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A Cross-Sectoral Collaboration Model for Slope Rehabilitation on Mount Prau

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ABSTRAK

Deforestasi di lereng Gunung Prau berakibat pada berkurangnya tutupan vegetasi, meningkatkan risiko banjir dan tanah longsor, melemahkan ketahanan ekologis serta meningkatkan kerentanan ekonomi masyarakat setempat. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk merehabilitasi lereng yang terdegradasi di Desa Gentinggunung, Kecamatan Sukorejo, Kabupaten Kendal, melalui kolaborasi lintas sektor. Kegiatan pengabdian kepada masyarakat ini menggunakan metode Community-Based Participatory Research (CBPR). Inisiatif ini melibatkan lembaga pendidikan madrasah, pemerintah daerah, aparat keamanan nasional, komunitas peduli lingkungan, dan masyarakat setempat dalam seluruh tahap perencanaan, pelaksanaan, dan evaluasi. Tahap perencanaan meliputi observasi awal, diskusi kelompok terarah, penyelarasan tujuan, penyemaian bibit, edukasi siswa, sosialisasi masyarakat, dan penyiapan lokasi. Pelaksanaan kegiatan dilakukan dalam tiga tahap penanaman, yaitu pada tanggal 14, 21, dan 29 Januari 2026 dengan sebanyak 1.000 bibit tanaman produktif berhasil ditanam. Hasil evaluasi menunjukkan respons yang sangat positif dari peserta pada seluruh dimensi yang diukur. Pemantauan lapangan pada 22 Maret 2026 menunjukkan sejumlah 831 tanaman bertahan hidup dengan tingkat kelangsungan hidup sebesar 83,1%. Sebagai tindak lanjut dilakukan penggantian tanaman yang mati dengan tanaman yang sudah disiapkan sejumlah 118 bibit tanaman. Program ini berkontribusi terhadap peningkatan kesadaran dan pengetahuan lingkungan di kalangan siswa serta memperkuat kolaborasi antar lembaga. Dalam jangka panjang, kegiatan ini diharapkan dapat mencegah banjir dan tanah longsor sekaligus mendukung pengembangan ekonomi lokal. Temuan ini menunjukkan bahwa model ekologi kolaboratif layak untuk direplikasi dan disesuaikan dengan lokasi serta konteks yang berbeda.

ABSTRACT

Deforestation on the slopes of Mount Prau has reduced vegetation cover, increasing the risk of flooding and landslides, and weakening ecological resilience while increasing economic vulnerability among local communities. This community service initiative aims to rehabilitate degraded slopes in Gentinggunung Village, Sukorejo Subdistrict, Kendal Regency, through cross-sectoral collaboration. This community service initiative utilized the Community-Based Participatory Research (CBPR) method. This initiative involves madrasahs, local governments, national security personnel, environmental advocacy groups, and local residents in the planning, implementation, and evaluation phases. The planning phase included field observations, focus group discussions, goal alignment, seedling preparation, student education, community outreach, and site preparation.

Implementation was carried out through three planting phases on January 14, 21, and 29, 2026, with 1,000 productive plant seedlings successfully planted. The results of the questionnaire-based evaluation showed very positive responses from participants across all measured dimensions. Monitoring result on March 22, 2026, recorded 831 surviving plants, with a survival rate of 83.1%. As a follow-up, replanting was conducted for dead plants using 118 previously prepared plant seedlings. The program contributed to increased environmental awareness and knowledge among students and strengthened inter-institutional collaboration. In the long term, the initiative is expected to prevent floods and landslides while supporting local economic development. These findings indicate that the collaborative ecological model is feasible for replication and adaptation to different locations and contexts.

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INTRODUCTION

Indonesia is among the countries with the highest deforestation rates globally.[1] Over the past five years, more than 1.45 million hectares of forest have been lost, indicating the continued pressure on Indonesia's forest ecosystems. This deforestation crisis has generated substantial impacts on ecosystems, the economy, and socio-cultural systems.[2] Several factors contribute to this trend, including rapid population growth, economic expansion, weak enforcement of environmental regulations, and limited governmental oversight. Additionally, the expansion of agricultural land, mining, and logging activities has resulted in habitat loss, reduced biodiversity, increased greenhouse gas emissions, and a rise in natural disasters.[3]

Deforestation in Java and Bali has persisted from before the colonial era to the present.[4] In Central Java, this long-standing process has contributed to substantial tree cover loss and pressure on forest ecosystems. Between 2001 and 2024, Kendal Regency lost 2,900 hectares of tree cover, representing 6.0% of its total tree cover in 2000 and generating 1.8 million tons of CO_2e emissions. Most of the deforestation was due to hard commodity agriculture, permaculture, and infrastructure development, which together made up 99% of the total. From 2021 to 2024, all tree cover loss in Kendal happened in natural forests, with 110 hectares lost and 77,000 tons of CO_2e carbon emissions produced. However, between 2000 and 2020, Kendal saw an increase in tree cover of 1.1 thousand hectares, which was 4.0% of all tree cover gains

[1] Antonio Santoro, Francesco Piras, and Qingyi Yu, "Spatial Analysis of Deforestation in Indonesia in the Period 1950 – 2017 and the Role of Protected Areas," *Biodiversity and Conservation* 34, no. 9 (2025), https://doi.org/10.1007/s10531-023-02679-8.

[2] Afrizal Nur et al., "Qur'anic Ecotheology and the Ethics of Forest Protection in Indonesia," *Jurnal Studi Ilmu-Ilmu Al-Qur'an Dan Hadis* 26, no. 2 SE-Articles in English (July 31, 2025), https://doi.org/10.14421/qh.v26i2.6312.

[3] Ummi A'zizah Zahroh and Fatma Ulfatun Najicha, "Problems and Challenges on Environmental Law Enforcement in Indonesia: AMDAL in the Context of Administrative Law," *Indonesian State Law Review* 5, no. 2 (2022), https://doi.org/https://doi.org/10.15294/islrev.v5i2.46511; Rosaline Anggita Elsa, Eka Intan, and Kumala Putri, "Unintended Effects of Forestry Fiscal Transfers on Deforestation in Indonesia," 2025.

[4] Santoro, Piras, and Yu, "Spatial Analysis of Deforestation in Indonesia in the Period 1950 – 2017 and the Role of Protected Areas."

in Central Java. Most of this gain, 950 hectares, happened outside plantations, while plantations saw an increase of 120 hectares.[5]

Based on initial observations and analysis of the Mount Prau slopes in Gentinggunung Village, Sukorejo Subdistrict, Kendal Regency, revealed issues such as reduced tree cover, deforested areas, and increased risks of flooding and landslides. These challenges negatively affect the local community. Drawing on these findings, a review of relevant literature, expert consultation, and coordination with stakeholders, the MI Trimulyo Eco-Theology team and its Adiwiyata partners plan to rehabilitate the slopes of Mount Prau. This strategic initiative aims to address these problems and protect the environment.

