

Developing Ecological Citizenship through Community Participation in Mangrove Conservation: A Case Study of Kaliwlingi Village, Indonesia

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Abstrak

Ekosistem mangrove sangat penting untuk menjaga kelestarian lingkungan pesisir dan meningkatkan kesejahteraan masyarakat. Namun, upaya pelestariannya bergantung pada partisipasi aktif masyarakat dan pengembangan kewarganegaraan ekologis. Penelitian ini bertujuan untuk menganalisis peran masyarakat Desa Kaliwlingi dalam menumbuhkan kewarganegaraan ekologis melalui pelestarian mangrove. Pendekatan studi kasus kualitatif digunakan dengan melibatkan tujuh informan yang dipilih secara purposif, yang terdiri dari satu kepala desa, satu perwakilan pengelola mangrove, satu perwakilan Pokdarwis, satu perwakilan PKK, satu perwakilan Karang Taruna, dan dua orang warga. Data dikumpulkan melalui wawancara semi-terstruktur, observasi, serta dokumentasi, dan dianalisis menggunakan model interaktif Miles dan Huberman. Hasil penelitian menunjukkan bahwa kewarganegaraan ekologis tercermin dalam peningkatan kesadaran lingkungan, partisipasi aktif dalam penanaman dan pemeliharaan mangrove, pendidikan lingkungan, serta inisiatif ekowisata berbasis masyarakat. Kolaborasi antara pemerintah daerah, organisasi masyarakat, dan warga semakin memperkuat upaya pelestarian, serta mendorong pengelolaan mangrove yang berkelanjutan dan perilaku ramah lingkungan di kalangan masyarakat pesisir.

Kata Kunci: ecological citizenship, partisipasi masyarakat, pelestarian mangrove, masyarakat pesisir, keberlanjutan lingkungan

Abstract

Mangrove ecosystems are essential for maintaining coastal environmental sustainability and improving community well-being. However, their conservation depends on active community participation and the development of ecological citizenship. This study aims to analyze the role of the Kaliwlingi Village community in fostering ecological citizenship through mangrove conservation. A qualitative case study approach was employed involving seven purposively selected informants, comprising one village head, one mangrove management representative, one Pokdarwis representative, one PKK representative, one Karang Taruna representative, and two residents. Data were collected through semi-structured interviews, observations, and documentation and analyzed using the interactive model of Miles and Huberman. The findings indicate that ecological citizenship is reflected in increased environmental awareness, active participation in mangrove planting and maintenance, environmental education, and community-based ecotourism initiatives. Collaboration among local government, community organizations, and residents further strengthens conservation efforts, promoting sustainable mangrove management and responsible environmental behavior in coastal communities.

Keywords: ecological citizenship, community participation, mangrove conservation, coastal community, environmental sustainability

PRELIMINARY

Environmental degradation in coastal areas has become one of the most pressing sustainability challenges worldwide, particularly in developing countries where coastal ecosystems are closely linked to community livelihoods, food security, and climate resilience. Rapid coastal development, land conversion, pollution, overexploitation of natural resources, and climate change have accelerated the degradation of coastal ecosystems, reduced their ecological functions while increasing the vulnerability of coastal communities (Kamakaula, Sagrim, and Fenetiruma 2025; Rahabav 2025). Among these ecosystems, mangrove forests provide indispensable ecological, economic, and social services. Mangroves protect coastlines from erosion and storm surges, sequester substantial amounts of blue carbon, conserve biodiversity, improve water quality, and support fisheries and ecotourism. Nevertheless, mangrove ecosystems continue to experience severe degradation due to unsustainable land-use practices, waste pollution, and excessive exploitation of natural resources. Consequently, sustainable mangrove management has become an international priority that requires integrated ecological, social, and institutional approaches rather than relying solely on government regulations or restoration projects.

Recent studies consistently demonstrate that successful mangrove conservation depends on meaningful community participation and collaborative governance involving governments, local communities, civil society organizations, and other stakeholders. Community participation not only contributes to ecological restoration but also strengthens local ownership, social capital, environmental awareness, and collective responsibility for natural resource management (Rudianto 2022). Community-based conservation enables local ecological knowledge to be integrated into environmental management while encouraging residents to become active participants rather than passive beneficiaries of conservation programs. Recent studies published in *The Kalimantan Social Studies Journal* also demonstrate that community participation in environmental management strengthens social responsibility and local stewardship through collective action, indicating that sustainable environmental governance is closely associated with civic engagement and community empowerment (Abbas et al, 2024). Likewise, environmental education has been identified as an important mechanism for promoting pro-environmental behaviour by improving ecological literacy and encouraging citizens to participate in environmental protection. Therefore, sustainable mangrove conservation requires continuous collaboration among multiple stakeholders to ensure that conservation activities remain effective beyond externally funded rehabilitation programs (Rahman, Husen, and Seta 2024; Sharma, Singh, and Kumar 2023).

