



Community-Based Coastal Environmental Management Education through the "Green Bulutui, Clean Sea, Sustainable Village" Program in Bulutui Village, North Minahasa

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ABSTRAK

Coastal areas play a strategic role in community life, serving as sources of livelihood, food, economic activity, and social identity. However, these areas are also vulnerable to pollution from household waste and single-use plastics, compounded by a lack of sustainable waste management practices. This community service initiative aimed to raise knowledge and awareness among the residents of Bulutui Village regarding the importance of maintaining ocean cleanliness and reducing waste pollution, while also encouraging resident participation in coastal environmental management. The event took place on Wednesday, May 20, 2026, in Bulutui Village, North Minahasa, North Sulawesi, under the theme "Green Bulutui, Clean Ocean, Sustainable Village." Approximately 50 people participated, including villagers, village officials, community leaders, and youth representatives. The implementation methods included educational outreach, presentations, interactive discussions, and reflection on environmental actions. Topics covered included the ocean's importance to coastal communities, the environmental and health impacts of waste, daily actions to protect the ocean, the role of the younger generation, and sustainable marine resource management. The results indicated that participants gained an understanding of how waste affects marine ecosystems, the importance of waste sorting, and the necessity of community cleanup activities and reducing single-use plastics. The initiative also fostered a community commitment to maintaining coastal cleanliness through simple, routine actions. Thus, this service activity serves as a first step toward building collective awareness among coastal residents to create a village that is clean, healthy, productive, and sustainable

INTRODUCTION

Coastal areas serve as vital living spaces that fulfill ecological, social, and economic functions for local communities. For coastal villagers, the sea represents not merely a natural environment but also a source of livelihood and food, a site of tourism potential, and a legacy for future generations. Given Indonesia's status as an archipelagic nation, coastal area management must be conducted sustainably to ensure that economic benefits do not come at the expense of environmental quality or the sustainability of marine resources (Dudayev et al., 2023; Lukman et al., 2020).

Common environmental issues in coastal areas include pollution caused by domestic waste, single-use plastics, and improperly managed household refuse. Waste entering coastal and marine environments can contaminate water, damage marine habitats, degrade environmental quality, and negatively impact both public health and the local economy. Previous community service studies indicate that education and community participation are crucial elements in addressing the problem of marine debris in coastal regions (Birch et al., 2025; Asyari et al., 2024).

Community waste management habits are heavily influenced by knowledge, environmental awareness, social ties within the community, and the availability of supporting facilities. Studies on waste management behavior in Indonesian coastal communities demonstrate a link between community attachment, environmental awareness, and waste management practices; however, changing behavior also requires infrastructure support and consistent collective habits (Birch et al., 2025).

Bulutui Village in North Minahasa is a coastal community possessing valuable marine resources and a natural environment essential to local livelihoods. These assets must be safeguarded against degradation caused by pollution and a lack of awareness regarding environmental management. Consequently, a community service initiative themed "Green Bulutui, Clean Seas, Sustainable Village" was implemented to educate and empower residents to maintain the cleanliness of their marine and coastal areas.

This initiative aligns with a community empowerment approach by positioning residents as the primary agents of change in environmental behavior. Effective coastal management relies not only on formal policies but also on community participation, village government cooperation, youth involvement, and the fostering of a culture of cleanliness. This participatory approach is consistent with concepts of fisheries and coastal governance that emphasize partnerships between the community and local stakeholders (Rockström et al., 2025; Dudayev et al., 2023).

Given this context, this article aims to describe the implementation of the community service activity in Bulutui Village, outline the coastal environmental education provided, and analyze the initiative's impact on raising community awareness regarding marine cleanliness and sustainable coastal resource management. It is hoped that this article will serve as a practical reference for similar community service activities in other coastal regions (Asyari et al., 2024; Ndobe et al., 2026).

IMPLEMENTATION AND METHODS

This community service activity employed an educational-participatory approach. The educational component involved presenting material on marine cleanliness, the impact of waste, and coastal resource management, while the participatory component involved discussions with participants to explore the environmental issues facing the community. This approach was selected because changing environmental behavior requires increased knowledge, resident engagement, and the strengthening of shared commitment (Voronkova et al., 2025; Awaluddin et al., 2024).

