

UTILIZING PLASTIC WASTE AS A VILLAGE LANDMARK THROUGH ECOBRICK TECHNOLOGY

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Abstract. Plastic waste management is one of the environmental problems that continues to grow in rural areas, including in Dile Village, Detusoko District, Ende Regency, East Nusa Tenggara. This community service activity aims to utilize plastic waste into Ecobricks as material for making the Dile Village name icon, develop sustainable environmental education media, and increase public participation and awareness in plastic waste management. The activity was carried out on June 13, 2026, at the Dile Village office by 24 Semester VI students of the Economic Education Study Program, University of Flores, accompanied by lecturers. The method used is an implementative approach based on active participation with participatory observation, interviews, and documentation techniques. The program was implemented through six stages, namely committee formation, initial observation, coordination with the village government, Ecobrick production, evaluation, and icon installation. The results of the activity showed that 700 plastic bottles were successfully processed into Ecobricks and assembled into an icon written "DILE VILLAGE", which was installed at the Dile Village Office. The presence of this icon has received a positive response from village officials and the community, as it strengthens the village's visual identity and serves as an educational tool regarding the importance of educational, aesthetic, and sustainable waste management. As a follow-up, this program is recommended for further development through community and village government involvement and replication in other villages facing similar plastic waste issues.

Keywords: ecobrick, environmental education, plastic waste

Abstrak. Pengelolaan sampah plastik merupakan salah satu permasalahan lingkungan yang terus berkembang di kawasan pedesaan, termasuk di Desa Dile, Kecamatan Detusoko, Kabupaten Ende, Nusa Tenggara Timur. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk memanfaatkan sampah plastik menjadi Ecobrick sebagai bahan pembuatan ikon nama Desa Dile, mengembangkan media edukasi lingkungan yang berkelanjutan, serta meningkatkan partisipasi dan kesadaran masyarakat dalam pengelolaan sampah plastik. Kegiatan dilaksanakan pada 13 Juni 2026 di kantor Desa Dile oleh 24 mahasiswa Semester VI Program Studi Pendidikan Ekonomi Universitas Flores yang didampingi dosen. Metode yang digunakan adalah pendekatan implementatif berbasis partisipasi aktif dengan teknik observasi partisipatif, wawancara, dan dokumentasi. Program dilaksanakan melalui enam tahapan, yaitu pembentukan panitia, observasi awal, koordinasi dengan pemerintah desa, produksi Ecobrick, evaluasi, dan pemasangan ikon. Hasil kegiatan menunjukkan bahwa 700 botol plastik berhasil diolah menjadi Ecobrick dan dirakit menjadi ikon bertuliskan "DESA DILE" yang dipasang di Kantor Desa Dile. Kehadiran ikon tersebut memperoleh respons positif dari aparat desa dan masyarakat karena mampu memperkuat identitas visual desa sekaligus menjadi sarana edukasi mengenai pentingnya pengelolaan sampah yang bernilai edukatif, estetis, dan berkelanjutan. Sebagai tindak lanjut, program ini direkomendasikan untuk terus dikembangkan melalui keterlibatan masyarakat dan pemerintah desa serta direplikasi pada desa-desa lain yang menghadapi permasalahan sampah plastik serupa.

Kata Kunci: ecobrick, edukasi lingkungan, sampah plastik

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INTRODUCTION

Plastic waste management has become one of the most pressing environmental challenges in Indonesia. Based on Law Number 32 of 2009 concerning Environmental Protection and Management, every citizen has the right to enjoy a clean and healthy environment. However, the increasing level of community activities and the widespread use of



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plastic-based products have led to a continuous rise in the volume of plastic waste (Gautam et al., 2024). Plastic is difficult to decompose naturally and may take decades or even hundreds of years to degrade (Dey et al., 2024). As a result, improperly managed plastic waste can contaminate soil, water, and air, disrupting ecosystem balance and public health (Antico et al., 2017). The issue of plastic waste remains a significant challenge in many regions, including Ende Regency, East Nusa Tenggara Province. Plastic waste generated from household activities and community economic activities has not yet been utilized optimally (Joshi et al., 2019). Some residents still dispose of or burn plastic waste, which may have long-term negative environmental impacts (Mihai et al., 2021). In fact, plastic waste has the potential to be transformed into various useful products when managed through appropriate approaches that actively involve community participation (Kumar et al., 2021).

Dile Village, located in Detusoko District, Ende Regency, faces a similar problem. Based on observations and coordination with the Dile Village Government led by Village Head Fabianus Mbana, plastic waste management in the village still requires improvement. The limited waste management system has resulted in a considerable amount of plastic waste remaining underutilized. On the other hand, the community has significant potential to participate in environmental management activities if supported by programs that are easy to implement and provide tangible benefits for the village (Chen et al., 2015)

One alternative solution that can be implemented is the utilization of plastic waste through the Ecobrick method. An Ecobrick is a technique of compacting cleaned plastic waste into plastic bottles until a certain density is achieved, allowing it to be used as a simple construction material and for various creative products (Antico et al., 2017). This method is easy to apply, does not require sophisticated technology, and encourages active community participation (Gonzalez-Mohino et al., 2023). Various studies have shown that Ecobricks are effective as both environmental education tools and a means of reducing plastic waste within communities (Samad et al., 2021).

