volume has increased. Cibadak Village, with an area of 464,700 Ha, has a population of around 32,334 people (Bogor City Statistics Center, 2018). Cibadak Urban Village does not have a Final Disposal Site (TPA) and only has four groups of Waste Disposal Sites (TDS) that have received guidance in waste management. The remaining community still throws garbage into the river or burns it, and some manage waste in groups by forming a garbage disposal association. One of these waste disposal groups/communities is in RW 08.

TDS Kukubut RW 08 has not yet received guidance from the Bogor City Environmental Service (DLH). The problems faced by TDS managers are knowledge and skills in terms of 1) sorting household waste into organic and non-organic waste; 2) waste processing technology into products with economic value; 3) availability of facilities and infrastructure for waste processing; 4) waste management. Empowerment and assistance need to be carried out by involving various parties, namely the community, RT/RW management, universities, and related local government institutions or other partners, so waste management can be sustainable and environmentally sound. Therefore, Nusa Bangsa University, as one of the universities located near TDS RW 08, initiated Community Service (PKM) activities through the program "Go Green Campus Circle: Collaborative Environmental Management with the Household Waste Disposal Association ."This activity, which will be carried out in stages and continuously, is expected to positively impact waste management, the community, and the environment. The first stage is educating the household waste disposal community, the surrounding community, RT/RW administrators, and collaborating with the Bogor City Environmental Service. This activity aims to explore information and potential of waste managers at temporary TDS, increase knowledge and skills of waste management, increase public understanding in household waste management and establish cooperation in household waste management with DLH.

B. Methodology

The activity was carried out at TDS Kukubut RW 08, Cibadak Village. The location selection was based on TDS Kukubut RW 08 was a new TDS in waste management managed by the waste management association. The methods used include a). Program socialization of activities; b) Situation analysis; c) Extension, Training, and Mentoring; d) Evaluation of activities.

Socialization of the activity program is carried out to waste managers, RW administrators, the community, and related agencies, especially in the activity area, to directly play a role in achieving the activity's success. For example, counseling, training, and assistance were carried out in the local RW area to waste managers, residents, PKK cadres, and Posyandu. The counseling and activity carried out were recognizing the types and sorting of waste, training on the use of inorganic waste into crafts, organic waste, and maggot cultivation. In addition, evaluation of activities is carried out by distributing questionnaires to waste managers and the public

C. Results and Discussion

The general condition of the Waste Disposal Site (TDS) at the activity location. The Kukubute RW 08 waste management site is managed by the RW 08 Butterfly Garbage Disposal Association. This TDS is located in an open area beside the Kubute public cemetery in the RW 08 area, only has a saung simple for the sorting and processing of waste. The location of the Kubute TDS is also on the side of a river where the water flows through several villages and empties into a lake. The situation and condition of TDS RW 08 are as shown in Figure 1.

Figure 1. Situation and Conditions Situation and Condition of TDS Kukubut RW 08

In Figure 1, it can be seen that the conditions at the Kukupu TDS were a buildup of waste, both organic and inorganic waste (kreek plastic, steoroform, pampers). Piles of garbage can disturb/contaminate the environment because leachate (wastewater) causes unpleasant odors and contaminates groundwater. According to Widiyanto et al. (2015), water pollution caused by household waste is around 47.62%. Heaps of garbage that cover the ground also cause the soil to be contaminated with toxic chemicals such as silver, lead, and boron, as well as bacteria (Muslimah. 2015). Garbage can also pollute the air, increasing greenhouse gas emissions because the accumulation of waste without being processed can release methane gas (CH4). Every 1 tonne of solid waste produces 50 kg of CH4 gas (Karmanah et al., 2016).

Currently, the Garbage Disposal Association serves about 130 families in the RW 08 area. On average, the garbage transported to the Kukupu TDS is around seven garbage carts per day (if one cart contains about 75 kg, the amount of waste disposed of is around 525 kg (or approx. 0.5 tons.) The waste transported from the residents has not been separated into organic, inorganic, and residual waste. The RW 08 waste disposal community handles waste by sorting the destruction that can be sold (plastic bottles, zinc, and iron). Meanwhile, organic waste is piled up without further processing as organic fertilizer/compost or used for maggot cultivation. Other types of waste that cannot be processed, such as pampers, stereo forms, are generally burned. This association is a beginner group as a waste manager at the Kukutu TDS and has not received guidance from related agencies. Knowledge in waste management is also relatively minimal. The knowledge and skills of waste management at the Kukutu TDS need to be improved, and supporting infrastructure for waste processing should be added to perform better waste management. Good waste management efforts and creating a clean and healthy environment can also reduce waste by 50-60% from the waste pile generated by households (Karmanah et al., 2016).