The activity took place on Wednesday, May 20, 2026, in Bulutui Village, North Minahasa, North Sulawesi. Approximately 50 people participated, comprising villagers, village officials, community leaders, and youth representatives. The event was organized by Universitas Nusantara Manado through its Institute for Research and Community Service (LPPM) as part of the implementation of the *Tri Dharma Perguruan Tinggi* (Three Pillars of Higher Education) regarding community service (LPPM Universitas Nusantara Manado, 2026).

The activity stages included preparation, the opening ceremony, material presentation, discussion, action reflection, and the closing session. During the preparation stage, the organizing committee arranged equipment, banners, refreshments, and documentation, and coordinated with village authorities. The implementation stage began with a prayer and welcoming remarks, followed by the presentation of material by resource persons, an interactive discussion, and the closing session. The structure of the activity followed the service program schedule prepared by the organizing committee (LPPM Universitas Nusantara Manado, 2026).

The first section emphasizes the importance of the sea as the lifeblood of coastal communities. It explains that the sea provides livelihoods, food sources, tourism potential, and an environmental legacy for future generations. Understanding this is crucial, as awareness of the benefits provided by coastal ecosystems can serve as a foundation for changing community behavior regarding environmental preservation (Lukman et al., 2021; LPPM Universitas Nusantara Manado, 2026).

The second section addresses the impact of waste on coastal and marine environments. Items such as plastic waste, packaging, beverage bottles, plastic bags, disposable diapers, and household refuse can pollute the water, litter beaches, harm health, reduce fish catches, and diminish tourism appeal. This material aligns with community service studies indicating that education on coastal pollution is vital for raising resident awareness regarding the ecological and social impacts of waste (Karimuna et al., 2025; Awaluddin et al., 2024).

The third section discusses concrete actions to protect the coast through environmental education, regular community discussions, and hands-on activities. Participants are encouraged to understand that protecting the sea can begin with five simple steps: refraining from dumping trash into the sea, providing trash receptacles, reducing single-use plastics, cleaning beach areas,

and participating in community cleanup drives. Small steps taken collectively can foster new social habits regarding coastal environmental management (Voronkova et al., 2025; Ndobe et al., 2026).

The fourth module addresses marine resource management for the well-being of coastal communities. Topics covered include sustainable capture fisheries, marine product processing, aquaculture, and community-based ecotourism. This material aims to foster an understanding that the preservation of the marine environment is directly linked to the economic sustainability of coastal communities (Dudayev et al., 2023; Laila, 2025).

The activity was evaluated descriptively based on observations made during the session, participant responses during discussions, and documentation of the proceedings. The evaluation focused on participant engagement, comprehension of the material, and the emergence of a commitment to maintaining the cleanliness of the coastal environment. Descriptive evaluation methods are commonly employed in community service articles, as they aim to provide a practical overview of the process, outcomes, and follow-up actions of the activity (Awaluddin et al., 2024; Ndobe et al., 2026).

RESULTS AND DISCUSSION

The community service activity themed "Green Bulutui, Clean Sea, Sustainable Village" was carried out as scheduled on Wednesday, May 20, 2026, in Bulutui Village, North Minahasa. The event proceeded through stages including preparation, the opening ceremony, material presentation, discussion, and the closing session. Approximately 50 participants attended, demonstrating the community's interest in issues regarding marine cleanliness and coastal sustainability (LPPM Universitas Nusantara Manado, 2026).

The activity highlighted the community's direct connection to the sea as a source of livelihood. During the presentation session, participants were guided to understand that the sea provides not only fish catches but also serves as a source of food, a potential tourism asset, and a space for the continued well-being of coastal communities. Awareness of the benefits provided by the coastal environment is a crucial factor in fostering conservation behavior and ecosystem protection (Lukman et al., 2021; Dudayev et al., 2023).

Regarding the segment on coastal pollution, participants gained an understanding of the impact of waste on the marine environment and community life. Indiscriminate waste disposal can pollute seawater, litter beaches, harm marine life, degrade environmental quality, and affect public health. These findings align with previous community service initiatives emphasizing that education on marine debris should focus on understanding ecological, economic, and health impacts (Awaluddin et al., 2024; Karimuna et al., 2025).

The activity results indicate that participants were able to identify various sources of waste with the potential to pollute the coast, such as plastic packaging, beverage bottles, plastic bags, and household waste. This understanding is crucial because household-level waste management practices serve as the initial point for reducing the amount of waste entering coastal and marine environments. Studies on waste management behavior in Indonesian coastal

communities also confirm that household behavior significantly influences the quality of waste management in coastal areas (Voronkova et al., 2025).

