PROFICIENT Community Service

Sustainable Waste Management Practices in Rural Communities: The Power of Upcycling Education in Situsari Village Cileungsi, Bogor, West Java

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ABSTRACT

The management of inorganic waste presents a critical challenge in sustainable development, particularly in Situsari Village, Cileungsi, Bogor – West Java. Non-biodegradable waste such as plastic, glass, and metal is often disposed of indiscriminately, leading to environmental issues such as water pollution, flooding from clogged drainage systems, and a declining quality of life. This Community Service Program aims to raise public awareness of the importance of waste management through an upcycling approach, which promotes creative recycling. The methods applied include education, demonstration, and hands-on workshops to create marketable products from waste, such as bags made from used coffee wrappers and pots from plastic bottles. Through a participatory approach, the program introduces the concept of the circular economy while simultaneously contributing to the local economic empowerment of the community, especially targeting housewives and youth. The activity could increased participant understanding of the upcycling concept and growing motivation to initiate waste-based businesses. The involvement of local partners reinforces the program's sustainability potential.

A. INTRODUCTION

Situsari Village has experiencing an increase in household waste, particularly inorganic waste such as plastic, glass, cans, and styrofoam. The lack of proper waste management has led to environmental degradation, including flooding caused by blocked drainage system and has posed health risks to the local population. According to the World Bank, poor waste management contributes to poverty, as the associated health and environmental costs are often borne by vulnerable groups [1].

Inorganic waste poses one of the most significant environmental challenges in the modern era, exacerbated by increasing consumption and urban lifestyles. Indonesia is currently the second-largest producer of plastic waste globally, generating more than 67 million tons per year [2]. This situation is worsened by limited environmental awareness, inadequate waste management infrastructure in rural areas, and the lack of synergy between communities and government entities in formulating innovative solutions.

A community-based approach is thus crucial, especially one that emphasizes active participation and local empowerment. One emerging method is **upcycling**—a creative recycling process that enhances the functional and aesthetic value of waste materials. Unlike conventional recycling that often degrades material quality, upcycling emphasizes design, creativity, and the creation of new economic value [3]. Aligned with the circular economy framework, this approach supports waste reduction, extends product lifespans, and fosters entrepreneurial opportunities [4].

This Community Service Program represents an entitled *"Understanding Creative Recycling of Inorganic Waste into Marketable Products"*, as team from Perbanas Institute conducted educational and hands-on training in Situsari Village using a participatory approach. The program aims to raise environmental awareness, introduce technical skills in waste processing, and cultivate environmental entrepreneurship. Moreover, the initiative serves as a platform to establish networks among academic institutions, village governance, and local communities to build an inclusive and sustainable waste management system. The training model is anticipated to be replicable in other villages facing similar challenges and contributes to the achievement of several Sustainable Development Goals (SDGs), particularly those related to sustainable consumption and production, poverty alleviation, and livable cities and villages.

B. IMPLEMENTATION METHOD

The community service program was conducted at the Situsari Village Office on June 20, 2025. The target participants included housewives, teenagers, and community leaders. A total of 34 participants completed the questionnaire. The implemented methods included:

1. **Education and Socialization**
   - Introduction to the concept of upcycling and its environmental and economic impacts.
2. **Demonstration and Discussion**
   - Hands-on tutorials on creating bags from used coffee sachets and pots from plastic bottles.
   - Active participant involvement in explaining the production stages.
3. **Evaluation (Pre-Test)**
   - A pre-test was administered to assess the participants' prior knowledge and practices related to recycling.
4. **Collaboration with Local Partners**
   - Village officials and BUMDes (village-owned enterprises) were involved to ensure program sustainability.