Although Ecobricks have been widely used to create chairs, tables, plant pots, reading gardens, and other public facilities, their utilization as village name landmarks remains relatively limited (Suhendri, 2022). The use of Ecobricks as a village name landmark offers added value because it not only serves as an aesthetic village marker but also functions as an environmental education medium that conveys messages about sustainable plastic waste management (Budiarti et al., 2025). The main advantage of this program lies in the use of Ecobricks as the Dile Village name landmark, integrating plastic waste management, environmental education, and village identity strengthening into a single community service activity (Cleveland et al., 2025).

Based on these conditions, students of the sixth-semester Economic Education Study Program carried out a community service program entitled "Utilizing Plastic Waste as a Village Name Landmark through Ecobrick Technology in Dile Village, Detusoko District, Ende Regency." This activity aims to transform plastic waste into Ecobricks as materials for constructing the Dile Village name landmark, develop an Ecobrick-based village icon as a medium for environmental education, and increase community participation and awareness regarding the importance of responsible and sustainable plastic waste management.

METHOD

This community service activity was conducted on June 13, 2026, at the Dile Village Office, Detusoko District, Ende Regency, East Nusa Tenggara Province, Indonesia. The partner in this activity was the Dile Village Government, led by Village Head Fabianus Mbana, involving village officials, community leaders, and local community representatives. The program was carried out by 24 sixth-semester students from the Economic Education Study Program of Flores University under the supervision of lecturers and the Head of the Study Program. The main problems faced by the partner were the suboptimal management of plastic waste and the absence of a village name landmark that could serve as the visual identity of Dile Village. To address these issues, the proposed solution was the utilization of plastic waste to produce

Ecobricks, which were then used as the primary material for constructing the Dile Village name landmark. A participatory approach was employed, involving the partner in the planning, coordination, and implementation processes to ensure that the program aligned with the needs of the local community.

The implementation of the program was carried out through several stages. The first stage involved field observations and coordination with the Dile Village Government to identify community problems and determine the location for installing the village name landmark. The second stage consisted of collecting and sorting plastic waste in the Ende Regency area. The collected plastic waste was then cleaned and dried before being used in the Ecobrick production process. The third stage involved producing Ecobricks by compacting plastic waste into plastic bottles until a specified density was achieved. The fourth stage was the construction of the landmark framework using iron as the main structural material, which was subsequently filled with and fitted with Ecobricks to form the inscription "Desa Dile." The fifth stage involved installing the village name landmark at a location agreed upon by the Dile Village Government as the implementation of the community service project outcomes. The tools and materials used in this activity included used plastic bottles, non-organic plastic waste, compacting sticks, iron frames, welding equipment, adhesive, paint, brushes, and other supporting equipment. Data were collected through observation, interviews with the Village Head and village officials, and documentation throughout the implementation process.

The program evaluation assessed the achievement of the program objectives, including the successful construction and installation of the Ecobrick-based Dile Village name landmark and the level of partner participation during implementation. Data analysis was carried out using a descriptive qualitative approach based on the Miles and Huberman model, which consists of data reduction, data display, and conclusion drawing. Data validity was ensured through source triangulation by comparing the results of observations, interviews, and documentation, thereby providing a comprehensive understanding of both the implementation process and the outcomes of the program (Schlunegger et al., 2024).

RESULT AND DISCUSSION

The community service activity focused on utilizing plastic waste to create a village name landmark through Ecobrick technology at the Dile Village Office, Detusoko District, Ende Regency. The program involved 24 sixth-semester students from the Economic Education Study Program of Flores University, supervising lecturers, the Head of the Economic Education Study Program, the Village Head of Dile, village officials, community leaders, and local community representatives. The implementation of the activity began with field observations and coordination with the Dile Village Government to determine the installation site of the landmark and to obtain support for the program.



Figure 1. *Observation and coordination with the Dile Village government*

The observation results indicated that the Dile Village Government provided full support for the implementation of the program. The Village Head of Dile, Fabianus Mbana, together with village officials, positively welcomed the activity because it was considered capable of providing environmental benefits while simultaneously strengthening the village's identity. This support was demonstrated through the approval of a strategic location for the installation of the landmark in front of the Dile Village Office, adjacent to the main Ende–Maumere road. The location was selected to ensure high visibility for both residents and travellers passing through the area.

The next stage was the production of EcoBricks through the processes of sorting, cleaning, and filling plastic waste into bottles until they became completely compact. This activity successfully produced approximately 700 plastic-bottle EcoBricks, which were used as the primary material for constructing the Dile Village name icon. These results demonstrate that plastic waste, which previously had no practical value, can be transformed into a useful material with both functional and aesthetic value (Haba et al., 2025).



