



COMMUNITY EMPOWERMENT IN SUSTAINABLE ENVIRONMENTAL MANAGEMENT THROUGH THE ENVIRONMENTAL CLUSTER COMMUNITY SERVICE PROGRAM

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Abstract: A clean environment is a vital aspect of a healthy and comfortable living space. Waste management remains a persistent issue across many areas in Indonesia, including in RW 08, Tiban Lama Subdistrict, where problems include the lack of adequate waste disposal facilities and low public awareness regarding environmental cleanliness. This Environmental Cluster Community Service Program was implemented with the aim of increasing residents' awareness about the importance of maintaining a clean environment. The methods used in this program included the installation of trash bins made from used paint barrels mounted on wooden frames, clean-up activities around public facilities such as the community hall and health post, and the creation of educational boards illustrating the decomposition time of various waste materials. These activities were carried out by students participating in the community service program. As a result, the program contributed to raising public awareness and fostering positive changes in knowledge, attitudes, and behaviors related to environmental hygiene among the RW 08 community.

INTRODUCTION

Rw 08 in Tiban Lama Subdistrict, Sekupang District, Batam City, comprises three neighborhood associations (RT) with residents from diverse social and economic backgrounds. Most residents work in the informal sector, small businesses, or as daily laborers, with varying income levels. The social life in the community activities remains limited. Children and adolescents attend primary and secondary schools in the surrounding area, although some educational facilities are still limited, including sanitation facilities, classrooms, and environmental education media. In terms of the environment, public areas such as the Multipurpose Building, the Posyandu, and the Telaga Biru area still require attention, with simple waste management facilities and limited community participation in maintaining cleanliness (Dinas Lingkungan Hidup Kota Batam, 2023). These social, economic, educational, and environmental conditions indicate the need for community-based programs to increase environmental awareness and improve residents' quality of life, forming the background for the interventions conducted by the Community Service Program Group 03.

The main problem faced by the residents of RW 08 includes the lack of consistent waste disposal habits and the limited availability of trash facilities. The Temporary Waste Storage



(TPS) system in the area is still very simple, utilizing wooden frames to hang plastic garbage bags. As a result, waste whether properly hung or carelessly placed often becomes scattered around the TPS area. In addition, public facilities such as the community hall and the health post appear unkempt due to overgrown grass and weeds. Similarly, the road leading to Telaga Biru area still shows signs of littering, including discarded plastic food and beverage packaging and cigarette butts left by visitors. These conditions reflect the community's limited participation in maintaining environmental cleanliness, emphasizing the urgent need for improved waste management practices and enhanced public awareness. Community involvement is a key factor in achieving sustainable waste management systems (Mansuri, G., & Rao, 2023; Medley, K., Rahman, F., & Santoso, 2020; Sukholthaman, P., & Sharp, 2016; UN-Habitat, 2020).

Based on community needs, through the Community Service Program Group 03 on August 9- September 7, 2025 in RW 08. This community service program applied an educational and participatory approach aimed at raising public awareness of the importance of maintaining environmental cleanliness. The participatory approach encouraged direct involvement of residents in every stage of the activity, thereby fostering a sense of ownership and responsibility toward their surroundings (Poppe, M., Weigelhofer, G., & Winkler, 2018). Additionally, the educational approach was implemented through joint clean-up activities in public areas, the construction and installation of trash bins, and the provision of educational boards illustrating the decomposition time of waste materials. The educational method has been proven effective in shaping behavioral change and enhancing community knowledge regarding sustainable waste management (Dushkova & Ivlieva, 2024; Nelson, 2012). Through these activities, it is expected that the community will begin to understand the benefits of maintaining environmental hygiene and initiate independent clean-up activities in the future.

The purpose of the Community Service activity carried out by all members of Group 03, Universitas Riau Kepulauan, is to enhance residents awareness and concern for environmental cleanliness, particularly in areas frequently used by the community such as the Multipurpose Building, the Posyandu, and the Telaga Biru open space. In addition, this activity aims to provide better-organized waste management facilities through the creation of trash bins and educational boards, as well as to encourage the community to take a more active role in maintaining environmental cleanliness in a sustainable manner.



METHODOLOGY

Approach and Implementation Techniques

This community service program was carried out using participatory approach, with students as the main implementers, while the local neighborhood officials RT/RW and residents acted as supporting partners. The implementation techniques included direct observation, needs identification, clean-up activities, the construction of trash bins from used paint buckets, and the installation of educational boards related to waste decomposition.

Activity Stages

The program was implemented through several stages, namely:

1. Preparation

Coordination with RT/RW officials, field observation, needs analysis, and preparation of tools and materials.

2. Implementation

Conducting clean-up activities around the Community Hall, Posyandu, and Telaga Biru pathway; Creating trash bins and educational boards, and documenting the activities

3. Evaluation

Carried out through group discussions among students to assess achievements and challenges, as well as coordination with local officials to receive feedback on the program.

4. Follow-up

Handing over the created facilities (trash bins and educational boards) to local officials for sustainable use.