Recent research demonstrates an increasing scholarly focus on environmental issues. This trend is evident in the rising number of studies that address conservation efforts and strategies to prevent further environmental degradation. Such initiatives span multiple domains, including environmental education, public awareness campaigns, government policy implementation, conservation and mitigation programs, and community movements dedicated to environmental protection.[6]

Various initiatives have been implemented to promote environmental awareness within educational settings, encompassing both formal and non-formal approaches in general and Islamic education. Research indicates that formal institutions, including schools, madrasahs, and all educational levels from elementary to higher education, as well as non-formal institutions such as Islamic boarding schools, have achieved considerable success in fostering environmental awareness.[7] These achievements are attributed to the integration of environmental values and content into the Islamic education curriculum, the implementation of co-curricular activities such as the Adiwiyata program, the promotion of eco-literacy, and extracurricular activities focused on environmental issues, along with other targeted initiatives.[8]

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[5] Global Forest Watch, "Tree Cover Loss and Deforestation Data for Kendal Regency, Central Java, Indonesia," *Global Forest Watch Dashboard* (Washington, DC: World Resources Institute, 2024), https://www.linkshort.app/r/pagea.uk/globalforestwatchorgkendaleyJoaWdobGlnaHRlZCI6ZmFsc2V9.

[6] Abdul Ghani Olabi et al., "The Role of Green Buildings in Achieving the Sustainable Development Goals," *International Journal of Thermofluids* 25 (2025), https://doi.org/https://doi.org/10.1016/j.ijft.2024.101002; Crescenza Calculli et al., "Evaluating People's Awareness about Climate Changes and Environmental Issues: A Case Study," *Journal of Cleaner Production* 324 (2021), https://doi.org/https://doi.org/10.1016/j.jclepro.2021.129244; Ye Wang et al., "Digital Government Initiatives for Sustainable Innovations, Digitalization, and Emission Reduction Policies to Balance Conservation Impact," *Natural Resources Forum* n/a, no. n/a (October 30, 2024), https://doi.org/https://doi.org/10.1111/1477-8947.12570; Judith van de Wetering et al., "Does Environmental Education Benefit Environmental Outcomes in Children and Adolescents? A Meta-Analysis," *Journal of Environmental Psychology* 81, no. March (2022), https://doi.org/10.1016/j.jenvp.2022.101782.

[7] Abdul Malik Karim Amrullah et al., "Integrating Islamic Education with Environmental Programs: Strategies for Sustainable Character Development at SMAN 2 and 7 Malang Indonesia," *Qualitative Report* 30, no. 3 (2025), https://doi.org/10.46743/2160-3715/2025.6020; I Mardhiah et al., "Developing Environmental Care Attitudes Among College Students Through Islamic Education (IRE) Learning With A Humanist-Contextual Approach," *IOP Conference Series: Earth and Environmental Science* 743, no. 1 (2021), https://doi.org/10.1088/1755-1315/743/1/012004; Asmaul Lutfauziah et al., "Curriculum Development for Environmental Education at an Islamic Boarding School," *Journal of Turkish Science Education* 20, no. 3 (2023), https://doi.org/10.36681/tused.2023.028; Listiyani Siti Romlah et al., "Environmental-Based Learning Management in Islamic Education Institutions," *E3S Web of Conferences* 04019 (2024).

[8] Humam Mahdi et al., "Green Islamic School : Integrating Environmental Education in the Islamic Education Curriculum," *Cendekiawan: Jurnal Pendidikan Dan Studi Keislaman* 3, no. 3 (2024), https://doi.org/https://doi.org/10.61253/cendekiawan; Fatin Nur et al., "Integration of Islamic Values for Environmental Conservation: An Analysis of School Textbooks," *Religions* 12, no. 7 (2021),

Most previous studies report an increase in ecological awareness. However, a gap exists between study results and on-the-ground realities, which show environmental degradation is still occurring and worsening. This raises questions about the quality, significance, and scope of studies addressing environmental issues.[9] The persistence of environmental degradation suggests that these challenges remain inadequately addressed. Empirical evidence regarding environmental conservation practices involving various stakeholders and the public remains limited. This situation highlights a gap in the evidence regarding collaboration between educational institutions, government agencies, state security forces, and the public in environmental conservation efforts. This gap is significant because cross-institutional collaboration often faces various obstacles, such as difficulties in coordinating schedules, conflicting interests, and differing priorities among various agencies. These obstacles are some of the factors that hinder the realization of collaborative activities in environmental conservation practices. Therefore, further study is needed to understand how environmental conservation collaboration practices involving cross-sectoral parties are carried out.

This initiative aims to address environmental degradation on the slopes of Mount Prau, especially in Gentinggunung Village, Sukorejo Subdistrict, Kendal Regency, through a reforestation program focused on area rehabilitation. It also seeks to educate students on environmental conservation through tree planting activities. Finally, the program serves as an initial commitment to cross-sector collaboration among various stakeholders in environmental conservation. Alongside practical solutions, the initiative also addresses a research gap by providing empirical evidence on cross-sectoral collaboration in environmental conservation. This community service initiative involves various cross-sectoral stakeholders, beginning with educational institutions, specifically MI NU Trimulyo and other madrasahs that are Adiwiyata partners, namely MTs NU 13 Arrahmat Sukorejo, MTs NU 08 Gemuh, and MI Al-Islam Gentinggunung. Government agencies include the Kendal Regency Environmental Agency, the Kendal Regency Ministry of Religious Affairs, Darmawanita of the Kendal Regency Ministry of Religious Affairs, and the Kendal

https://doi.org/https://doi.org/10.3390/rel12070509; Asmaul Lutfauziah et al., "Does Environmental Education Curriculum Affect Student's Environmental Culture in Islamic Boarding School ," *Revista de Gestão Social e Ambiental - RGSA* 18, no. 5 SE-Artigos (March 21, 2024), https://doi.org/10.24857/rgsa.v18n5-079; Nur Wakhidah and Erman Erman, "Examining Environmental Education Content on Indonesian Islamic Religious Curriculum and Its Implementation in Life," *Cogent Education* 9, no. 1 (December 31, 2022), https://doi.org/10.1080/2331186X.2022.2034244; Rohmatulloh Rohmatulloh et al., "Energy-Saving Triangle: Internalizing Islamic Ethical Values on Energy Saving in Integrative Learning," *Religions* 14, no. 10 (2023), https://doi.org/https://doi.org/10.3390/rel14101284; Masturin, Mhd. Rasid Ritonga, and Siti Amaroh, "Tawhid-Based Green Learning In Islamic Higher Education: An Insan Kamil Character Building," *Qudus International Journal of Islamic Studies (QIJIS)* 10, no. 1 (2022), https://doi.org/http://dx.doi.org/10.21043/qijis.v10i1.14124; Amrullah et al., "Integrating Islamic Education with Environmental Programs: Strategies for Sustainable Character Development at SMAN 2 and 7 Malang Indonesia"; Abdul Karim, "Integration of Religious Awareness in Environmental Education," *Qudus International Journal of Islamic Studies (QIJIS)* 10, no. 2 (2022), https://doi.org/http://dx.doi.org/10.21043/qijis.v10i2.14404.