Figure 2. *The process of making ecobricks from plastic waste*

The main output of this community service activity was the installation of the “DESA DILE” name icon made from EcoBricks in front of the Dile Village Office. The icon was constructed using an iron frame filled with EcoBricks, resulting in a sturdy, attractive structure with educational value. The installation was carried out on June 13, 2026, and witnessed by village government officials, community leaders, and residents. The presence of this icon symbolises the village's identity and serves as a tangible example of transforming plastic waste into a valuable, useful product (Hoaihongthong & Tuamsuk, 2024).



Figure 3. *The installed “DESA DILE” name icon made from ecobricks*

The implementation of this program generated positive impacts for both the village government and the local community. The Dile Village Government responded very positively to the program, as it was considered a creative solution for plastic waste utilization while

simultaneously strengthening the village's identity. The Village Head of Dile expressed appreciation to the implementation team, consisting of students from the Economic Education Study Program of Flores University and their supervising lecturers, for the innovation introduced through the construction of an Ecobrick-based village name landmark. According to the village government, the landmark not only enhances the appearance of the Dile Village Office environment but also serves as a symbol of the community's commitment to environmental cleanliness and conservation.

From the community's perspective, the activity provided new insights into the potential utilization of plastic waste, which had previously been regarded as having little or no value (Phelan et al., 2020). Community members were able to directly observe that plastic waste can be transformed into useful products with aesthetic value and can also serve as a medium for strengthening village identity (Wood et al., 2020). The existence of the Ecobrick-based Dile Village name landmark is expected to increase public awareness of the importance of plastic waste management and encourage greater community participation in sustainably maintaining environmental cleanliness (Novaliendry et al., 2025).

The results of the program indicate that the utilization of plastic waste through the Ecobrick method can serve as an alternative solution for reducing plastic waste problems while simultaneously producing products that are beneficial to the community (Akbar et al., 2023). Approximately 700 Ecobrick bottles were successfully utilized as the primary material for constructing the Dile Village name landmark. This finding demonstrates that plastic waste can be managed not only to reduce environmental pollution but also to create products that possess functional, aesthetic, and educational value (Lange, 2021). The success of the program was also supported by the active involvement of the Dile Village Government from the planning stage through implementation. The support provided by the Village Head and village officials facilitated coordination and increased community acceptance of the program. The involvement of various stakeholders demonstrates that community participation-based programs have significant potential to be developed as a sustainable environmental management strategy (Ewane, 2024).

In addition to its environmental benefits, the Ecobrick-based Dile Village name landmark has educational value that can increase public awareness regarding the importance of plastic waste management (Novaliendry et al., 2025). The landmark serves as an environmental education medium that can be directly observed by both residents and visitors, enabling messages about plastic waste utilization to be continuously communicated (Brinton et al., 2023). These findings are consistent with previous studies indicating that Ecobricks can function as environmental education tools while encouraging community participation in plastic waste management (Isnainingsih et al., 2026). The novelty of this program lies in the utilization of Ecobricks as a visual representation of village identity. Unlike many previous initiatives that have primarily used Ecobricks for constructing chairs, tables, plant pots, or other public facilities, this program integrates environmental conservation, aesthetics, education, and territorial identity into a single product that benefits the community. The Ecobrick-based Dile Village name landmark functions not only as a territorial marker but also as a symbol of the community's commitment to environmental sustainability (Suci et al., 2024).

Therefore, this program successfully addressed the issues identified at the outset, namely the utilization of plastic waste as Ecobrick material for constructing the Dile Village name landmark, the use of Ecobricks as an environmental education medium, and the strengthening of village identity through an innovative and beneficial plastic waste management approach (Budiarti et al., 2025). The program also demonstrates that community-based waste management can serve as an effective alternative solution for supporting environmental conservation and sustainable rural development (Vinti & Vaccari, 2022).

CONCLUSION

The community service program involving the construction of an Ecobrick-based Dile Village name landmark successfully achieved its intended objectives. The utilization of plastic

waste as Ecobricks proved to be an effective alternative solution for waste management while simultaneously creating a visual village identity that is aesthetically appealing, educational, and environmentally friendly. The presence of the “DESA DILE” landmark not only strengthens the village’s identity but also enhances community awareness regarding the importance of creative and sustainable plastic waste management. Furthermore, this activity demonstrates that Ecobrick-based innovations can serve as a community empowerment medium that integrates environmental conservation, education, and rural development.

As a follow-up effort, the Ecobrick program should be continuously developed through active community involvement in the collection and processing of plastic waste. The Dile Village Government is expected to maintain the village landmark that has been established and to initiate further activities that support community-based environmental management. The Economic Education Study Program of Flores University is also expected to strengthen its assistance and collaboration with the village government in developing similar programs. This model of activity has the potential to be replicated in other villages as an alternative solution for plastic waste management while simultaneously strengthening village identity and enhancing the environmental attractiveness of rural areas.

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