Place and Program Implementation

1. Place of implementation of the training program
   The place for implementing this community service is in Situsari Village Hall, Cileungsi Subdistrict, Bogor Regency, West Java
2. Time of Program Implementation
   The activities held on Friday, June 20th 2025 at 13.30 – 16.30 PM

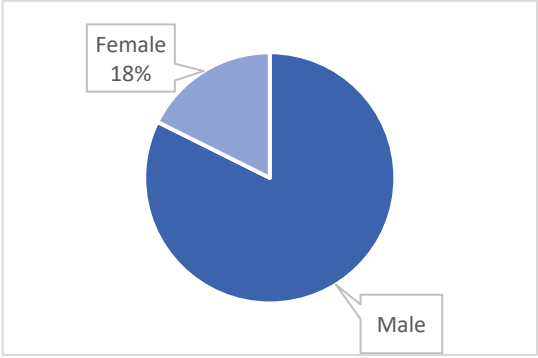
Tabel 1. Schedule of Activities

Time	Activity Description
10.00 – 11.00	Departure preparation from Perbanas Institute
11.01 - 12.00	Arrival and greeting session with village officials
12.01 – 13.00	Lunch and prayer break (Ishoma)
13.01 – 13.30	Event preparation at the village hall
13.31 – 14.00	Participant registration and pre-test
14.01 – 14.10	Opening remarks by the Master of Ceremony
14.11 – 14.25	Speeches by DP2M Perbanas and the Village Head of Situsari
14.26 – 15.00	Environmental household waste sorting education
15.01 -15.45	Organic waste management practice using maggots
15.46 – 15.55	Question-and-answer session
15.56 – 16.00	Prize awarding to participants who asked questions
16.01 – 16.15	Closing and group photo session
16.16 – 16.30	Souvenir distribution to all participants

C. DISCUSSION

The creative recycling training held in Situsari Village, Cileungsi, represents a community-based service initiative focused on enhancing environmental literacy and practical skills in managing inorganic waste. Throughout the event, participants showed positive engagement with the materials delivered. A total of 34 participants attended, consist of 82% by male and 18% by female, as illustrated in Figure 1. The high level of engagement during the hands-on session indicated strong enthusiasm and interest in the upcycling approach introduced.

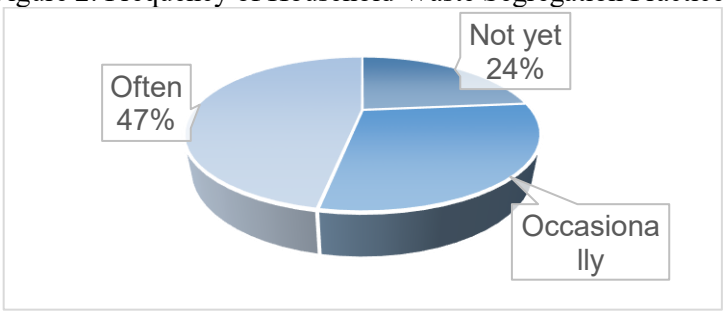
Figure 1. Gender Composition of Training Participants



Source : Result of Quisioner (2025)

During the initial session, participants demonstrated enthusiasm when introduced to different types of inorganic waste and their environmental impacts. Early discussions revealed that most participants were unfamiliar with the concept of upcycling but expressed interest when shown examples of final products such as bags made from coffee sachets, pots from plastic bottles, and decorations from used CDs. This indicates that limited environmental literacy can be effectively addressed through concrete, visual, and demonstrative learning approaches. During the discussion session, most participants actively asked questions regarding the process, materials, and potential market opportunities. One participant stated that the activity opened their mind to the economic potential of household waste, which had previously been considered worthless. Several participants expressed interest in continuing the practice of upcycling at home, with some having already engaged in similar activities through local women's groups or village bazaars. These responses suggest the potential for program sustainability if supported by continued mentoring and institutional backing, such as BUMDes or community-based enterprise groups. However, the process of recycling inorganic waste is closely tied to prior waste segregation between organic and inorganic materials.