The activity also fostered the understanding that effective waste management requires more than just prohibiting the dumping of waste into the sea; it must be supported by habits such as waste sorting, the provision of trash receptacles, the reduction of single-use plastics, and regular community cleanup events. A collective habit-based approach is vital because environmental behaviors are more easily transformed when supported by social norms, tangible examples, and joint activities at the community level (Voronkova et al., 2025; Ndobe et al., 2026).

The role of the younger generation emerged as a key aspect of this community service initiative. The youth of Bulutui Village are positioned as drivers of change, possessing the potential to encourage and motivate others while serving as role models for a clean lifestyle. Involving young people in environmental activities is essential for ensuring program sustainability, as they can act as agents of change who bridge the gap between education, social action, and the adoption of new habits within the community (Awaluddin et al., 2024; LPPM Universitas Nusantara Manado, 2026).

Beyond the aspect of cleanliness, this activity emphasizes the importance of sustainable marine resource management. Coastal communities must not only protect the ocean from waste but also understand strategies to improve their well-being through seafood processing, aquaculture, ecotourism, and strengthening the economy based on local potential. Community-involved marine resource governance is crucial, as sustainable coastal management requires collaboration among residents, the government, and other stakeholders (Dudayev et al., 2023; Laila, 2025).

This community service activity demonstrates that environmental education can serve as a starting point for building community commitment. Participants did not merely receive information; they were also encouraged to understand the interconnections between a clean environment, public health, economic productivity, and the future of the next generation. Thus, the activity holds strategic value by linking environmental issues with the direct interests of the coastal community (Lukman et al., 2021; Voronkova et al., 2025).

Activity documentation serves as evidence that the community service initiative in Bulutui Village, North Minahasa, was successfully implemented with direct community involvement. Photographs show the participation of the implementation team, resource persons, village officials, and residents in the coastal environmental education program themed "Green Bulutui, Clean Sea, Sustainable Village." Participant attendance and support from village authorities indicate a positive response from the local community. Overall, the results reflect a positive reception from the participants. Their enthusiasm was evident in their attendance, active engagement, and willingness to participate in the entire program. This positive response serves as social capital to drive follow-up initiatives, such as regular community clean-up drives, the formation of environmental awareness groups, household waste sorting, and the

strengthening of village-based environmental education (Ndobe et al., 2026; LPPM Universitas Nusantara Manado, 2026).



Figure 1. Publicity Material for a Community Service Activity Themed “Green Bulutui, Clean Sea, Sustainable Village,” Serving as a form of Coastal Environmental Education in Bulutui Village, North Minahasa.

The event banner highlights the core identity of the Community Service initiative by Universitas Nusantara Manado, centered on the theme "Green Bulutui, Clean Seas, Sustainable Village." This theme reflects the program's focus on coastal environmental education—specifically, raising community awareness about maintaining clean seas, preserving coastal areas, and fostering a sustainable village. The event took place on Wednesday, May 20, 2026, starting at 09:00 WITA, in Bulutui Village, North Minahasa, North Sulawesi.

The banner also lists the speakers—Fandy Latuni, S.Pd., M.Si., and Dr. Indriana, S.P., M.Si. — who were responsible for delivering educational content to the community. Visual elements on the banner, such as the sea, mangroves, and coastline, reinforce the event's primary message: the importance of protecting marine ecosystems and the coastal environment as integral parts of life in Bulutui Village. Thus, the banner serves not only as an informational tool but also as a visual campaign medium to encourage community participation in preserving the cleanliness and sustainability of the coastal environment.



Figure 2. Documentation of the Implementation Team and Resource Persons for the Universitas Nusantara Manado Community Service Activity in Bulutui Village, North Minahasa.

This photograph shows the implementation team from Universitas Nusantara Manado's Community Service program, alongside guest speakers and support staff, in Bulutui Village, North Minahasa. The image captures the team's readiness and active involvement in conducting a coastal environmental education program themed "Green Bulutui, Clean Seas, Sustainable Village." The team played a crucial role in ensuring the smooth execution of the event, handling everything from initial preparations and material delivery to participant guidance and activity documentation. The photo also serves as evidence that the community service initiative was carried out in person and in a well-coordinated manner at the site.



Figure 3. Group Photo of the Organizing team, Resource Persons, and Some of the Participants of the Community Service Activity in Bulutui Village, North Minahasa.