Within this context, the concept of ecological citizenship has emerged as an important theoretical framework for explaining how environmental responsibility develops through civic engagement and collective action (Sitiningrum, 2025). Ecological citizenship extends the traditional understanding of citizenship beyond legal rights and political participation by emphasizing ethical obligations toward nature, future generations, and sustainable resource management. Rather than viewing environmental conservation solely as the responsibility of governments or conservation agencies, ecological citizenship encourages individuals to voluntarily engage in conservation activities, collective decision-making, and environmentally responsible behaviour (Rahman, Husen, and Seta 2024). Contemporary studies suggest that ecological citizenship can be strengthened through participatory governance, environmental education, and community-based conservation initiatives that foster long-term behavioural transformation and environmental stewardship. Consequently, ecological citizenship provides an appropriate conceptual perspective for understanding how active participation in conservation programs contributes to sustainable environmental governance (Hadjichambis, Reis, and Paraskeva-Hadjichambi, 2022).

Indonesia possesses one of the world's largest mangrove ecosystems and therefore plays a strategic role in global mangrove conservation. However, many Indonesian coastal regions continue to experience mangrove degradation due to coastal abrasion, land conversion, pollution, and weak community participation. Kaliwlingi Village in Brebes Regency represents a notable example of a coastal community that has transformed severe environmental degradation into a successful community-based mangrove conservation initiative. Through collaboration among the village government, Pokdarwis, PKK, Karang Taruna, mangrove management groups, and residents, extensive mangrove rehabilitation has improved ecological conditions while creating opportunities for ecotourism development and community empowerment. Nevertheless, maintaining long-term environmental responsibility and consistent community participation remains a continuing challenge because ecosystem sustainability depends not only on successful rehabilitation but also on behavioural transformation among community members (Kamakaula, Sagrim, and Fenetiruma, 2025; Sitiningrum, 2025).

Previous studies have extensively discussed mangrove rehabilitation, community participation, collaborative governance, and environmental education. Most research concludes that community involvement contributes significantly to ecosystem restoration, institutional strengthening, and sustainable livelihood development (Islam et al, 2024). However, these studies generally focus on conservation outcomes, participation levels, or institutional

performance without comprehensively explaining how community participation contributes to the development of ecological citizenship characterized by environmental ethics, moral responsibility, and long-term civic engagement. Similarly, studies on ecological citizenship have primarily examined environmental education and sustainable behaviour without specifically investigating its relationship with community-based mangrove conservation. Consequently, the interaction between environmental awareness, institutional collaboration, community participation, and ecological citizenship remains insufficiently explored, particularly within Indonesian coastal communities (Onbaşılı, 2025; Rudianto, 2022).

This study addresses these gaps by integrating ecological citizenship theory with community-based mangrove conservation through a qualitative case study in Kaliwlingi Village. Unlike previous studies that mainly evaluate ecological restoration or participation levels, this research investigates how environmental awareness, moral responsibility, institutional collaboration, and active community participation interact to foster ecological citizenship among coastal residents. Furthermore, the study explains the behavioural transformation of community members from resource users into environmental stewards who voluntarily support sustainable mangrove management (Nasution and Basyuni, 2025; Putra 2025; Stern, 2000). This integrated perspective enriches the literature by connecting environmental governance, citizenship education, and community-based conservation within a single analytical framework while providing empirical evidence from one of Indonesia's most successful mangrove rehabilitation initiatives (Noventari et al, 2025; Onbaşılı, 2025; Sitiningrum, 2025).

Based on these considerations, this study aims to analyse the role of community participation in developing ecological citizenship through mangrove conservation in Kaliwlingi Village, Brebes Regency. Specifically, the study seeks to identify the forms of community participation in mangrove conservation, examine how environmental awareness and institutional collaboration contribute to the development of ecological citizenship, and analyse the behavioural transformation of coastal residents toward environmental stewardship. The findings are expected to contribute to the advancement of ecological citizenship theory within citizenship education and environmental studies while providing practical recommendations for policymakers and local communities in designing participatory, inclusive, and sustainable coastal conservation strategies.

