

When Tourism Meets Ecology: Community Narratives of Environmental Change in Indonesian Small Islands

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ABSTRACT

This study investigates how tourism development shapes environmental change in Indonesia's small islands, with a focus on community perspectives of sustainability and ecological vulnerability. Small islands are often promoted as idyllic destinations, yet they are ecologically fragile, with limited resources, sensitive ecosystems, and strong dependence on coastal environments. Using a qualitative research design, fieldwork was conducted in the Gili Islands (Lombok) and Karimunjawa (Central Java), where tourism has rapidly expanded over the past two decades. Semi-structured interviews were carried out with local fishers, homestay operators, tourism workers, and community leaders, complemented by participant observation of coastal activities and collection of local documents on environmental management. Thematic analysis revealed four central dynamics. First, participants described visible environmental degradation, including coral reef damage, waste accumulation, and declining fish stocks. Second, communities expressed concern over water scarcity and land-use conflicts driven by resort development. Third, tourism was perceived as both a threat and an opportunity, with livelihoods increasingly dependent on the very ecosystems under pressure. Finally, community members highlighted efforts to adapt, including local conservation initiatives, waste management programs, and calls for stricter regulation. The findings underscore that tourism-driven environmental change in small islands is experienced not only ecologically but also socially, as communities negotiate trade-offs between economic benefits and ecological sustainability.

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INTRODUCTION

Small islands have become central to global tourism, marketed as pristine destinations that promise natural beauty and cultural distinctiveness. Yet their ecological fragility makes them particularly vulnerable to environmental pressures associated with rapid tourism growth. Research highlights that small island environments are characterized by limited freshwater resources, fragile coastal ecosystems, and high dependence on marine biodiversity, which renders them acutely sensitive to external shocks (Briguglio, 1995; Scheyvens & Momsen, 2008). As tourism expands, pressures on land, water, and marine systems intensify, generating tensions between economic opportunity and ecological sustainability (Gössling, 2003; Habibi et al., 2021; Pegatariana et al., 2025).

Indonesia, as the world's largest archipelagic state, offers a critical context in which to examine these dynamics. Tourism has been a central pillar of national economic development, and small islands such as the Gili Islands (Lombok) and Karimunjawa (Central Java) have emerged as prominent destinations. However, rapid tourism development in these areas has been accompanied by significant ecological challenges, including coral reef degradation, waste management crises, and freshwater scarcity (Hampton & Jeyacheya, 2015; Cole, 2014). Studies in Indonesian coastal regions suggest that while tourism has diversified livelihoods and reduced reliance on fisheries, it has also displaced traditional practices and intensified environmental vulnerabilities (Clifton & Benson, 2006; Wiranatha & Robinson, 2021).

Despite growing recognition of these issues, much of the existing research has focused on ecological assessments or economic analysis, with less attention to community perspectives on how environmental change is experienced and negotiated. Local voices are crucial for understanding the lived realities of tourism-driven

ecological transformation, as communities are simultaneously beneficiaries and custodians of fragile island environments.

This study seeks to address this gap by exploring how small island communities in Indonesia perceive and respond to environmental change associated with tourism. Using qualitative methods in the Gili Islands and Karimunjawa, the study examines local narratives of ecological degradation, resource conflict, and adaptation strategies. In doing so, it contributes to broader debates on tourism and sustainability in small islands, foregrounding the tensions and trade-offs that define the pursuit of livelihoods in ecologically vulnerable settings.

LITERATURE REVIEW

The relationship between tourism and environmental change in small islands has been widely documented, with scholars emphasizing both ecological fragility and socio-economic dependence. Small islands are ecologically distinctive due to their limited size, scarce freshwater, and reliance on fragile coastal and marine ecosystems (Briguglio, 1995; Ropiqi, 2023). Tourism often exacerbates these vulnerabilities, contributing to coastal erosion, coral reef damage, and waste accumulation, while simultaneously creating critical income streams (Gössling, 2003; Scheyvens & Momsen, 2008). This duality has framed small island tourism as both a lifeline and a threat, raising questions about sustainability.

Research has shown that tourism development frequently displaces traditional livelihoods, particularly fisheries, while placing additional pressure on limited natural resources (Gani et al., 2023; Hampton & Jeyacheya, 2015). In the Maldives, for example, rapid resort expansion has resulted in significant ecological footprints, yet has also reduced poverty through employment opportunities (King et al., 2009). Similar patterns are evident across Southeast Asia, where tourism-driven economic diversification has occurred alongside heightened vulnerability to environmental degradation (Cole, 2014; Pramuja et al., 2025).