[9] E B Ali et al., "Investigating the Research Trends on the Determinants of Environmental Degradation: A Bibliometric Analysis," *International Journal of Environmental Science and Technology* 21, no. 11 (2024), https://doi.org/10.1007/s13762-024-05521-y.

Regency PKK. National security forces consist of the TNI and POLRI. Community groups dedicated to environmental protection include Garda Prau and Destana of Gentinggunung Village.

The community service demonstrates that collaboration between cross-sectoral institutions and local residents is very feasible. Practically, through this community service initiative, madrasah students gain knowledge and experience in environmental conservation through hands-on tree-planting activities. For the participating institutions, this activity is beneficial in strengthening relationships among the involved institutions, particularly in environmental conservation efforts. The results of this activity are expected to reduce the risk of flooding and landslides in the area surrounding the slopes of Mount Prau. Finally, the productive plants that have been planted are expected to provide benefits in boosting the local economy.

COMMUNITY SERVICE METHODS

This community service project utilizes the Community-Based Participatory Research (CBPR) approach to address environmental challenges. CBPR emphasizes equitable collaboration among researchers, partners, and community members to resolve local issues, foster social change, and address environmental concerns. This approach requires active community involvement throughout all stages of the research process, including problem identification, implementation, and evaluation. CBPR is grounded in principles such as prioritizing shared goals, mutual learning, justice, solidarity, a commitment to social change, and the responsible dissemination of results. Employing CBPR can improve the accuracy, relevance, and dissemination of scientific knowledge, anchor new theories in social experience, and promote researchers' critical self-reflection.[10]

Data were collected through observation, questionnaires, and documentation. Participant observation helped assess subjects. Questionnaires measured participants' perceptions after activities ended. Documentation gathered existing relevant materials from the field.

The stages of the community service activities carried out include planning, implementation, and evaluation. The planning process will take place over one year, from January 2025 to January 2026. The extended duration is due to the complexity of the needs and the requirement for thorough, phased preparation. These step includes Initial internal meeting of the committee and teachers at MI NU Trimulyo, establishing partnerships with other organizations and institutions, Initial observation, Group Discussion Forum, independent seedling propagation, education for students, Community outreach, Survey and preparation of the land to be planted.

The implementation of planting activities was implemented in three phases. The first phase of planting was carried out on January 14, 2026, the second phase on January 21, 2026, and the third and final phase on January 28, 2026.

[10] Alexis M Wilson et al., "Towards Environmental Justice: A Framework and Strategic Approach for Implementing Community Based Participatory Research in the Earth and Environmental Sciences," *Environmental Science & Policy* 167 (2025), https://doi.org/https://doi.org/10.1016/j.envsci.2025.104036.

The evaluation process for this community service project utilized observation and questionnaires. The questionnaires in this study were divided into two categories: student questionnaires and participant questionnaires. First, the student questionnaire is intended for madrasah students participating this activities. Second, the participant questionnaire is intended for participants from various cross-sectoral institutions, such as teachers, government officials, TNI, POLRI, and community members who also participated. The questionnaire for this community service program was designed based on pre-determined dimensions. Responses use a 1–4 Likert scale. Observations involve monitoring and documenting events that occur during the implementation of the activity, from the planning stage through the evaluation stage

The subsequent evaluation utilizes observation. In this context, observation aims to observe and record events from the planning stage until the completion of the planting activity. The evaluation of this community service practice also includes an assessment of the alignment between the number of trees planted and the plan, as well as the number of plants that successfully survived and grew after planting.

RESULT AND DISCUSSION

Planning

Beginning with MI NU Trimulyo's routine activities in environmental education and conservation practices as part of the integration of an Islamic education-based environmental curriculum, or Eco-theology. In 2025, MI NU Trimulyo was the only private elementary madrasah representing Central Java to receive the national-level Adiwiyata award. Furthermore, MI NU Trimulyo has set its sights on participating in the Adiwiyata Mandiri program in 2026 and adhering to the ASEAN Guidelines on Eco-Schools by 2028. To achieve these goals and as a manifestation of MI NU Trimulyo's commitment to environmental conservation through education and sustainable practices within the madrasah, the school seeks to expand its contributions to the surrounding community.

Based on this, an internal meeting was held on January 7, 2025, attended by all teachers and the committee of MI NU Trimulyo. As a result, MI NU Trimulyo initiated a greening activity in the community, specifically on a mountain slope. Additionally, MI NU Trimulyo will collaborate with various cross-sectoral parties to amplify its impact and contribution to environmental education and conservation practices not only within the madrasah but also through direct community engagement.

Based on the results of the internal meeting, MI NU Trimulyo agreed to send letters to establish initial communication with various parties, such as the Kendal Regency Environmental Agency and the Kendal Regency Ministry of Religious Affairs, to seek further action and recommendations. Following this communication, the Kendal Regency Environmental Agency recommended establishing more intensive communication and cooperation with Garda Prau, an environmental volunteer community in the Mount Prau area whose members are spread across several regencies.

Through the outcomes of the initial Focus Group Discussion (FGD), preliminary observations, literature reviews, expert advice, and various considerations taken into account by MI NU Trimulyo, the Kendal Regency Environmental Agency, the Kendal Regency Ministry of Religious Affairs, and the Garda Prau Community, an agreement was reached to carry out land rehabilitation on the slopes of Mount Prau.

The location selected for the planting is Genting Gunung Village, Kendal Regency, Central Java, specifically on land directly bordering the forest. Based on initial observations, this area faces several issues, such as reduced tree cover, several bare slope areas, and risks of flooding and landslides. These issues require immediate attention through land rehabilitation. The types of plants to be planted include productive crops such as avocado, coffee, jackfruit, orange, durian, and longan. The selection of productive fruit trees is due to the fact that planting is being conducted on mountain slopes rather than within the forest. This initiative is expected to be a positive starting point in addressing environmental issues through cross-sectoral collaboration. Additionally, it is hoped that the community will cease logging activities in the area. These plants are also expected to reduce the risk of flooding and landslides in the long term. Finally, it is hoped that this community service initiative will have a positive impact on improving the local economy through the yields from the productive plants that are planted.

The planned activities have received a positive response from various parties, which have shown interest and a commitment to joining the initiative. Several Adiwiyata partner madrasahs, such as MTs NU 13 Arrahmat Sukorejo, MTs NU 08 Gemuh, and MI NU Al-Islam Genting Gunung, have joined and are ready to contribute as a concrete manifestation of their commitment to environmental care.

