



FLORES UNIVERSITY FOR THE COMMUNITY AND ENVIRONMENT: TREE PLANTING, SPRING CONSERVATION, AND RIVER RESTORATION THROUGH THE IMPACTFUL CAMPUS PROGRAM

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Abstract. *The community service program conducted by Universitas Flores in Wolomuku and Djeodua Villages, Ende Regency, aimed to support spring conservation and river ecosystem restoration through a participatory-collaborative approach. The program was implemented as part of the university's Green University and Kampus Berdampak initiatives, involving the Tana Nua Flores Foundation, village governments, traditional leaders, local communities, and approximately 300 lecturers and educational staff. The activities consisted of environmental problem identification, planning, planting 3,165 productive tree seedlings comprising durian and nutmeg, releasing shrimp juveniles into two rivers at the activity sites, environmental education, literacy and numeracy activities, health services, and monitoring and evaluation. The results demonstrated collaborative efforts in vegetation conservation and aquatic ecosystem restoration, while strengthening the engagement of the academic community and local residents in environmental sustainability. The planting of productive trees provided ecological benefits while offering potential long-term economic benefits for local communities, whereas the release of shrimp juveniles served as an educational medium for promoting awareness of river ecosystem protection. Overall, the program demonstrates that a participatory-collaborative approach can integrate environmental conservation, community empowerment, education, and social services into a comprehensive community service program.*

Keywords: *impactful campus, river ecosystem restoration, spring conservation, tree planting*

Abstrak. Kegiatan pengabdian kepada masyarakat yang dilaksanakan Universitas Flores di Desa Wolomuku dan Desa Djeodua, Kabupaten Ende, bertujuan mendukung konservasi mata air dan pemulihan ekosistem sungai melalui pendekatan partisipatif-kolaboratif. Program ini merupakan bagian dari implementasi Green University dan Kampus Berdampak, dengan melibatkan Yayasan Tana Nua Flores, pemerintah desa, tokoh adat, masyarakat setempat, serta sekitar 300 dosen dan tenaga kependidikan. Tahapan kegiatan meliputi identifikasi permasalahan lingkungan, perencanaan, penanaman 3.165 bibit pohon produktif (durian dan pala), pelepasan biota air berupa bibit udang ke dua sungai di lokasi kegiatan, edukasi lingkungan, literasi dan numerasi, pelayanan kesehatan, serta monitoring dan evaluasi. Hasil kegiatan menunjukkan keberhasilan konservasi vegetasi dan pemulihan ekosistem perairan secara kolaboratif, sekaligus meningkatkan keterlibatan sivitas akademika dan masyarakat dalam menjaga keberlanjutan lingkungan. Penanaman pohon produktif memberikan manfaat ekologis sekaligus potensi ekonomi bagi masyarakat, sedangkan pelepasan bibit udang berfungsi sebagai media edukasi mengenai perlindungan ekosistem sungai. Program ini menegaskan bahwa pendekatan partisipatif-kolaboratif dapat mengintegrasikan konservasi lingkungan, pemberdayaan masyarakat, pendidikan, dan pelayanan sosial dalam satu rangkaian kegiatan pengabdian.

Kata Kunci: kampus berdampak, konservasi mata air, pemulihan ekosistem sungai, penanaman pohon

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INTRODUCTION

Environmental problems and the sustainability of natural resources are challenges that increasingly require the involvement of various stakeholders, including higher education institutions (Putro et al., 2024). These issues are particularly important in rural areas of Ende Regency, East Nusa Tenggara, where some communities still depend on natural water sources for domestic needs and agricultural activities. Wolomuku and Djeodua Villages, Detukeli Subdistrict,



are areas with springs that play an important role in sustaining community life. However, these water sources face pressure from the loss of vegetation around spring areas, land-cover degradation, erosion, and declining aquatic habitat quality. This situation indicates that spring conservation cannot rely solely on physical infrastructure; it also requires the restoration of vegetation and ecosystems through direct community involvement. Various studies have shown that community-based spring conservation, the development of vegetation and agroforestry in catchment areas and around springs, and the restoration of aquatic organisms can help maintain the ecological functions of water sources and support their sustainable use. However, activities that integrate tree planting, spring conservation, riparian vegetation restoration, and aquatic-organism restocking into a single program involving collaboration between higher education institutions and communities remain relatively limited, particularly in villages in Ende Regency. Therefore, the community service program conducted by Universitas Flores in Wolomuku and Djeodua Villages was designed not only to plant trees but also to restore the ecological functions of springs and river ecosystems through active community participation. This integrated approach contributes to sustainable water-resource management, local ecosystem restoration, greater community environmental awareness, and the implementation of Universitas Flores' commitment as a Green University.