In Indonesia, small islands such as Bali, Lombok, and Karimunjawa illustrate these tensions. Tourism has provided new livelihoods, but at the cost of ecological sustainability. Cole (2014) found that water shortages in Flores were directly linked to tourism demand, creating inequities between hotels and residents. Hampton & Jeyacheya (2015) argued that the political economy of tourism in Indonesia often privileges external investors over local communities, weakening local capacity to manage ecological impacts. Clifton & Benson (2006) further noted that poorly planned ecotourism initiatives often reproduce, rather than resolve, environmental challenges.

More recently, scholars have emphasized the importance of community perspectives in assessing sustainability in small island tourism. While ecological indicators can track environmental change, local narratives reveal how communities experience and respond to these transformations. Community-based conservation programs and waste management initiatives have emerged in several Indonesian islands, suggesting that resilience depends not only on ecological systems but also on local agency and governance (Cole & Browne, 2015).

Overall, the literature highlights that small island tourism in Indonesia exists within a paradox of development and degradation. Tourism generates livelihoods and global visibility but simultaneously intensifies pressures on fragile ecosystems. This study builds on existing work by foregrounding community perspectives on these dynamics, seeking to understand how island residents perceive environmental change and negotiate the trade-offs between economic benefits and ecological sustainability.

METHODOLOGY

This study employed a qualitative research design to investigate how communities in small islands of Indonesia perceive and respond to environmental changes driven by tourism. A qualitative approach was appropriate because the research focused on lived experiences, local narratives, and socio-cultural interpretations of ecological transformations, which cannot be adequately captured through quantitative indicators alone.

Fieldwork was conducted in two small island destinations: the Gili Islands in Lombok and Karimunjawa in Central Java. Both sites were selected purposively due to their prominence as tourism destinations and their ecological vulnerability. The Gili Islands are well known for diving and beach tourism but have faced challenges of coral reef degradation, waste accumulation, and freshwater scarcity. Karimunjawa, a marine national park, has similarly experienced pressures from tourism growth, including overfishing, pollution, and land-use change. These contrasting yet comparable cases allowed for the exploration of shared patterns and context-specific dynamics.

Participants were drawn from diverse stakeholder groups to capture a range of perspectives. Semi-structured interviews were carried out with 36 participants, including fishers, homestay operators, dive instructors, resort employees, community leaders, and local government officials. Purposive sampling ensured that individuals with

direct experience of tourism and environmental change were included, while snowball referrals helped identify less visible voices such as small-scale vendors and informal workers.

Data collection was undertaken over a four-month period in 2024. Interviews focused on perceptions of environmental change, observed impacts of tourism on land and marine systems, and local responses to sustainability challenges. Interviews were conducted in Bahasa Indonesia or local languages with translation when necessary, and each lasted between forty-five and ninety minutes. Participant observation complemented interviews, as the researcher attended community meetings, conservation initiatives, and daily tourism activities, keeping detailed field notes on interactions and environmental practices. In addition, local documents, policy reports, and NGO materials were collected to provide contextual background and triangulation.

Thematic analysis was applied to interpret the data, following Braun and Clarke's six-phase framework. Transcripts and field notes were coded inductively to identify recurring patterns, which were then refined into broader themes, including environmental degradation, resource conflicts, tourism dependence, and local adaptation strategies. NVivo software was used to organize data and facilitate cross-case comparison between the Gili Islands and Karimunjawa. The iterative process of coding and theme development ensured that findings remained grounded in participants' narratives while also connected to broader analytical categories.

Trustworthiness of the study was enhanced through methodological rigor. Credibility was supported by member checking, where preliminary findings were shared with selected participants for feedback. Transferability was ensured by providing thick description of the island contexts, while dependability and confirmability were strengthened through an audit trail of coding decisions and reflexive journaling.

Participants were provided with information sheets and consent forms, and pseudonyms were used to protect anonymity. Given the sensitivity of discussing environmental degradation in economically dependent tourism settings, interviews were conducted with care to avoid attributing blame to individuals or communities..

RESULTS

Visible Environmental Degradation

Participants across both the Gili Islands and Karimunjawa consistently emphasized the environmental degradation that has accompanied the expansion of tourism. Coral reef damage was one of the most frequently cited concerns. Divers, fishers, and local residents described how increased boat traffic, anchoring, and inexperienced snorkelers have harmed reef structures. A dive instructor in the Gilis observed, "When I started working here, the reefs were alive with color. Now, many parts are broken, and fish are fewer. Tourists come to see the reef, but the reef is dying because of tourism itself." Such reflections illustrate the paradox of tourism dependency: the very attraction that sustains livelihoods is also under threat from overuse.