As a follow-up, a follow-up meeting was held to present the initial plan in a Focus Group Discussion (FGD) as a stage for unifying the vision and goals of cross-sectoral cooperation. In this context, technical readiness and the determination of the implementation date were also discussed. The follow-up meeting was held on January 18, 2025, involving all teachers and the internal committee of MI NU Trimulyo, the Kendal Regency Environmental Agency (represented by 2 people), Garda Prau (2 people), Destana of Genting Gunung Village (2 people), the Kendal Regency Ministry of Religious Affairs (represented by the Head of Section and Deputy Head of the General Affairs Subdivision), one member of TNI, POLRI, one representative from Darmawanita of the Ministry of Religious Affairs, and one person from the Kendal Regency PKK. Additionally, the meeting was attended by Adiwiyata partners, with each school sending two delegates; in this case, the Adiwiyata partners included MTs NU 13 Arrahmat Sukorejo, MTs NU 08 Gemuh, and MI NU Al-Islam Genting Gunung.

The outcomes of the follow-up meeting included educational sessions for students to equip them with knowledge prior to participating in the activities. These sessions were conducted at each madrasah by local madrasah teachers and the Kendal Regency Environmental Agency. The educational program includes imparting knowledge to students regarding eco-theology in Islam, such as humanity's stewardship on Earth to care for and not harm the environment, forms of environmental degradation, methods to prevent environmental damage, and demonstrations on how to plant trees.

In addition to educating the students, outreach was also conducted for residents living near the slopes of Mount Prau in Gentinggunung Village, Sukorejo Subdistrict, Kendal Regency. This outreach was carried out by the Kendal Regency Environmental Agency, Garda Prau, and Destana of Gentinggunung Village regarding the upcoming tree-planting activity for the rehabilitation of Mount Prau's slopes, which will be held at MI NU Al-Islam Gentinggunung.

Since January 2025, MI NU Trimulyo has internally propagated 350 productive plant seedlings, such as avocado, jackfruit, durian, coffee, longan, and orange. The seedlings are planted behind Campus Building 1 and alongside Campus Building 2. They are watered day and fertilized with compost made from organic waste by teachers and Adiwiyata student groups. The seedlings receive daily care until they are ready to be planted elsewhere. Of the 350 seedlings planted in January, 263 have successfully grown and are now ready for planting. They are approximately one year old as of January 2026. Additionally, each student from first through sixth grade at MI NU Trimulyo was required to bring one plant seedling from home, resulting in a total of 530 seedlings contributed by students.



Figure 1. Seedling Propagation Process

All participating institutions and partners contributed productive plant seedlings, with quantities adjusted to their capacity. The Kendal Regency Environmental Agency, Destana of Gentinggunung Village, Garda Prau, and the Kendal Regency Ministry of Religion each donated 50 seedlings. TNI, POLRI, MTS NU 08 Gemuh, MTs NU 13 Arrahmat Sukorejo, and MI Al-Islam Gentinggunung each contributed 25 seedlings. In total, 1,118 ready-to-plant seedlings were provided for this activity.

On November 21, 2025, another meeting was held to present the objectives, plans, requests for plant seedlings, determination of success indicators, and technical details of the activity to all involved parties. In accordance with the meeting's agreement, the activity will be implemented over 3 days. The first planting phase will take place on January 14, 2026, involving MI NU Trimulyo, the Kendal Regency Environmental Agency, Garda Prau, and Destana of Genting Gunung Village. The second day of planting will take place on January 21, 2026, and will involve only MI NU Trimulyo, the Kendal Regency Environmental Agency, Garda Prau, and Destana of Genting Gunung Village. The culmination of the planting phase on the third day will be held on January 29, 2026, involving all participating parties,

including MI NU Trimulyo, the Kendal Regency Environmental Agency, the Kendal Regency Ministry of Religious Affairs, Darmawanita Kemenag, the Kendal Regency PKK, TNI, POLRI, Garda Prau, Destana, and Adiwiyata Partners, consisting of several schools, namely MTs NU 08 Gemuh, MTs NU 13 Arrahmat Sukorejo, and MI Al-Islam Gentingunung.

The second survey was conducted in May 2025 to map the land to be planted, involving teachers from MI NU Trimulyo, the Kendal Regency Environmental Agency, Garda Prau, and Destana of Genting Gunung Village. The third site survey, which also involved the demarcation of plots for planting specific types of plants, was carried out by a group of teachers from MI NU Trimulyo together with the Environmental Agency, Garda Prau, the Indonesian National Armed Forces (TNI), and Destana of Genting Gunung Village on December 28, 2025.

Implementation

The implementation of community service through the collaborative planting of productive tree seedlings involving various cross-sectoral stakeholders in the rehabilitation of Mount Prau slopes was carried out in three plantings.

The first planting session was held on January 14, 2026, involving 8 teachers from MI NU Trimulyo and 86 fourth-grade students from MI NU Trimulyo, 2 officials from the Kendal Regency Environmental Agency, 6 volunteer members of Garda Prau, 9 people from Destana Desa Gentinggunung, 8 teachers, and 13 students from MI Al-Islam Gentinggunung. During the first tree-planting session, 250 productive tree seedlings were successfully planted.



Figure 2. The Planting Process

The second planting session was carried out on January 21, 2026, involving 6 teachers from MI NU Trimulyo, 75 fifth-grade students, 2 officials from the Kendal Regency Environmental Agency, 9 volunteers from Garda Prau, and 11 members of the Genting Gunung Village Destana. During the second planting phase, 250 tree seedlings were successfully planted.



Figure 3. The Planting Process

The culmination of the project was the third planting session, held on Thursday, January 29, 2026, which was a collaborative effort involving all cross-sectoral parties working together as planned. This involved all 27 teachers from MI NU Trimulyo and 2 members of the madrasah committee, 80 sixth-grade students, 6 officials from the Kendal Regency Environmental Agency, 12 representatives from the Kendal Regency Ministry of Religious Affairs, 4 representatives from Darmawanita (the Ministry of Religious Affairs' women's organization), 2 representatives from the Kendal Regency PKK (Family Welfare Movement), 4 members of TNI, 4 members of POLRI, 15 Garda Prau volunteers, and 20 Destana volunteers. Additionally, Adiwiyata Partners included MTs NU 08 Gemuh, comprising 5 teachers and 12 students; MTs NU 13 Arrahmat Sukorejo, which sent 5 teachers and 14 student Adiwiyata cadres; and MI Al-Islam Gentingunung, with 8 teachers and 13 sixth-grade students. During the second phase of planting, 500 plant seedlings were successfully planted.



Figure 4. Post-Planting Activity

Evaluation

From the first through the third planting phases, 1,000 out of 1,118 prepared productive tree seedlings were successfully planted. The remaining 118 seedlings are reserved as replacements should any trees fail to survive following the planting activity. Most participants and students actively supported the reforestation efforts. However, some issues were noted, including late arrivals and participation motivated primarily by formalities or documentation, which limited overall effectiveness. Despite these challenges, this activity represents the first stage of collaboration among cross-sectoral stakeholders. The findings provide a foundation for evaluation and improvement in future initiatives.