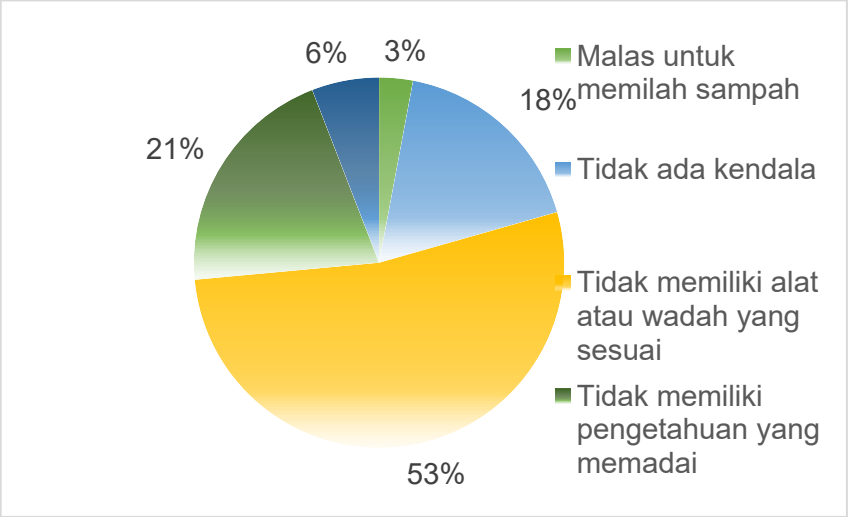
Figure 2. Frequency of Household Waste Segregation Practices



Source : Result of Quisioner (2025)

As shown in Figure 2, only 47% of participants regularly segregate their household waste, while 29% do so occasionally and 24% do not segregate at all. If waste segregation were consistently practiced, the availability of clean inorganic materials for upcycling could more effectively reduce waste accumulation in the village. Participants also identified several challenges to waste segregation. The most commonly cited issue (53%) was the lack of suitable tools or containers for separation. Other constraints included insufficient knowledge (21%), lack of time (18%), lack of motivation (6%), and no obstacles reported by 3%, as presented in Figure 3.

Figure 3. Reported Barriers to Household Waste Segregation



Source : Result of Quisioner (2025)

From the higher education perspective, the involvement of lecturers and students in this initiative strengthens the implementation of the Tri Dharma of Higher Education, particularly community service grounded in collaboration and local context. Students played a role as technical facilitators and documenters, gaining meaningful social learning experiences and fostering intergenerational empathy. The participation of village officials and BUMDes representatives also provided legitimacy to the program and opened opportunities for continued collaboration in future activities.

In a broader context, this training initiative represents an effort to localize circular economy principles at the grassroots level. Communities were introduced to the paradigm that waste is not merely a burden but also a potential resource that can be independently managed. This effort aligns with national policy directions on reducing plastic waste and promoting reuse as part of the country's commitment to the Sustainable Development Goals (SDGs), particularly Goal 11 (sustainable cities and communities) and Goal 12 (responsible consumption and production) [5].

The implementation of upcycling-based programs supports the principles of the circular economy by reducing dependency on raw materials and promoting the 3Rs (reduce, reuse, recycle) [6]. If widely replicated, this approach could offer a strategic and scalable alternative solution to waste-related problems in various regions. To ensure long-term impact, follow-up activities are necessary, including continuous mentoring, monitoring the application of skills at home, and forming environmental working groups. These follow-up initiatives would enable a more systematic and in-depth assessment of the

program's impact in environmental, economic, and social dimensions. The presence of local partners such as BUMDes is a valuable asset in supporting the sustainability of the program and its expansion into other sectors, such as environmental entrepreneurship training.

Figure 4. Training Module

Figure 5. The Speakers of Community Service Program

Figure 6. Group Photo with the Village Head of Situsari M. Dahlan

Figure 7. Give Souvenir to the Head of BUMDes Situsari

Figure 8. Group Photo of Training Participants

Figure 9. TheTraining Session

Figure 10. Reward to few Active Participants

Figure 11. Photo with all participants

D. CONCLUSION

The creative recycling training in Situsari Village had a tangible impact on improving community awareness, skills, and entrepreneurial potential concerning waste management. Through participatory methods and direct practice, participants not only understood the importance of managing inorganic waste but also demonstrated the ability to transform it into economically valuable products. Improved participant comprehension and engagement reflected the effectiveness of the educational approach. The emergence of business potential from this activity highlights upcycling as a sustainable local solution within the circular economy framework. The success of the program was made possible through the synergy of higher education institutions, local government, and community members. This collaboration underscores the importance of multi-stakeholder partnerships in simultaneously addressing environmental issues and empowering communities. Similar initiatives should be followed up with post-training mentoring, promotional support, and market access for upcycled products. The program model is highly replicable in other regions, provided it is adapted to local contexts, thereby amplifying and sustaining its impact.

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