Degradation of vegetation cover, declining aquatic ecosystem quality, and reduced capacity of recharge areas to maintain water availability can directly affect the sustainability of community life (Putri et al., 2026). Springs are important sources of water for domestic needs, agriculture, and community social activities; therefore, they must be protected through sustainable area management (Desti & Ula, 2021). Conservation efforts cannot rely solely on technical approaches; they also require greater awareness, participation, and collaboration among community members to maintain a harmonious relationship between people and the environment (Indriyani & Nugraheni, 2024).

Higher education institutions are strategically positioned to respond to these issues through the implementation of the Three Pillars of Higher Education (Tri Dharma Perguruan Tinggi), particularly education, research, and community service (Amalia, 2024). Universities do not function solely as institutions that generate knowledge; they also have a social responsibility to apply their knowledge and academic resources to address real problems faced by communities. In environmental contexts, the involvement of the academic community can take the form of conservation activities, environmental education, community empowerment, and the development of sustainable natural-resource management practices (Rachmadian et al., 2025). This approach aligns with the concept of a Green University, which integrates environmental responsibility into university governance, teaching, research, community service, and academic activities (Napitupulu et al., 2025).

Universitas Flores (Uniflor) used its 46th anniversary in 2026 as an opportunity to strengthen its commitment to implementing the Green University concept. This commitment has been developed since 2025 and put into practice through various environmental conservation initiatives. One such initiative was tree planting around the spring areas of Wolomuku and Djeodua Villages, Detukeli Subdistrict, Ende Regency, on July 23, 2026. The activity was designed not merely as a ceremonial event, but as a tangible expression of the university's involvement in protecting water-source areas, restoring vegetation cover, and raising public awareness of the importance of environmental sustainability for present and future generations.

The main issues addressed by this activity concern the declining vegetation cover around spring areas and the tendency for water discharge to decrease. Based on an assessment and discussions with community members conducted in collaboration with the Tana Nua Flores Foundation, the loss of some vegetation around the springs was identified as an issue requiring attention to maintain the function of water-catchment areas. In addition to problems affecting spring areas, river ecosystems are also under pressure from environmentally harmful fishing practices, including the use of toxic substances. These practices may threaten aquatic organisms and disrupt the balance of aquatic ecosystems. Therefore, the community service intervention needed to focus not only on vegetation rehabilitation but also on aquatic ecosystem restoration

and increasing public awareness of the importance of protecting natural resources (Andi et al., 2024).

In response to these issues, Universitas Flores collaborated with the Tana Nua Flores Foundation to carry out community-based conservation activities. This collaboration continued a partnership established in 2025 to promote environmental conservation. Trees were planted around spring areas, with productive species such as durian and nutmeg selected for planting. These productive plants serve two complementary purposes: helping maintain the ecological functions of recharge areas while also offering potential economic benefits to the community (Suri et al., 2024). Durian generally grows well at elevations of approximately 0–800 meters above sea level, while nutmeg is generally suitable for elevations of 0–700 meters. Thus, Detukeli, at approximately 700 meters above sea level, falls within the elevation range that may accommodate both species, provided that temperature, rainfall, drainage, and soil conditions are suitable.

Accordingly, conservation is viewed not only as an effort to protect the environment but also as a strategy for strengthening community interest and participation in maintaining trees and spring areas over the long term (Indriyani & Nugraheni, 2024). The conservation activities also included releasing aquatic organisms into the river as part of efforts to restore aquatic ecosystems affected by environmentally harmful fishing practices.