METHOD

This study employed a qualitative descriptive approach using a case study design to examine how community participation contributes to the development of ecological citizenship

through mangrove conservation in Kaliwlingi Village, Brebes Regency, Central Java, Indonesia. A qualitative approach was selected because it enables an in-depth exploration of environmental awareness, civic responsibility, and community participation within their natural social context (Creswell and Poth, 2018). The research adopted an interpretive paradigm, viewing ecological citizenship as a socially constructed phenomenon shaped through everyday environmental experiences and community interactions. The research site was purposively selected because Kaliwlingi Village represents a successful example of community-based mangrove rehabilitation while continuing to face environmental challenges, including coastal abrasion and domestic waste pollution (Moleong, J, and Surjaman, 2018).

The study involved seven purposively selected informants, comprising one village head, one representative of the mangrove management group, one representative of the Tourism Awareness Group (Pokdarwis), one representative of the Family Welfare Movement (PKK), one representative of the youth organization (Karang Taruna), and two residents actively involved in mangrove conservation. Data were collected between May and June 2025 through semi-structured interviews, direct field observations, and document analysis. Semi-structured interviews explored participants' perceptions of environmental awareness, community participation, institutional collaboration, and ecological responsibility. Field observations were conducted during mangrove conservation activities, while supporting documents, including village reports, conservation records, and policy documents, were reviewed to complement and verify the primary data.

The number of informants was determined based on the principle of data adequacy and thematic saturation rather than statistical representativeness. Data collection continued until no substantially new information or themes emerged from subsequent interviews. Saturation was achieved because participants representing all key stakeholder groups consistently provided convergent perspectives regarding environmental awareness, community participation, institutional collaboration, and ecological citizenship. This indicated that the collected data were sufficient to comprehensively address the research objectives (Guest, Bunce, and Johnson, 2006; Saunders et al, 2018).

Data credibility was ensured through source and method triangulation by comparing information obtained from interviews, observations, and documentary evidence. The collected data were analyzed using the interactive model of Miles, Huberman, and Saldaña, (2014), consisting of data condensation, data display, and conclusion drawing and verification. The analysis focused on identifying recurring themes related to environmental awareness, community participation, institutional collaboration, and ecological citizenship. Ethical

principles were observed throughout the study by obtaining informed consent from all participants, ensuring confidentiality through anonymous reporting, and using the collected data exclusively for academic purposes.

RESULTS AND DISCUSSION

Environmental Awareness as the Foundation of Ecological Citizenship

The findings indicate that environmental awareness has become the primary foundation for developing ecological citizenship among the residents of Kaliwlingi Village. Based on interviews with seven informants, all participants consistently acknowledged that public awareness of mangrove conservation has increased significantly over the past decade. Initially, many residents perceived mangrove forests primarily as natural resources with limited economic value. However, continuous rehabilitation programs, environmental education, and direct involvement in conservation activities have transformed community perceptions. Residents increasingly recognize that mangroves play an essential role in preventing coastal abrasion, reducing tidal flooding, conserving biodiversity, supporting fisheries, and promoting community-based ecotourism. **Figure 1** illustrates the active involvement of residents in mangrove planting activities, demonstrating that environmental conservation has become a shared community practice rather than an occasional government-led program.

Interview data further revealed that this transformation was largely driven by residents' direct experiences with the ecological and economic benefits of mangrove rehabilitation. One informant explained:

"Before the rehabilitation program, many people did not realize the importance of mangroves. After seeing that the coastline became more protected and visitors started coming for ecotourism, people became more willing to participate in planting and protecting mangroves." (Village Head)

A similar perspective was expressed by a local resident:

"Now we understand that protecting mangroves also means protecting our homes and our livelihoods. Because of that, we participate voluntarily, not only when there are government activities." (Resident)

These statements indicate that environmental awareness has gradually shifted from individual understanding to collective responsibility. Residents no longer participate in conservation activities merely because of external encouragement but because they perceive mangrove protection as essential for sustaining both the coastal ecosystem and community welfare.