This documentation features a group photo of the organizing team, resource persons, village officials, and some of the participants from the community service activity held in Bulutui Village, North Minahasa. The image illustrates the community's direct involvement in a coastal environmental education initiative themed "Green Bulutui, Clean Seas, Sustainable Village." The presence of participants in the photo demonstrates that the service activity was not merely a formality but also garnered a positive response from the community—the program's primary target audience.

The documentation highlights the collaborative relationship between the university, the village government, and the local community in supporting coastal environmental conservation efforts. The involvement of these various stakeholders reinforces the activity's objectives: raising public awareness about the importance of maintaining clean seas and reducing waste pollution, while fostering a shared commitment to creating a clean, healthy, and sustainable Bulutui Village.



Figure 4. Conducting Coastal Environmental Education Outreach as Part of A Community Service Activity in Bulutui Village, North Minahasa

This documentation illustrates the implementation of an outreach session conducted as part of Universitas Nusantara Manado's community service initiative in Bulutui Village, North Minahasa. During the session, the speaker presented material on the importance of maintaining marine cleanliness, reducing waste pollution, and raising community awareness regarding the sustainable management of the coastal environment. This outreach activity served as a core component of the service program, providing an educational platform for the community to understand the interconnections between coastal environmental preservation, public health, and the sustainability of marine resources.

The session also facilitated direct interaction among the implementation team, the speaker, and the participants. Through presentations and discussions, participants were guided to understand simple, actionable steps for their daily lives—such as refraining from dumping trash into the sea, reducing single-use plastic consumption, keeping the beach clean, and participating in community cleanup activities. Consequently, this outreach activity played a vital role in fostering collective community awareness aimed at creating a clean, healthy, and sustainable Bulutui Village.

However, the activity had limitations, as the evaluation did not employ pre-test and post-test instruments to quantitatively measure improvements in participant knowledge. Instead, the evaluation was conducted descriptively based on activity observations and participant responses. Therefore, it is recommended that future activities utilize simple questionnaires administered before and after the session to allow for a more systematic measurement of changes in community knowledge and attitudes (Awaluddin et al., 2024; Voronkova et al., 2025).

The recommended follow-up action is the implementation of a continuous mentoring program in Bulutui Village. Subsequent initiatives could include establishing a coastal care group, placing waste bins at strategic locations, conducting waste-sorting training and beach cleanup activities, and developing economic opportunities from specific types of inorganic waste. These

recommendations align with coastal community-based service activities that emphasize the importance of local institutions and village government support for program sustainability (Ndobe et al., 2026; Asyrofi et al., 2025).

Thus, the "Green Bulutui, Clean Sea, Sustainable Village" initiative can be viewed as a preliminary model for community service grounded in education and coastal resident participation. This initiative not only imparts knowledge but also fosters an understanding that a healthy ocean is vital for public health, economic sustainability, and the quality of life for future generations. The success of such programs relies heavily on the continuity of activities, village government support, and active community engagement (Dudayev et al., 2023; Voronkova et al., 2025).

CONCLUSION AND RECOMENDATION

A community service activity themed "Green Bulutui, Clean Sea, Sustainable Village" was successfully conducted in Bulutui Village, North Minahasa, on Wednesday, May 20, 2026. Approximately 50 participants attended, comprising villagers, village officials, community leaders, and youth representatives. Through outreach sessions, presentations, and interactive discussions, the activity fostered an understanding among participants regarding the importance of maintaining marine cleanliness, reducing waste, and managing coastal resources sustainably (LPPM Universitas Nusantara Manado, 2026; Awaluddin et al., 2024).

The results indicate that coastal environmental education can serve as an initial step in raising community awareness about the dangers of marine debris and the necessity of collective action. Participants gained insight into simple measures to protect the ocean, such as refraining from dumping trash into the sea, providing waste disposal facilities, reducing single-use plastics, cleaning the beach, and participating in community cleanup drives. The activity also underscored the vital role of the younger generation as drivers of environmental change at the village level (Voronkova et al., 2025; Ndobe et al., 2026).

The activity recommends follow-up measures, including ongoing guidance, the formation of coastal care groups, the provision of waste management facilities, and the implementation of regular beach cleanup events. Furthermore, future community service initiatives should employ pre-test and post-test evaluation instruments to more accurately measure improvements in community knowledge and attitudes. With program continuity, Bulutui Village has the potential to become a clean, healthy, productive, and sustainable coastal village (Dudayev et al., 2023; Laila, 2025).

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