This questionnaire is designed to assess the perceptions of cross-sectoral stakeholders following the implementation of collaborative tree-planting activities aimed at rehabilitating the slopes of Mount Prau. The questionnaire consists of five dimensions and a total of 25 questions.

Table 1. Results of Participant Questionnaires

Dimensions	Average Percentage
Comprehension Dimensions	95.25
Implementation Dimensions	92.17
Collaboration Dimensions	89.81
Impact Dimensions	93.48
Commitment to Sustainability Dimension	91.53

The dimensions of participants' comprehension from various cross-sectoral stakeholders regarding the tree-planting activities for the rehabilitation of Mount Prau's slopes achieved an average percentage score of 95.25%. This percentage reflects the participants' high level of comprehending the objectives and rationale behind the implementation of the activities.

The implementation process shows that the rehabilitation of the slopes of Mount Prau has been carried out very successfully, with an average percentage of 92.17%. These findings highlight the adequacy of material resources, the effectiveness of outreach and education, and the alignment of activities with the established plan. The implementation process also fulfilled participant safety and security standards, ensured the appropriate number of trees were planted, and included systematic monitoring, maintenance, and replacement of seedlings that did not survive after planting. Evaluation results were reported transparently. Collectively, these data suggest that all stages of implementation were executed thoroughly, systematically, and consistently, contributing significantly to stakeholder engagement and the overall success of the Mount Prau slope rehabilitation.

Analysis of collaboration dimensions shows that all parties achieved a "very good" rating, averaging 89.81%. Each stakeholder fulfilled its role according to its capacity and expertise. Information was communicated clearly during the program. Effective communication and coordination among

institutions ensured an efficient collaborative process. These results confirm that participation was both optimal and synergistic.

The impact dimensions achieved an average score of 93.48%. This serves as a benchmark that the community service program was not merely a formality but rather provided significant benefits to both individuals and the community. These include increased environmental awareness, strengthened relationships among the participating institutions, reduced risks of natural disasters such as floods and landslides, and improved economic conditions for the surrounding community.

Analysis of the sustainability commitment dimensions reveals that participants exhibit a high level of awareness and responsibility toward environmental conservation, with an average score of 91.53%. These findings indicate a strong commitment to conservation efforts and the prevention of environmental degradation. Evidence for this commitment includes participants' willingness to share knowledge about environmental conservation, avoid environmentally harmful behaviors, and support or participate in future conservation programs. This initiative may also serve as a replicable model for broader sustainable environmental programs.

The students' questionnaire aims to assess students' perceptions after a collaborative tree-planting activity for the rehabilitation of the Mount Prau slopes. The questionnaire consists of five dimensions.

Table 2. Results of Student Questionnaires

Dimension	Average Percentage
Comprehension Dimensions	93.33
Participation Dimensions	91.06
Impact Dimensions	89.35
Commitment to Sustainability Dimensions	87.96
Collaboration Dimensions	91.33

The students who participated in community activities have an excellent basic knowledge of environmental sustainability. This is evident through the average score obtained for the knowledge indicator, which was 93.33%. Students acquired this knowledge from learning materials and environmental education programs at the madrasah. Students understand the vital role of trees for life and ecosystems, recognize the importance of reforestation activities in preventing floods and landslides, and understand the Islamic teachings that encourage environmental conservation and prohibit behavior that harms nature.

Student participation in the activities was notably high, with an average rate of 91.06%. This result suggests that the activities effectively fostered positive emotional experiences among students. From the beginning, students exhibited strong interest and a willingness to participate. These findings indicate that the activities are engaging and may enhance students' awareness and involvement in environmental conservation in the future.

Impact dimensions revealed that the implemented activities led to an average increase of 89.35% in students' understanding of and concern for the environment. Participants gained practical knowledge of appropriate tree planting techniques. Additionally, there was a significant rise in awareness and commitment to environmental protection.

The sustainability commitment dimensions yielded a high score, with an average of 87.96%. This result suggests that students demonstrate substantial motivation and awareness regarding environmental sustainability. Evidence of this commitment includes a willingness to learn new methods for environmental preservation, interest in participating in future environmental initiatives, and readiness to disseminate knowledge and encourage peers and family members to engage in environmental protection.

After the planting process, regular monitoring of the seedlings was carried out, and replacement plants were provided when possible. The Adiwiyata team from MI NU Trimulyo, Garda Prau, and Destana of Gentinggunung Village assumed responsibility for monitoring and plant replacement activities.

Table 3. Monitoring of Plant Survival Rate

Quantity Planted	Quantity Survived	Survival Rate
1000	831	83,1 %

According to monitoring conducted on March 22, 2026, 831 out of 1,000 planted seedlings survived, resulting in a survival rate of 83.1 percent. The success of a collaborative tree-planting program is not measured solely by the number of trees planted, but also by other benefits, such as the quality of inter-agency cooperation and the social benefits experienced by the community.[11]

The primary strength of this community service program lies in its ability to foster equal cross-sector collaboration in environmental conservation activities. This collaboration serves as vital social capital, as each party contributes complementary capacities, resources, and responsibilities. This community service program also serves as a productive platform for strengthening relationships among the stakeholders involved. The program has reinforced collective awareness that environmental conservation requires shared commitment, coordinated action, and practical engagement with community-based problems. The participation of the institutions involved goes beyond symbolic or ceremonial involvement because it has begun to move toward more sustainable ecological cooperation. Differences in institutional backgrounds, interests, and priorities can be managed through a common goal, namely, protecting environmental sustainability at the local level.

Environmental conservation programs, including tree planting, cannot be viewed merely as environmental projects, but must be regarded as a shared ecological responsibility that requires the

[11] Jess Vogt and Margaret Abood, "The Motivations, Desired Outcomes, and Visions of Partner Organizations to Collective Impact Tree Planting: A Transdisciplinary Case Study of CommuniTree in Northwest Indiana, U.S.," *Urban Forestry & Urban Greening* 65 (2021), https://doi.org/https://doi.org/10.1016/j.ufug.2021.127311.

involvement of all parties.[12] Previous study supports these findings, indicating that effective ecological collaboration is facilitated by clear information, effective communication, equality, targeted coordination, shared goals, and mutual respect among all parties involved.[13]

For students, this program directly contributes to the improvement of ecological knowledge and environmental attitudes. Students not only receive theoretical knowledge about environmental conservation, but also experience learning through the practical activity of tree planting. This direct experience strengthens their understanding that protecting the environment is a concrete action that can be practiced from a school age. Therefore, the program supports the formation of an environmentally conscious character within the culture of the madrasah.

Planting productive fruit trees can provide ecological benefits to the environment by restoring vegetation cover, improving the soil's water retention capacity, and strengthening soil structure through the root system, thereby reducing the risk of flooding and landslides in the long term. In addition to these ecological benefits, planting productive fruit trees also has the potential to provide economic benefits to the community through the sustainable use of fruit yields in the future.