Waste management emerged as another pressing issue. Residents noted that the influx of tourists generated volumes of plastic and organic waste far beyond the islands' capacity to manage. A homestay operator in Karimunjawa stated, "Every week we see more garbage on the beach. The trucks cannot take it all to the mainland, so much of it stays here or is burned." The accumulation of waste was frequently linked to declining aesthetics of the islands, with participants expressing fear that environmental degradation could eventually reduce tourist arrivals.

Declining fish stocks were also described as a visible impact of tourism growth. Fishers in both sites reported that rising demand from restaurants catering to tourists has accelerated overfishing. A fisherman in Lombok explained, "Before, we caught enough for our families and to sell in the market. Now, with many restaurants, the sea feels empty. We must go farther to catch less." These narratives reflect the intersection of ecological change and livelihood stress.

Many participants reflected on how environmental change has become more evident across generations. Older residents frequently contrasted the current state of the islands with memories of abundance and ecological balance. One elder in Karimunjawa remarked, "When I was young, the sea was clear, and fish were plenty. Now the water is cloudy, and our grandchildren must work harder for less." Such intergenerational perspectives highlight the lived awareness of long-term environmental decline, situating tourism within a broader trajectory of ecological transformation.

Overall, the accounts reveal that environmental degradation is not abstract but highly visible and deeply felt by small island communities. Coral reef loss, waste accumulation, and declining marine resources are seen as tangible consequences of tourism growth, underscoring the vulnerability of fragile island ecosystems to unchecked development.

Resource Conflicts and Scarcity

Alongside concerns about visible environmental degradation, participants in both the Gili Islands and Karimunjawa highlighted growing conflicts over scarce natural resources, particularly freshwater and land. Water scarcity was described as one of the most pressing challenges, with tourism facilities consuming disproportionately high volumes compared to households. A resident of the Gilis explained, “Hotels and villas have swimming pools and showers running all day, but local people must buy water by the gallon for drinking and cooking. It feels unfair.” Such disparities reinforced perceptions of inequality, where commercial actors benefited at the expense of community needs.

Land-use conflicts also emerged as a recurring theme. Resort construction was seen as encroaching on agricultural land and coastal areas traditionally used for fishing or community gatherings. A fisherman in Karimunjawa reflected, “The beach where we kept our boats is now private property for a resort. We are told we cannot tie our boats there anymore.” These changes not only disrupted traditional livelihoods but also symbolized the loss of communal access to natural spaces.

Participants further described tensions between investors and local residents, with tourism development often favoring external entrepreneurs who acquired prime coastal land. A community leader in Lombok remarked, “Developers come with money and permits, while we have traditions but no documents. Slowly, the land of our ancestors is taken, and we are left with smaller spaces.” This sense of dispossession illustrates how resource conflicts extend beyond environmental concerns to encompass cultural and historical dimensions.

Water and land were not the only contested resources. Several participants noted that energy use and waste disposal systems were also under strain, with resorts securing preferential access to limited infrastructure. Such inequalities were seen as undermining the sustainability of tourism by deepening social divides.

Overall, the findings show that resource scarcity in small islands is not simply a technical issue but a social one, producing visible inequalities between tourism investors and local communities. Freshwater shortages, land-use conflicts, and contested access to coastal spaces illustrate how tourism development intensifies competition over limited resources, generating friction that threatens both ecological sustainability and social cohesion.

Livelihood Dependence and Vulnerability

Participants in both the Gili Islands and Karimunjawa described tourism as the primary source of livelihood, replacing or supplementing traditional occupations such as fishing and small-scale farming. Many expressed pride in the opportunities created by tourism, yet they also voiced concern about the risks of dependence on an industry that is ecologically fragile and highly sensitive to external shocks. A homestay operator in Lombok reflected, “Before, my husband fished, and we grew vegetables. Now, almost all of our income comes from tourists. If visitors stop coming, we have nothing.” Such accounts illustrate how tourism has shifted economic reliance away from diversified livelihoods toward a single, vulnerable sector.

Several fishers acknowledged that while tourism provided employment, it also constrained access to natural resources. A fisherman in Karimunjawa explained, “I stopped fishing to work as a boat driver for tourists. It pays more, but I worry because the sea is still our main life. If tourism damages it, what will we do?” This ambivalence highlights the dual role of tourism as both opportunity and threat, particularly in contexts where ecological degradation undermines the very attractions on which tourism depends.