Target, Location, and Time of Implementation

The target group of this program was the community of RW 08, Tiban Lama Subdistrict, Sekupang District, Batam City, which includes three neighborhood units: RT 01, RT 02, and RT 03. The program was conducted from August 9 to September 7, 2025, and took place every Saturday and Sunday.

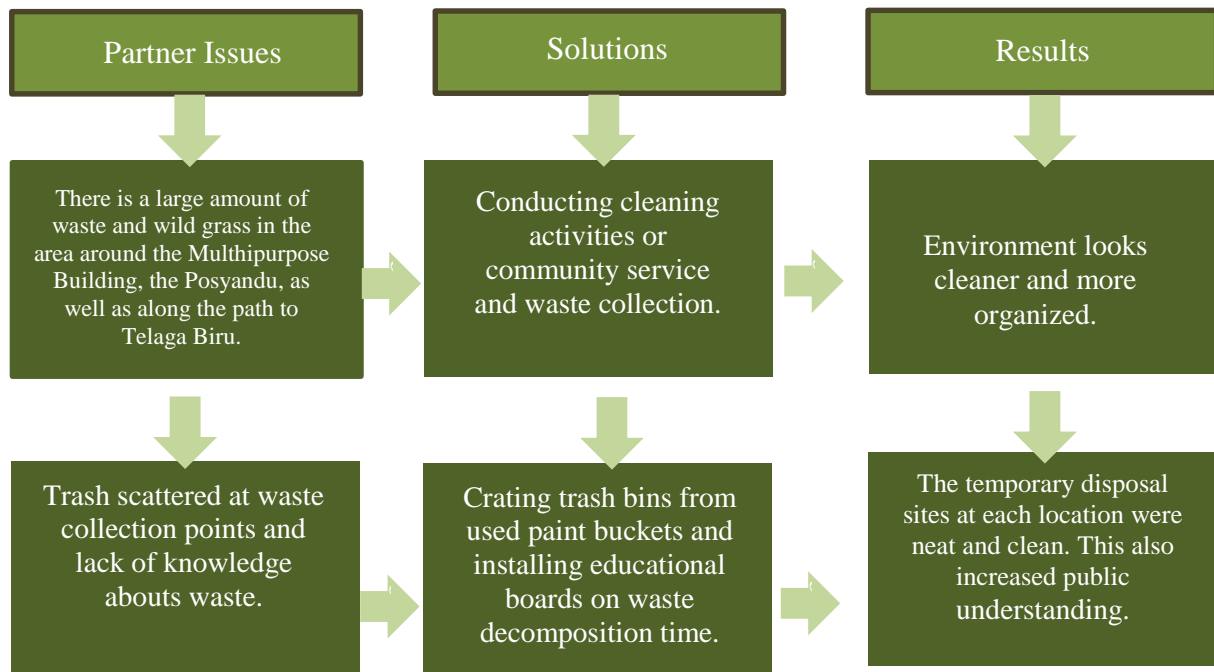


Figure 1. Method of Activity Implementation

RESULTS AND DISCUSSION

This community service program was carried out in RW 08, Tiban Lama Subdistrict, Sekupang District, Batam City, with the main focus on improving environmental cleanliness and providing waste management education for the local community. The activities were conducted every weekend, on Saturdays and Sundays, beginning from the coordination and planning stages to the field implementation. The student team conducted cleaning activities at three main points agreed upon with the community, namely around the Multipurpose Building (which also served as the group's post), the Posyandu area, and the pathway leading to Telaga Biru. The activities included grass cutting, sweeping, collecting garbage, and arranging the area to make it look cleaner and more organized. In addition, the team also made and placed several simple trash bins made from used paint buckets and wooden stands, and installed an educational board containing information on the decomposition time of various types of waste. The activities were mostly carried out directly by students based on their own initiative and coordination with local neighborhood leaders RT/RW

The participation of local residents in this activity was still limited but gave a positive contribution. Some residents assisted by lending cleaning tools such as brooms, mops, buckets, hoes, machetes, sickles, and even a grass-cutting machine. There were also residents who voluntarily provided drinking water, snacks, and moral support to the students during the activities. Such support became one of the



main driving factors for the smooth implementation of the program. Meanwhile, the challenge encountered was the low level of direct community involvement in field activities, so most of the work was still done by students. Overall, student attendance rate reached almost 100% in each session, reflecting strong commitment and responsibility toward the program. Although community participation was not massive, it indicated an initial awareness of the importance of maintaining environmental cleanliness. This participation in environmental programs is influenced by motivation, awareness, and perceived benefits of the activities carried out.

The results of this community service program can be seen through the improvement of cleanliness around the activity areas and the activity areas and the establishment of new cleanliness- supporting facilities created and installed by the students. Physically, the program outputs included three cleaned and organized locations: the area around the Multipurpose Building, the Posyandu, and the pathway leading to Telaga Biru. Additionally, the students successfully made and installed nine simple trash bins made from used paint buckets mounted on wooden frames, as well as one educational boards displaying information about the decomposition time of various types of waste. The educational boards serves as a visual learning tool for the community, especially for children and teenagers, to better understand the importance of waste sorting and proper disposal. The new trash bins also make it easier for residents to dispose of waste properly, creating a cleaner and more orderly environment.