These findings are supported by previous studies showing that cross-sector collaboration can strengthen tree-planting programs by providing guidance on the selection of local species that are effective for CO_2 sequestration, flood mitigation, soil erosion prevention, heat reduction, and air pollution control.[14] Productive fruit trees are also relevant in agroforestry systems because they contribute to vegetation cover restoration, soil stability, water regulation, and the reduction of flood and landslide risks.[15] Furthermore, collaboration between communities and the private sector in tree-planting programs has been shown to support the rehabilitation of degraded land by increasing vegetation cover, plant diversity, above-ground carbon storage, soil conditions, and microclimate quality.[16]

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[12] Vogt and Abood.

[13] Elena Andriollo et al., "Collaborations in Environmental Initiatives for an Effective 'Adaptive Governance' of Social–Ecological Systems: What Existing Literature Suggests," *Sustainability*, 2021, https://doi.org/10.3390/su13158276.

[14] Loren P Hopkins et al., "A Simple Tree Planting Framework to Improve Climate, Air Pollution, Health, and Urban Heat in Vulnerable Locations Using Non-Traditional Partners," *Plants, People, Planet* 4, no. 3 (May 1, 2022), https://doi.org/https://doi.org/10.1002/ppp3.10245.

[15] Kurniatun Hairiah et al., "Tree Roots Anchoring and Binding Soil: Reducing Landslide Risk in Indonesian Agroforestry," *Land*, 2020, https://doi.org/10.3390/land9080256; Rina Purwaningsih, Junun Sartohadi, and Muhammad Anggri Setiawan, "Trees and Crops Arrangement in the Agroforestry System Based on Slope Units to Control Landslide Reactivation on Volcanic Foot Slopes in Java, Indonesia," *Land* 9, no. 9 (2020), https://doi.org/https://doi.org/10.3390/land9090327; Rui Liu et al., "Groundcover Improves Nutrition and Growth of Citrus Trees and Reduces Water Runoff, Soil Erosion and Nutrient Loss on Sloping Farmland," *Frontiers in Plant Science* 15 (2024), https://doi.org/10.3389/fpls.2024.1489693; Van Hung Do et al., "Agroforestry with Contour Planting of Grass Contributes to Terrace Formation and Conservation of Soil and Nutrients on Sloping Land," *Agriculture, Ecosystems & Environment* 345 (2023), https://doi.org/https://doi.org/10.1016/j.agee.2022.108323; Hanani Safira Zildan and Hero Marhaento, "Land Suitability Analysis of Different Plant Species to Rehabilitate Landslide Prone Areas in Merawu Catchment , Indonesia," *BIO Web Conf.* 167 (2025).

[16] Lia Hapsari et al., "Ecological Analysis of Community and Private Partnership in Tree Planting Program to Rehabilitate Degraded Lands : A Case Study in East Java , Indonesia," *Jurnal Manajemen Hutan Tropika* 29, no. 1 (2023), https://doi.org/10.7226/jtfm.29.1.22.

This community service program is quite challenging to implement because it involves many cross-sectoral stakeholders with different institutional characteristics. Planning the activities requires a very long time. This extended duration indicates that the activities cannot be carried out instantly, as they require needs assessment, well-established institutional coordination, schedule adjustments, role allocation, and technical preparations in the field. The primary weakness in implementing this program lies in the uneven commitment and contributions of all involved parties. Some participants still prioritize their respective institutional interests, resulting in participation that is not yet fully equitable and productive. This finding serves as a critical note that cross-sectoral collaboration cannot be built merely through the presence of many parties but must be supported by commitment, discipline, and contributions aligned with the assigned roles.

Previous studies demonstrate that building trust and uniting diverse stakeholders is a lengthy process, rendering it unsuitable for ecological issues that demand immediate intervention.[17] In some cases, actors engage in collaboration primarily to advance their own interests, resulting in suboptimal outcomes due to an emphasis on symbolic formalities aimed at securing legitimacy.[18] Further research indicates that cross-sectoral collaboration in conservation frequently lacks transparency, accountability, and effective complaint mechanisms.[19] Resource limitations and insufficient institutional support also impede cross-sectoral collaboration.[20] These interconnected barriers, including institutional, power, and knowledge-related obstacles, contribute to inadequate coordination and management.[21]

The primary challenge associated with the program's outcomes is maintaining consistent quality and ensuring the sustainability of benefits derived from the productive plants. These plants require significant time to mature, as well as proper care and yield management, to generate economic value for the community. Although the potential fruit yield cannot be realized in the short term, the program's economic benefits are expected to manifest over the medium and long term. There are considerable opportunities for further development, as tree-planting activities may be expanded into a community-based

[17] Tessa D Toumbourou et al., "Collaboration for Social-Ecological Restoration: Reflections from Literature and Practice," *Restoration Ecology* 33, no. 3 (March 1, 2025), https://doi.org/https://doi.org/10.1111/rec.14355.

[18] Örjan Bodin, "Collaborative Environmental Governance: Achieving Collective Action in Social-Ecological Systems," *Science* 357, no. 6352 (August 18, 2017), https://doi.org/10.1126/science.aan1114; David Tobón-Orozco, José Pla-Barber, and Joaquín Alegre, "Between Substance and Symbolism: How Resources and Organizational Facades Interact in Voluntary Climate Commitments," *Business Strategy and the Environment* 34, no. 7 (2025), https://doi.org/https://doi.org/10.1002/bse.70059.

[19] Tyler C Doucet et al., "Perspectives of Successes and Challenges in Collaborations between Non-Governmental Organization and Local Government on Urban Forest Management," *Urban Forestry & Urban Greening* 93 (2024), https://doi.org/https://doi.org/10.1016/j.ufug.2024.128220.

[20] Kayleigh Hutt-Taylor et al., "Improving Cross-Sectoral Collaboration towards Urban Nature-Based Solutions: Insights from a Participatory Workshop," *Facets* 10 (January 1, 2025), https://doi.org/10.1139/facets-2025-0035.

[21] Mônica Cavalcanti Sá de Abreu and Raphael de Jesus Campos de Andrade, "Problematizing the Wickedness of the Fundão Dam Rupture: Are Cross-Sector Partnerships Enough to Bring about the Doce River Basin Recovery Process?," *Environmental Science & Policy* 132 (2022), https://doi.org/https://doi.org/10.1016/j.envsci.2022.02.013; E C O'Donnell, J E Lamond, and C R Thorne, "Learning and Action Alliance Framework to Facilitate Stakeholder Collaboration and Social Learning in Urban Flood Risk Management," *Environmental Science & Policy* 80 (2018), https://doi.org/https://doi.org/10.1016/j.envsci.2017.10.013.

environmental education model centered on madrasahs and the broader community. Program development may include the formation of student environmental cadres, implementation of tree adoption campaigns, and establishment of joint maintenance schedules.