These environmental conservation activities formed part of the implementation of the Impactful Campus (*Kampus Berdampak*) concept, which positions universities as institutions that connect knowledge with practical action, research with community needs, and learning with empowerment to generate measurable social, economic, and ecological benefits (Bakaruddin et al., 2023). In this activity, the Impactful Campus principle was put into practice through the involvement of Universitas Flores and the communities of Wolomuku and Djeodua Villages in spring conservation, tree planting, and river ecosystem restoration. Meanwhile, the Green University commitment served as a foundation for strengthening a culture of sustainable environmental management within the university. Thus, Green University focuses on ecological sustainability within the institution, whereas Impactful Campus emphasizes extending benefits to communities and environments beyond the campus. As part of the 46th anniversary celebrations, members of the Universitas Flores community carried out activities not only on campus but also directly in local communities, involving lecturers and educational staff in conservation efforts. Approximately 300 lecturers and educational staff participated in the tree-planting action as a form of academic-community engagement. The series of activities also included free health examinations, the distribution of school supplies to elementary school students, and literacy and numeracy activities for the community. This integration of environmental, educational, and social services demonstrates that university community engagement can be developed in a multidimensional way by connecting ecological, social, educational, and community-welfare needs.

Based on these conditions, this community service activity aims to: (1) plant productive trees in areas mutually agreed upon with the communities of Wolomuku and Djeodua Villages; (2) support the restoration of spring and river ecosystems through the release of aquatic biota at designated sites; (3) increase community knowledge and awareness of spring and aquatic ecosystem conservation through evaluations conducted before and after the activity; and (4) encourage community involvement in plant maintenance and monitoring of the sustainability of conservation areas. The success of the activity was evaluated based on the number of seedlings planted, the location and coverage of the conservation areas, plant survival rates, the number of aquatic organisms released, changes in community understanding, and community involvement in maintenance and monitoring activities. At the institutional level, this activity represents an implementation of the *Green University* and *Kampus Berdampak* principles through the utilization of university knowledge, resources, and engagement to generate measurable ecological benefits and strengthen community participation in maintaining environmental sustainability around the activity sites.

METHOD

The activity used a community-based approach that positioned local residents as active partners in problem identification, implementation, and maintenance of conservation outcomes (Firjatullah et al., 2026). This approach was used because the decline in vegetation around springs and pressure on river ecosystems require continuous cooperation between communities, universities, and conservation partners. The activity involved Universitas Flores as the implementing institution, Yayasan Tana Nua Flores (YTNF) as the conservation partner, and communities in Wolomuku and Djeodua Villages, Detukeli District, Ende Regency. The main activities were conducted on July 23, 2026, as part of the 46th Anniversary of Universitas Flores and the Green University and Kampus Berdampak programs. The activities consisted of the following stages.

Initial Identification and Mapping

The initial assessment was conducted through field observations, semi-structured interviews, and discussions with YT NF, village officials, community leaders, and residents. Informants were selected purposively based on their knowledge of spring conditions, water use, vegetation, and river conditions. Observations and interviews were used to identify environmental problems and community needs. The activity locations were recorded using GPS/GNSS. The results were used to determine conservation locations, intervention activities, and the roles of each partner.

Planning and Preparation

Universitas Flores, YT NF, and the community prepared the activity plan based on the initial assessment. The preparation included determining planting locations, plant types and numbers, planting methods, equipment, maintenance activities, and locations for releasing aquatic organisms. Durian and nutmeg seedlings were selected based on local environmental conditions, land characteristics, economic benefits, and community needs. Planting sites were selected without disturbing the main function of the spring area. Agreements with landowners and communities were also established to ensure clear responsibility for plant maintenance.

Tree Planting

The activity began with an explanation of conservation goals, planting techniques, and plant maintenance. Approximately 300 lecturers and staff of Universitas Flores, together with YT NF and residents, participated in planting trees at the selected locations. The seedlings were planted, watered, and supported with stakes when needed. The number of seedlings, planting locations, and other relevant information were recorded for monitoring. Residents were involved in watering, removing weeds, protecting the plants, and replacing dead seedlings.

River Ecosystem Restoration

River restoration was carried out by releasing aquatic organisms at selected locations. Before the activity, participants received information about the importance of aquatic organisms and river habitat protection. The type and number of organisms, release locations, and initial conditions were recorded. The release activity was part of a broader conservation effort that also included environmental education and habitat protection.

Environmental Education and Community Empowerment

Environmental education was provided through presentations and discussions. The main topics included spring conservation, vegetation protection, plant maintenance, river ecosystem protection, and sustainable use of natural resources. Supporting activities included literacy and numeracy activities, distribution of school supplies to elementary students, and free health checks. These activities were reported as supporting social outcomes and were not used as the main indicators of environmental conservation success.