The findings demonstrate that environmental awareness serves as the initial stage in developing ecological citizenship. Continuous interaction with environmental problems, participation in rehabilitation activities, and direct observation of the ecological improvements generated by mangrove restoration have strengthened residents' sense of responsibility toward environmental sustainability. This behavioural transformation reflects the emergence of ecological citizenship, where environmental protection becomes a shared civic responsibility embedded in everyday community life rather than a response to legal obligations alone. These findings are consistent with previous studies reporting that direct environmental experience, community participation, and environmental education contribute significantly to strengthening environmental awareness and fostering long-term ecological stewardship (Wardana et al, 2025). Therefore, environmental awareness constitutes the fundamental basis upon which ecological citizenship is developed within the coastal community of Kaliwlingi Village.

Figure 1. Community Participation in Mangrove Conservation Activities



Source: Documentation archived in the Pokdarwis Kaliwlingi Annual Report, accessed on 12 May 2026.

From the perspective of ecological citizenship, these findings indicate that environmental awareness evolves into a form of moral responsibility whereby individuals perceive environmental protection as an ethical obligation rather than merely compliance with external regulations. This moral commitment also reflects an intergenerational concern, as participants recognized that conserving mangrove ecosystems is essential for safeguarding environmental quality and community livelihoods for future generations.

Community Participation in Mangrove Conservation

The findings demonstrate that ecological citizenship is reflected through active community participation in various mangrove conservation activities in Kaliwlingi Village. All seven informants reported that community members regularly participate in mangrove planting, coastal clean-up campaigns, seedling maintenance, environmental education, and community-

based ecotourism programs coordinated by the village government, the Tourism Awareness Group (Pokdarwis), the Family Welfare Movement (PKK), the youth organization (Karang Taruna), and the mangrove management group. As presented in Figure 2, residents from different community groups collectively participated in mangrove rehabilitation by planting seedlings in degraded coastal areas. The activity illustrates that mangrove conservation has evolved into a collaborative community initiative involving multiple stakeholders rather than remaining a government-led restoration program. Beyond restoring ecological conditions, these activities have strengthened social interaction, mutual cooperation, and a shared commitment to protecting coastal ecosystems.

Interview findings further indicate that participation has gradually shifted from externally motivated involvement to voluntary environmental action. A Pokdarwis representative explained:

"Community participation is now much stronger because people have experienced the benefits of mangrove conservation. Besides protecting the coastline from abrasion, mangroves have increased tourism activities and created additional income for local residents."

Similarly, one member of the youth organization (Karang Taruna) stated:

"We no longer wait for government invitations to participate. Whenever there is a mangrove planting activity, young people voluntarily join because we believe this is our responsibility to protect the village for future generations."

These statements demonstrate that participation is no longer driven primarily by government programs but by an internalized sense of environmental responsibility. Residents increasingly perceive mangrove conservation as a collective obligation that benefits both the ecosystem and community livelihoods, thereby encouraging sustained involvement in conservation activities.

Figure 2. Community-Based Mangrove Rehabilitation Activities



Source: Documentation archived in the Pokdarwis Kaliwlingi Annual Report, accessed on 12 May 2026

The findings further reveal that community participation represents a practical expression of ecological citizenship through concrete environmental action rather than merely environmental knowledge. Regular involvement in mangrove rehabilitation, environmental education, and ecotourism management has strengthened environmental awareness, collective responsibility, and civic engagement among community members. The evidence presented in Figure 2, together with participants' testimonies, indicates that repeated participation in conservation activities has transformed environmental protection into an everyday social practice embedded within community life. This finding supports previous studies emphasizing that participatory environmental management encourages long-term pro-environmental behaviour and strengthens community stewardship of natural resources (Putri, 2025). Consequently, mangrove conservation in Kaliwlingi Village functions not only as an ecosystem restoration initiative but also as a continuous civic learning process through which ecological citizenship is strengthened and sustained.

These patterns of participation demonstrate that ecological citizenship is manifested through voluntary civic engagement, where individuals willingly contribute to environmental conservation beyond formal institutional obligations. Such voluntary participation represents everyday practices of environmental citizenship, transforming ecological responsibility into routine collective action embedded within community life.

Institutional Collaboration and the Development of Ecological Citizenship

The findings indicate that ecological citizenship in Kaliwlingi Village is strengthened through collaboration among government institutions, community organizations, and local residents. All informants acknowledged that mangrove conservation has been supported by

partnerships involving the village government, the Environmental Agency, the Tourism Office, the Tourism Awareness Group (Pokdarwis), the Family Welfare Movement (PKK), the youth organization (Karang Taruna), and the mangrove management group. These stakeholders collaboratively organize mangrove planting campaigns, environmental education programs, coastal clean-up activities, ecotourism development, and seedling assistance. Such collaboration has created opportunities for residents to participate actively in environmental conservation while strengthening communication and coordination among institutions responsible for sustainable coastal management.