CONCLUSION

A community service program involving cross-sectoral collaboration for the rehabilitation of Mount Prau's slopes successfully planted 1,000 productive tree seedlings in three planting phases. Monitoring results on March 22, 2026, showed that 831 seedlings survived, representing a survival rate of 83.1 percent. Replacement of dead plants was carried out by planting 118 prepared seedlings. Results from participant and student satisfaction questionnaires indicated excellent outcomes across all dimensions, including understanding, implementation, collaboration, impact, participation, and commitment to sustainability. Overall, this program has led to increased ecological awareness among the community, strengthened inter-institutional networks, and fostered an environmentally conscious character among students. Additionally, the program holds long-term potential for restoring vegetation cover, reducing the risk of floods and landslides, and boosting the local economy. This cross-sectoral collaborative ecological model has proven effective and is therefore suitable for adaptation and development according to the ecological, social, and institutional characteristics of populations in different locations.

BIBLIOGRAPHY

Abreu, Mônica Cavalcanti Sá de, and Raphael de Jesus Campos de Andrade. "Problematizing the Wickedness of the Fundão Dam Rupture: Are Cross-Sector Partnerships Enough to Bring about the Doce River Basin Recovery Process?" *Environmental Science & Policy* 132 (2022). https://doi.org/https://doi.org/10.1016/j.envsci.2022.02.013.

Ali, E B, E Agbozo, E M Aboagye, and N A A Effah. "Investigating the Research Trends on the Determinants of Environmental Degradation: A Bibliometric Analysis." *International Journal of Environmental Science and Technology* 21, no. 11 (2024). https://doi.org/10.1007/s13762-024-05521-y.

Amrullah, Abdul Malik Karim, Ali Murfi, Ahmad Fauzi, and Basri Basri. "Integrating Islamic Education with Environmental Programs: Strategies for Sustainable Character Development at SMAN 2 and 7 Malang Indonesia." *Qualitative Report* 30, no. 3 (2025). https://doi.org/10.46743/2160-3715/2025.6020.

Andriollo, Elena, Alberto Caimo, Laura Secco, and Elena Pisani. "Collaborations in Environmental Initiatives for an Effective 'Adaptive Governance' of Social–Ecological Systems: What Existing Literature Suggests." *Sustainability*, 2021. https://doi.org/10.3390/su13158276.

Bodin, Örjan. "Collaborative Environmental Governance: Achieving Collective Action in Social-Ecological Systems." *Science* 357, no. 6352 (August 18, 2017). https://doi.org/10.1126/science.aan1114.

Calculli, Crescenza, Angela Maria D'Uggento, Angela Labarile, and Nunziata Ribecco. "Evaluating People's Awareness about Climate Changes and Environmental Issues: A Case Study." *Journal of Cleaner Production* 324 (2021). https://doi.org/https://doi.org/10.1016/j.jclepro.2021.129244.

Do, Van Hung, Nguyen La, Göran Bergkvist, A Sigrun Dahlin, Rachmat Mulia, Van Thach Nguyen, and Ingrid Öborn. "Agroforestry with Contour Planting of Grass Contributes to Terrace Formation and

Conservation of Soil and Nutrients on Sloping Land." *Agriculture, Ecosystems & Environment* 345 (2023). https://doi.org/https://doi.org/10.1016/j.agee.2022.108323.

Doucet, Tyler C, Peter N Duinker, Melanie Zurba, James W N Steenberg, and John D Charles. "Perspectives of Successes and Challenges in Collaborations between Non-Governmental Organization and Local Government on Urban Forest Management." *Urban Forestry & Urban Greening* 93 (2024). https://doi.org/https://doi.org/10.1016/j.ufug.2024.128220.

Elsa, Rosaline Anggita, Eka Intan, and Kumala Putri. "Unintended Effects of Forestry Fiscal Transfers on Deforestation in Indonesia," 2025.

Global Forest Watch. "Tree Cover Loss and Deforestation Data for Kendal Regency, Central Java, Indonesia." *Global Forest Watch Dashboard*. Washington, DC: World Resources Institute, 2024. https://www.linkshort.app/r/pagea.uk/globalforestwatchorgkendaleyJoaWdobGlnaHRlZCI6ZmFsc2V9.

Hairiah, Kurniatun, Widianto Widianto, Didik Suprayogo, and Meine Van Noordwijk. "Tree Roots Anchoring and Binding Soil: Reducing Landslide Risk in Indonesian Agroforestry." *Land*, 2020. https://doi.org/10.3390/land9080256.

Hapsari, Lia, Titut Yulistyarini, Setyawan Agung Danarto, Shofiyatul Mas, and Janis Damaiyani. "Ecological Analysis of Community and Private Partnership in Tree Planting Program to Rehabilitate Degraded Lands : A Case Study in East Java , Indonesia." *Jurnal Manajemen Hutan Tropika* 29, no. 1 (2023). https://doi.org/10.7226/jtfm.29.1.22.

Hopkins, Loren P, Deborah J January-Bevers, Erin K Caton, and Laura A Campos. "A Simple Tree Planting Framework to Improve Climate, Air Pollution, Health, and Urban Heat in Vulnerable Locations Using Non-Traditional Partners." *Plants, People, Planet* 4, no. 3 (May 1, 2022). https://doi.org/https://doi.org/10.1002/ppp3.10245.

Hutt-Taylor, Kayleigh, Sarah Chamberland-Fontaine, Adrina C Bardekjian, Aalia Khan, Aileen Duncan, Ali Mokdad, Alison Munson, et al. "Improving Cross-Sectoral Collaboration towards Urban Nature-Based Solutions: Insights from a Participatory Workshop." *Facets* 10 (January 1, 2025). https://doi.org/10.1139/facets-2025-0035.

Karim, Abdul. "Integration of Religious Awareness in Environmental Education." *Qudus International Journal of Islamic Studies (QIJIS)* 10, no. 2 (2022). https://doi.org/http://dx.doi.org/10.21043/qijis.v10i2.14404.

Liu, Rui, Yuting Zhang, Zhichao Wang, Xueliang Zhang, Wenjing Xu, Jianwei Zhang, Yueqiang Zhang, Bin Hu, Xiaojun Shi, and Heinz Rennenberg. "Groundcover Improves Nutrition and Growth of Citrus Trees and Reduces Water Runoff, Soil Erosion and Nutrient Loss on Sloping Farmland." *Frontiers in Plant Science* 15 (2024). https://doi.org/10.3389/fpls.2024.1489693.

Lutfauziah, Asmaul, Mimien Henie Irawati Al-Muhdhar, Suhadi, and Fatchur Rohman. "Does Environmental Education Curriculum Affect Student's Environmental Culture in Islamic Boarding School ." *Revista de Gestão Social e Ambiental - RGSA* 18, no. 5 SE-Artigos (March 21, 2024). https://doi.org/10.24857/rgsa.v18n5-079.