Tabel 1. Participation in Community Service Program

Type	Number	Percentage
a) Cluster Team Members	5 people	14,7%
b) Other Group Participation	22 people	62,8%
c) Community Members	8 people	22,9%
Total	35	100 %

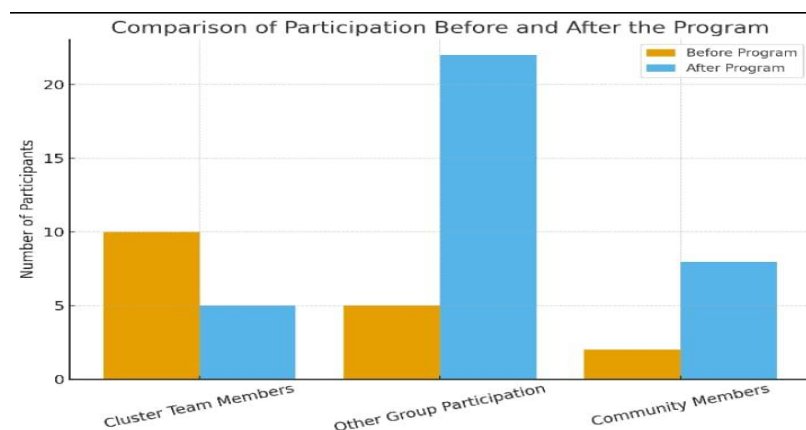


Figure 1. Comparison of Environmental Conditions Before and After this Program



No	Pictures	Description
1		<p>Cleaning activities in the multipurpose building area</p>
2		<p>Cleaning around the Posyandu.</p>
3		<p>Garbage collection from the parking area to Telaga Biru.</p>
4		<p>Trash bin construction : painting, frame assembly, and installation at designated points.</p>
5		<p>Educational board creation : preparation, cutting, painting, labeling, and installation at high-traffic locations.</p>

Analysis and Discussion

1. Partner's Problem

The main issue identified in RW 08, Tiban Lama Subdisrict, as the lack of community awareness and habits in waste management. Many residents still disposed of waste improperly, and the temporary waste collection point (TPS) was inadequate, using simple



wooden frames for hanging plastic waste bags. This condition led to environmental pollution and unpleasant odors (Kusumaningrum, A., & Rahmawati, 2022).

2. Empowerment Approaches

The program implemented a participatory approach, involving 27 university students and 8 community members. Activities included environmental education, communal cleaning and building simple waste facilities. Collaboration between students and residents improved engagement and encouraged shared responsibility in maintaining neighborhood cleanliness (Medley, J., & Rahmawati, 2021; Setiawan, 2021)

3. Previous Research

Previous studies support the idea that community participation enhances environmental management effectiveness. According to (Widyastuti, 2020), participatory-based programs strengthen public awareness and foster sustainable environmental behavior. Similarly, (Suhartono, 2021) found that joint clean-up movements help increase local ownership and long-term environmental care.

4. Sustainability

This program's sustainability relies on continuous collaboration between students and residents. After completion, residents were motivated to continue maintaining the environment and organizing monthly cleaning activities. Strengthened local awareness and established teamwork are expected to keep the neighborhood clean and environmentally friendly (Fitri, R., Hasanah, D., & Putra, 2020).

CONCLUSION AND RECOMMENDATIONS

Conclusion

The community service activities carried out by Group 03 of the Universitas Riau Kepulauan Community Service Program in RW 08, Tiban Lama Subdistrict, successfully enhanced residents awareness of the importance of environmental cleanliness. Activities such as cleaning the surrounding area, creating trash bins from used buckets, and installing educational boards about waste decomposition contributed to tangible improvements in the local environment. Although direct community participations was still limited, the program provided visible outputs and fostered a positive impression of the students among residents.



RECOMMENDATIONS

To ensure sustainability of these activities, it is recommended that similar programs be conducted regularly using approaches that actively involve residents. Strong support from the RT/RW officials and continuous education on waste management are expected to increase community participation and maintain environmental cleanliness in a more sustainable manner. Additionally, developing more attractive educational media and integrating technology could attract broader community interest. Continuous collaboration between students and residents, supported by educational methods, has been shown to promote long-term behavioral change and community ownership of cleanliness initiatives (Dushkova & Ivlieva, 2024; Nelson, 2012; Rahmawati, 2022)

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to Universitas Riau Kepulauan for providing funding support, either in the form of funding or facilities, which made this community service program possible. This support was provided through institutional collaboration under contract number 0813-7103-5348. Appreciation is also extended to the RW 08 officials, the head of RT 01, RT 02, and RT 03, as well as the entire community of RW 08, Tiban Lama Subdistrict, Sekupang District, for their cooperation, participation, and valuable contributions throughout the implementation of this program.

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Proceeding
UNRIKA International Conference on Community Service
(UICCS) Universitas Riau Kepulauan, Batam, November 27,
2025

E-ISSN:
xxxxxxx

E-ISBN:
xxxxxxx

Volume 1(1), 65-73, 2025

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