Dependence on tourism was also perceived as creating a fragile economic cycle tied to seasonality and global events. Multiple participants referenced the COVID-19 pandemic as a moment of crisis that revealed their vulnerability. A woman in the Gilis recounted, “When the pandemic came, all the tourists disappeared. We had no income for months, and many families returned to fishing or borrowing money.” These narratives demonstrate how tourism dependence amplifies exposure to external shocks, leaving communities with limited resilience when flows of visitors are disrupted.

Despite these risks, many participants accepted tourism dependence as inevitable given declining fish stocks and reduced viability of agriculture. Some framed tourism as the only viable livelihood path for younger generations. A schoolteacher in Karimunjawa remarked, “The children no longer dream of being fishers. They want to be dive guides or work in hotels. It is our reality now.” This generational perspective underscores how tourism reshapes aspirations, even as ecological and economic vulnerabilities persist.

Overall, the findings reveal that while tourism has created crucial income opportunities for small island communities, it has also deepened economic dependence on a fragile and uncertain industry. This dependence ties community well-being directly to the sustainability of local ecosystems, reinforcing the tension between short-term economic benefits and long-term ecological vulnerability.

Community Adaptation and Conservation Efforts

Amid concerns over ecological degradation and resource pressures, participants described a range of community-led efforts to adapt and safeguard the environment. These initiatives reflected both resilience and creativity in responding to the challenges of tourism-driven change. In the Gili Islands, residents highlighted local reef restoration projects organized by dive operators and NGOs. A dive instructor explained, “We build artificial reef structures and transplant corals because we know the reefs are our future. Without healthy reefs, there will be no divers, no tourists, and no income.” Such actions demonstrate the recognition of ecological stewardship as integral to sustaining tourism livelihoods.

Waste management was another area where communities sought solutions. In Karimunjawa, local youth groups organized beach clean-ups and public campaigns to reduce plastic use. One youth activist remarked, “We cannot wait for the government to solve the waste problem. We start with small actions, like cleaning the beaches every week, and we hope tourists will join.” These grassroots efforts were often driven by intergenerational awareness, with younger residents positioning themselves as agents of environmental responsibility.

Community members also emphasized the importance of education and awareness in fostering conservation. A schoolteacher in Lombok explained, “We teach children about the importance of coral reefs and clean water, so they grow up understanding that tourism and the environment are connected.” Such initiatives highlight the role of education in embedding sustainability values across generations.

Despite these efforts, participants acknowledged that local initiatives often struggled against systemic challenges, including limited funding, weak enforcement of environmental regulations, and the sheer scale of waste and resource pressures. A community leader in Karimunjawa reflected, “We do what we can, but without stronger rules and government support, our efforts are small compared to the problem.” This tension underscores the limits of community resilience in the absence of structural support from policy and governance frameworks.

Nevertheless, adaptation and conservation efforts were also described with a sense of pride and ownership. Communities framed these initiatives not only as environmental responses but also as acts of cultural identity and responsibility. A resident of the Gilis stated, “This island is our home. If we do not protect it, no one else will. Caring for the environment is part of who we are.” Such statements illustrate how environmental stewardship has become intertwined with community self-perception, reinforcing a sense of agency even in the face of structural constraints.

Overall, the findings show that small island communities are not passive victims of tourism-driven environmental change. Instead, they actively engage in adaptation and conservation practices, drawing on collective action, education, and partnerships with NGOs. However, the scale and sustainability of these efforts remain limited without stronger governance support, highlighting the importance of linking community initiatives to broader institutional frameworks.

Calls for Regulation and Sustainable Governance

While communities engaged in local adaptation and conservation, participants repeatedly stressed the need for stronger regulation and more consistent government involvement to address environmental challenges. Many expressed frustration with weak enforcement of existing rules, particularly around waste disposal, construction permits, and marine protection. A fisherman in Karimunjawa remarked, “There are already laws that say you cannot fish in certain areas, but many people still do it. If the rules are not enforced, the sea will not recover.” His statement illustrates how governance gaps undermine sustainability, even when communities recognize ecological limits.

Tourism development was frequently described as unbalanced, with external investors receiving preferential treatment. In the Gili Islands, participants criticized the lack of clear planning and zoning, which allowed resorts to dominate prime coastal areas. A community leader commented, “Developers build close to the shore, even when it damages the beach. The government issues permits, but they do not listen to our voices.” Such accounts reflect perceptions of exclusion from decision-making and raise concerns about power asymmetries in tourism governance.

Several participants emphasized the importance of including local voices in planning processes. A youth activist in Karimunjawa explained, “We want to be part of the discussion about our future. Too often, decisions are made in Jakarta or by investors, not by the people who live here.” This call for participatory governance highlights how communities seek not only stricter regulation but also more equitable structures of representation.