Socialization of Activities

Socialization of activities is intended to facilitate the implementation of PKM activities to be carried out. The socialization was carried out to waste managers, RW managers, Kelurahan, and DLH Bogor City.

Extension, Training, and Assistance

The extension is carried out with a community approach pattern. This pattern includes an effective pattern for capturing community participation in an activity. According to Dwiyanto (2011). This community approach pattern is included in the integrated utilization system approach Integrated Material Recovery (IMR). The concept of IMR is basically to reuse waste that still has the potential to be recycled, the steps of its activities starting from storage, collection, transportation, and final disposal. The IMR system will increase the acquisition of various materials with economic value and market. In addition, public awareness to apply this concept will trigger the growth of community-based waste management.

The training carried out utilizes inorganic waste into handicrafts that have economic value. The activity was carried out for women members of waste management, residents, PKK cadres, and Posyandu cadres. This activity aims to increase participants' understanding, knowledge, and skills and increase public awareness in self-help-based waste management (Figure 2).

Figure 2. Counseling and training on the use of inorganic waste in crafts.

Training for Maggot Cultivation.

Besides inorganic waste, organic waste is also produced, such as leftover food, vegetables, and fruits. This waste can be used as compost and feed for maggot cultivation. In addition, the results of previous community service that the compost produced from household organic waste management have a characteristic blackish color which indicates the compost has reached good maturity, 18.99% moisture content. Furthermore, total N was 0.45%, higher than the minimum threshold for compost criteria based on SNI 19-7030-2004 (Karmanah et al., 2016). Therefore, the compost product produced from household waste management has the economic potential to increase income.

The potential for household organic waste in the TDS Kubut provides an opportunity to feed for maggot cultivation. Maggot is insect larvae that Black Soldier Fly (BSF) can decompose 1-3 times its body weight in organic waste for 24 hours, even up to 5 times its body weight. Maggot is used as feed for fish, catfish, and livestock. In addition, maggot cocoons are used as fertilizer, so they don't create new waste. Efforts to increase knowledge in the use of organic waste are training for maggot cultivation for the youth of the RW 08 waste disposal community. The activities carried out at the Bogor City Environmental Service are expected to provide knowledge and become a business opportunity for utilizing organic waste to earn income for waste managers. This household.

Figure 3. Maggot Cultivation Counseling and Training

Evaluation of program activities

Evaluation of program implementation is carried out by distributing questionnaires. This determines the extent to which knowledge and information about waste management are absorbed. Based on the activity evaluation results of 30 respondents consisting of waste managers, the community, and posyandu cadres, around 83.3% generally already know the difference between organic and non-organic waste, and the remaining 16.7% of the community do not see the difference. Trash cans at home that are owned still use the open trash can model (83.3%), and the rest (36.7%) use the closed trash can model. In the community in sorting organic and non-organic waste, 63% have not done the sorting, and 37% have done. Based on several factors, the evaluation results above indicate that counseling, guidance, and assistance to the Kukutu TDS managers and the surrounding community need to be carried out sustainably. According to Karmanah et al. (2016), the success of household waste management at TDS is influenced by the waste management group's knowledge and skills, the waste

processing technology mastered, waste management and community support, and the participation of other institutions.

D. Conclusion

The activity results showed a very good response from all parties involved. The "Go Green Campus Circle: Environmental Management Collaboration with Household Garbage Disposal Association" program implemented by the University of Nusa Bangsa became the beginning for the empowerment of the waste management community at TDS Kukubut RW 08. The existence of TDS Kukubut and its potential must be carried out with counseling, coaching, and mentoring sustainably by involving various parties, namely UNB, local, regional administrators, and the Regional Government (DLH). Community empowerment in household waste management also has a positive impact because it can improve cleanliness and reduce environmental pollution due to household waste.

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