Follow-Up and Sustainability

Follow-up activities focused on maintaining the planted trees and monitoring environmental conditions around the springs and rivers. Universitas Flores and YTNF helped and periodic monitoring, while residents were encouraged to take the main role in plant maintenance and environmental protection. This approach was expected to ensure that the conservation activities continued beyond the university anniversary event and supported the long-term implementation of Green University and Kampus Berdampak.

RESULT AND DISCUSSION

The community service activity, held as part of the 46th Anniversary of Universitas Flores, was conducted on July 23, 2026, in the spring areas of Wolomuku and Djeodua Villages, Detukeli District, Ende Regency. The activity was part of the implementation of the Green University and Kampus Berdampak programs, integrating environmental conservation with community empowerment. The activity was carried out through collaboration among Universitas Flores, Yayasan Tana Nua Flores, and local communities. Approximately 300 lecturers and administrative staff of Universitas Flores participated directly in the activity. This participation demonstrated that environmental conservation was not the responsibility of a specific group alone but had become an institutional effort involving the wider university community.



Figure 1. *Preparation and coordination*

The activity began with coordination among Universitas Flores, Yayasan Tana Nua Flores, and local communities. The coordination focused on site preparation, task distribution, plant selection, planting techniques, and community involvement in plant maintenance. Based on field observations and discussions with residents, the areas around the springs required attention due to reduced vegetation cover and a tendency toward declining water flow. These findings were used to determine the planting sites and ensure that the conservation activities focused on areas that are important for maintaining the community's water resources.



Figure 2. *Identification and assessment of spring areas as conservation sites*

The identification and assessment of spring areas were conducted to determine suitable conservation sites. The results provided a baseline for determining planting locations, aquatic biota release sites, and the distribution of roles among Universitas Flores, Yayasan Tana Nua Flores (YTNF), and local communities. Community involvement is important in conservation because local participation and long-term maintenance can strengthen the sustainability of conservation outcomes (Brooks et al., 2013; Taylor et al., 2022).



Figure 3. *Planting productive trees around spring areas*

A total of 3,165 productive tree seedlings were planted around the spring areas in Wolomuku and Djeodua Villages. In Wolomuku Village, 800 durian and 750 nutmeg seedlings were planted, while 940 durian and 675 nutmeg seedlings were planted in Djeodua Village. Thus, the total consisted of 1,740 durian seedlings and 1,425 nutmeg seedlings. The selection of durian and nutmeg considered their ecological functions and potential long-term economic benefits for local communities. Planting was conducted collaboratively by approximately 300 lecturers and educational staff of Universitas Flores, YT NF, and residents. Participants received guidance on planting techniques, seedling placement, and post-planting maintenance. The seedlings were planted in prepared holes, covered with soil, and watered after planting.



Figure 4. *Release of aquatic organisms as part of river ecosystem restoration*

The involvement of local communities in subsequent maintenance, including watering, weed removal, plant protection, and replacement of dead seedlings, is important for sustaining restoration outcomes. Previous research on community-based conservation has shown that local participation and long-term maintenance contribute to better ecological outcomes (Brooks et al., 2013). Similarly, community-based ecosystem restoration in Indonesia has demonstrated that

long-term maintenance, public support, and community participation can improve restoration outcomes (Damastuti et al., 2022). The participation of approximately 300 lecturers and educational staff also demonstrates the institutional implementation of the Green University concept. Universities can contribute to environmental sustainability not only through education and research but also through outreach and direct engagement with communities (Wang et al., 2013)

In addition to vegetation rehabilitation, the program included river ecosystem restoration through the release of shrimp seedlings. The release was conducted in the Loworea and Lowolaka Rivers at two points in each river, with 50 shrimp seedlings released at each point. Thus, a total of 200 shrimp seedlings were released.

The activity responded to pressures on aquatic ecosystems caused by unsustainable fishing practices, including the use of toxic substances. Before the release, community members received information about the importance of protecting aquatic organisms, maintaining river habitat quality, and avoiding destructive fishing practices. Community involvement is particularly important because conservation outcomes depend not only on ecological interventions but also on local support and continued participation (Taylor et al., 2022).

The mapping identified the Lowolaka River as a river that crosses Wolomuku Village and is a tributary of the Loworea River. The coordinates of the spring, planting sites, and aquatic biota release sites were determined using GPS/GNSS measurements during the field survey. Therefore, the final manuscript should report coordinates based on the field measurements rather than secondary coordinates that cannot be directly associated with the activity sites.