Lutfauziah, Asmaul, Mimien Henie, Irawati Al, and Fatchur Rohman. "Curriculum Development for Environmental Education at an Islamic Boarding School." *Journal of Turkish Science Education* 20, no. 3 (2023). https://doi.org/10.36681/tused.2023.028.

Mahdi, Humam, Shofy Widya Sari, Suci Indah Sari, and Nadila Raihanun Nazwa. "Green Islamic School : Integrating Environmental Education in the Islamic Education Curriculum." *Cendekiawan: Jurnal Pendidikan Dan Studi Keislaman* 3, no. 3 (2024). https://doi.org/https://doi.org/10.61253/cendekiawan.

Mardhiah, I, Amaliyah, A Hakam, and A Hadiyanto. "Developing Environmental Care Attitudes Among College Students Through Islamic Education (IRE) Learning With A Humanist-Contextual Approach." *IOP Conference Series: Earth and Environmental Science* 743, no. 1 (2021). https://doi.org/10.1088/1755-1315/743/1/012004.

Masturin, Mhd. Rasid Ritonga, and Siti Amaroh. "Tawhid-Based Green Learning In Islamic Higher Education: An Insan Kamil Character Building." *Qudus International Journal of Islamic Studies (QIJIS)* 10, no. 1 (2022). https://doi.org/http://dx.doi.org/10.21043/qijis.v10i1.14124.

Nur, Afrizal, Hayati bin Husin, Alwizar, and Muhammad Yasir. "Qur'anic Ecotheology and the Ethics of Forest Protection in Indonesia." *Jurnal Studi Ilmu-Ilmu Al-Qur'an Dan Hadis* 26, no. 2 SE-Articles in English (July 31, 2025). https://doi.org/10.14421/qh.v26i2.6312.

Nur, Fatin, Marhamah Zabidi, Norshariani Abd Rahman, and Lilia Halim. "Integration of Islamic Values for Environmental Conservation: An Analysis of School Textbooks." *Religions* 12, no. 7 (2021). https://doi.org/https://doi.org/10.3390/rel12070509.

O'Donnell, E C, J E Lamond, and C R Thorne. "Learning and Action Alliance Framework to Facilitate Stakeholder Collaboration and Social Learning in Urban Flood Risk Management." *Environmental Science & Policy* 80 (2018). https://doi.org/https://doi.org/10.1016/j.envsci.2017.10.013.

Olabi, Abdul Ghani, Nabila Shehata, Usama Hamed Issa, O A Mohamed, Montaser Mahmoud, Mohammad Ali Abdelkareem, and M A Abdelzaher. "The Role of Green Buildings in Achieving the Sustainable Development Goals." *International Journal of Thermofluids* 25 (2025). https://doi.org/https://doi.org/10.1016/j.ijft.2024.101002.

Purwaningsih, Rina, Junun Sartohadi, and Muhammad Anggri Setiawan. "Trees and Crops Arrangement in the Agroforestry System Based on Slope Units to Control Landslide Reactivation on Volcanic Foot Slopes in Java, Indonesia." *Land* 9, no. 9 (2020). https://doi.org/https://doi.org/10.3390/land9090327.

Rohmatulloh, Rohmatulloh, Aan Hasanah, Lalan Sahlani, and M Tajudin Zuhri. "Energy-Saving Triangle: Internalizing Islamic Ethical Values on Energy Saving in Integrative Learning." *Religions* 14, no. 10 (2023). https://doi.org/https://doi.org/10.3390/rel14101284.

Romlah, Listiyani Siti, Rahmad Purnama, Rivama Ambarwati, and Umi Hijriyah. "Environmental-Based Learning Management in Islamic Education Institutions." *E3S Web of Conferences* 04019 (2024).

Santoro, Antonio, Francesco Piras, and Qingyi Yu. "Spatial Analysis of Deforestation in Indonesia in the Period 1950 – 2017 and the Role of Protected Areas." *Biodiversity and Conservation* 34, no. 9 (2025). https://doi.org/10.1007/s10531-023-02679-8.

Tobón-Orozco, David, José Pla-Barber, and Joaquín Alegre. "Between Substance and Symbolism: How Resources and Organizational Facades Interact in Voluntary Climate Commitments." *Business Strategy and the Environment* 34, no. 7 (2025). https://doi.org/https://doi.org/10.1002/bse.70059.

Toumbourou, Tessa D, Bondan Winarno, Tri W Yuwati, Sri Lestari, Dony Rachmanadi, Kushartati Budiningsih, Niken Sakuntaladewi, et al. "Collaboration for Social-Ecological Restoration: Reflections from Literature and Practice." *Restoration Ecology* 33, no. 3 (March 1, 2025). https://doi.org/https://doi.org/10.1111/rec.14355.

Vogt, Jess, and Margaret Abood. "The Motivations, Desired Outcomes, and Visions of Partner Organizations to Collective Impact Tree Planting: A Transdisciplinary Case Study of CommuniTree in Northwest Indiana, U.S." *Urban Forestry & Urban Greening* 65 (2021). https://doi.org/https://doi.org/10.1016/j.ufug.2021.127311.

Wakhidah, Nur, and Erman Erman. "Examining Environmental Education Content on Indonesian Islamic Religious Curriculum and Its Implementation in Life." *Cogent Education* 9, no. 1 (December 31, 2022). https://doi.org/10.1080/2331186X.2022.2034244.

Wang, Ye, Muhammad Umair, Yessengali Oskenbayev, and Ainur Saparova. "Digital Government Initiatives for Sustainable Innovations, Digitalization, and Emission Reduction Policies to Balance Conservation Impact." *Natural Resources Forum* n/a, no. n/a (October 30, 2024). https://doi.org/https://doi.org/10.1111/1477-8947.12570.

Wetering, Judith van de, Patty Leijten, Jenna Spitzer, and Sander Thomaes. "Does Environmental Education Benefit Environmental Outcomes in Children and Adolescents? A Meta-Analysis."

Journal of Environmental Psychology 81, no. March (2022). https://doi.org/10.1016/j.jenvp.2022.101782.

Wilson, Alexis M, Emily Polk, Christopher B Field, and Scott Fendorf. "Towards Environmental Justice: A Framework and Strategic Approach for Implementing Community Based Participatory Research in the Earth and Environmental Sciences." *Environmental Science & Policy* 167 (2025). https://doi.org/https://doi.org/10.1016/j.envsci.2025.104036.

Zahroh, Ummi A'zizah, and Fatma Ulfatun Najicha. "Problems and Challenges on Environmental Law Enforcement in Indonesia: AMDAL in the Context of Administrative Law." *Indonesian State Law Review* 5, no. 2 (2022). https://doi.org/https://doi.org/10.15294/islrev.v5i2.46511.

Zildan, Hanani Safira, and Hero Marhaento. "Land Suitability Analysis of Different Plant Species to Rehabilitate Landslide Prone Areas in Merawu Catchment , Indonesia." *BIO Web Conf.* 167 (2025).