Interview findings further revealed that institutional collaboration has significantly enhanced both community participation and environmental awareness. A representative of the mangrove management group stated:

"Conservation activities have become more sustainable because different institutions work together. The village government provides policy support, the Environmental Agency offers technical assistance, while community organizations mobilize local residents to participate in rehabilitation activities."

Similarly, a PKK representative explained:

"Environmental education is now carried out regularly through community meetings and village activities. This collaboration has encouraged more families, especially women and children, to become involved in protecting the mangrove ecosystem."

Despite these positive achievements, participants also emphasized that long-term conservation requires stronger institutional commitment, continuous environmental education, and sustainable financial support. Several informants expressed concerns that conservation activities could gradually decline without consistent assistance from government agencies and external partners.

The findings demonstrate that ecological citizenship is not solely an individual characteristic but also a collective social outcome supported by collaborative governance. Institutional partnerships create opportunities for residents to translate environmental awareness into collective action through conservation programs, environmental education, and community empowerment initiatives. The interview findings suggest that cooperation among government agencies and community organizations has strengthened trust, shared responsibility, and long-term community engagement in mangrove conservation. These findings are consistent with previous studies emphasizing that collaborative governance enhances environmental stewardship and strengthens community capacity for sustainable natural resource management (Nasrullah, 2025; Wardana, et al. 2025; Wibowo, et al. 2021).

Therefore, sustaining ecological citizenship requires not only environmentally responsible individuals but also strong institutional networks capable of facilitating continuous community participation and adaptive coastal environmental governance.

Institutional collaboration therefore functions not only as an organizational mechanism but also as a social environment that reinforces ecological citizenship by encouraging shared moral responsibility and collective stewardship of natural resources. Through sustained collaboration, environmental citizenship becomes institutionalized as a continuous civic practice that supports long-term environmental sustainability across generations. This finding is also consistent with previous studies published in *The Kalimantan Social Studies Journal*, which emphasize that collaborative governance and active community engagement are fundamental to strengthening sustainable environmental management and civic responsibility at the local level (Maulidah et al, 2024).

CONCLUSION

This study concludes that community participation plays a fundamental role in developing ecological citizenship through mangrove conservation in Kaliwlingi Village, Brebes Regency. The findings demonstrate that ecological citizenship is reflected in increasing environmental awareness, active participation in mangrove conservation activities, and the emergence of a shared sense of responsibility for protecting coastal ecosystems. Community involvement extends beyond mangrove planting and environmental clean-up activities to include environmental education, ecotourism development, and collaborative conservation initiatives involving the village government, Pokdarwis, PKK, Karang Taruna, mangrove management groups, and local residents. These collective efforts have transformed mangrove conservation into a community-based movement that integrates environmental protection with social and economic development.

The study further reveals that ecological citizenship is strengthened through the interaction between environmental awareness, community participation, and institutional collaboration. Direct experience with the ecological and economic benefits of mangrove conservation has encouraged residents to shift from merely utilizing natural resources to becoming environmental stewards committed to sustainable coastal management. This finding extends the concept of ecological citizenship by demonstrating that it is not only an individual moral responsibility but also a socially constructed civic practice fostered through continuous community engagement and collaborative governance. Therefore, strengthening ecological citizenship requires sustained environmental education, consistent institutional support, and

long-term community participation to ensure the sustainability of mangrove ecosystems while promoting responsible citizenship within coastal communities.

From a practical perspective, local governments and related stakeholders should strengthen community-based mangrove conservation by expanding environmental education programs, providing continuous institutional assistance, and supporting community organizations such as Pokdarwis, PKK, and Karang Taruna through sustainable funding and capacity-building initiatives. Integrating ecological citizenship into local environmental governance and coastal development policies may further encourage long-term community participation and improve the sustainability of mangrove conservation efforts.

This study is subject to several limitations. As a qualitative case study conducted in a single coastal village involving seven purposively selected informants, the findings are context-specific and cannot be generalized to all coastal communities in Indonesia. Future research should examine ecological citizenship across multiple coastal regions using larger and more diverse participant groups and mixed-methods approaches to provide broader empirical evidence and comparative insights into community-based environmental conservation.

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