The release of aquatic biota should be considered part of a broader ecosystem restoration strategy rather than a stand-alone intervention. Habitat protection, community awareness, and continuous monitoring are necessary to support long-term ecological recovery. Community-based restoration studies in Indonesia emphasize the importance of long-term maintenance and community support for achieving sustainable ecological outcomes (Damastuti et al., 2022).



Figure 5. *Literacy and numeracy activities and the distribution of school supplies to students*

Social and educational activities complemented the conservation program as part of the Kampus Berdampak concept. Universitas Flores conducted literacy and numeracy activities for elementary school students, distributed stationery, and provided free health checks for local residents. These activities demonstrate that the university's contribution to the community extended beyond environmental conservation to education and social well-being.

The literacy and numeracy activities aimed to strengthen students' basic reading, writing, and numeracy skills through interactive and contextual learning activities. Direct mentoring provided students with opportunities to participate actively and develop greater motivation and confidence in learning. The distribution of stationery further supported students' learning needs after the activity.

The integration of environmental conservation, education, and community services reflects the broader role of higher education institutions in promoting sustainable development. Green University initiatives emphasize the importance of combining education, research, community outreach, and institutional action to address environmental and social challenges (Wang et al., 2013). Therefore, the activities implemented by Universitas Flores demonstrate how the Green University and Kampus Berdampak concepts can be translated into direct benefits for both the environment and local communities.



Figure 6. *Free health checks for residents*

Overall, the program integrated environmental conservation and community empowerment through productive tree planting, aquatic biota release, environmental education, and social services. The involvement of Universitas Flores, Yayasan Tana Nua Flores (YTNF), local communities, and approximately 300 university staff demonstrates a participatory approach to conservation. Community involvement is important because the success of conservation programs depends not only on ecological interventions but also on local participation and long-term community support (Brooks et al., 2013; Taylor et al., 2022).

Tree planting around the springs addressed the need to improve vegetation cover and protect local water sources. The use of productive trees such as durian and nutmeg also connected ecological conservation with potential community benefits. This approach can support long-term maintenance because community-based conservation is more sustainable when local communities have an active role and can obtain social or economic benefits from conservation activities. Evidence from Indonesia also shows that long-term community involvement and regular maintenance are important for successful ecosystem restoration (Brooks et al., 2013; [relevant Indonesian case study]).

The release of aquatic biota complemented the tree-planting activity by addressing the biological component of river ecosystems. However, this intervention should be followed by habitat protection, environmental education, and monitoring because a single restoration activity cannot ensure long-term ecosystem recovery. Locally based monitoring can provide useful information on ecological changes while also strengthening environmental education and community capacity (Sodhi et al., 2012). The participation of approximately 300 university staff also demonstrates the implementation of the Green University concept beyond the campus. Green universities are expected to integrate sustainability into education, research, community engagement, and institutional activities (Wang et al., 2013). Therefore, the program can be viewed as an initial model of sustainable community service. Further monitoring of plant survival, vegetation cover, spring water flow, and aquatic biota is needed to evaluate its long-term ecological impact.

CONCLUSION

The community service program "Universitas Flores for Community and Environment," conducted as part of the 46th Anniversary of Universitas Flores, integrated environmental conservation and community empowerment through productive tree planting around spring areas, aquatic biota release to support river ecosystem restoration, and supporting activities such as literacy, numeracy, stationery distribution, and free health checks. The participatory and collaborative approach involving Universitas Flores, Yayasan Tana Nua Flores, the communities of Wolomuku and Djeodua Villages, and approximately 300 lecturers and administrative staff demonstrated that the Green University and Kampus Berdampak programs can be implemented through direct university involvement in addressing community environmental and social needs.

Further activities should include regular maintenance and monitoring of planted trees, monitoring of spring and river conditions, continued environmental education on water-source protection and preventing destructive fishing practices, and ongoing assistance from Universitas Flores, YTNF, and local communities. Long-term monitoring of plant survival, vegetation cover, spring water flow, and aquatic biota is also needed to evaluate the program and guide future conservation activities. Thus, the program is expected to continue beyond the anniversary event and develop into a sustainable community service model that strengthens the role of Universitas Flores as a Green University and Kampus Berdampak for the community and environment.

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