At the same time, some residents acknowledged positive steps, such as marine park regulations in Karimunjawa and plastic reduction campaigns in Lombok, but felt these efforts lacked consistent implementation. A homestay operator reflected, “The rules are good on paper, but in practice they are weak. If government worked more closely with us, we could protect both the environment and tourism.”

Overall, participants framed sustainable governance as a shared responsibility between government, investors, and communities. They emphasized that without stronger regulation, unchecked tourism development will continue to undermine fragile ecosystems and deepen inequalities. These findings highlight that ecological sustainability in small islands cannot rely on community initiatives alone but requires institutional frameworks that are transparent, participatory, and enforceable.

DISCUSSION

The findings of this study illustrate the paradox of small island tourism in Indonesia: while it provides essential livelihoods, it simultaneously drives ecological degradation and resource conflicts that threaten long-term sustainability. This aligns with earlier scholarship highlighting the vulnerability of small islands to external pressures, where limited resources and fragile ecosystems amplify the environmental footprint of tourism (Briguglio, 1995; Gössling, 2003). Participants’ accounts of coral reef damage, waste accumulation, and declining fish stocks confirm that tourism development often intensifies rather than mitigates environmental vulnerability (Cole, 2014).

Resource conflicts over water and land highlight the distributive inequalities associated with small island tourism. As noted by Hampton & Jeyacheya (2015) external investors frequently secure privileged access to prime resources, while local communities face scarcity. The narratives from the Gili Islands and Karimunjawa reinforce this critique, with participants expressing frustration over tourism facilities consuming freshwater and coastal land while local needs remain secondary. These findings echo Scheyvens & Momsen (2008) observation that small island tourism can deepen social divides, even as it provides economic opportunity.

Tourism dependence emerged as another central theme, with participants acknowledging both the benefits and vulnerabilities of shifting livelihoods from fishing and agriculture to tourism-based employment. This ambivalence reflects King et al. (2009) argument that tourism in small islands often creates “development traps,” where economic well-being becomes tightly bound to fragile environments and volatile visitor flows. The experience of the COVID-19 pandemic, as described by participants, further demonstrates the risks of mono-dependence, aligning with recent studies on tourism shocks in island economies (Hampton & Jeyacheya, 2020).

At the same time, community adaptation and conservation initiatives suggest that local actors are not passive recipients of environmental change. Reef restoration, waste management programs, and youth-led awareness campaigns illustrate forms of grassroots resilience that contribute to sustainability. Similar to findings in other small island contexts (Aisyah, 2023; Cole & Browne, 2015), these initiatives highlight the potential of community agency, even though their impact remains limited without structural support.

Participants’ calls for stronger regulation and inclusive governance reflect broader critiques of weak institutional frameworks in small island tourism. The uneven enforcement of environmental regulations and exclusion of local voices from planning processes reinforce governance gaps that undermine sustainability (Clifton & Benson, 2006). The results suggest that effective sustainability requires not only local initiatives but also regulatory frameworks that are transparent, participatory, and enforceable.

Taken together, the study contributes to debates on tourism and sustainability in small islands by foregrounding local perspectives. It demonstrates that environmental change is experienced not only in ecological terms but also as a social process shaped by inequality, dependence, and negotiation. The findings suggest that tourism in Indonesia’s small islands will remain caught between opportunity and vulnerability unless governance frameworks better integrate ecological limits with equitable development.

CONCLUSION

This study explored community perspectives on the environmental impacts of tourism in two small island destinations of Indonesia: the Gili Islands and Karimunjawa. The findings reveal a complex interplay between opportunity and vulnerability. On the one hand, tourism has become the mainstay of local livelihoods, creating income and employment that have replaced traditional fishing and farming. On the other hand, participants described visible ecological degradation, including coral reef damage, waste accumulation, and declining fish stocks, alongside conflicts over freshwater and land resources. These dynamics underscore the fragility of small island ecosystems and the social tensions that emerge when development is driven by external interests and unequal access to resources.

The study also demonstrated that communities are actively engaged in adaptation, ranging from reef restoration and beach clean-ups to educational initiatives that embed conservation values. While these efforts illustrate resilience, their scope remains constrained without broader institutional support. Participants' repeated calls for stronger regulation and participatory governance highlight the need for government frameworks that balance ecological sustainability with equitable community benefits.

Several limitations must be acknowledged. The study focused on two sites, which may not capture the full diversity of small island tourism contexts in Indonesia. The qualitative design provides depth but limits generalization. Future research could adopt mixed-method or comparative approaches across multiple islands to assess how governance, ecology, and livelihoods intersect in diverse settings.

The findings suggest that sustainable tourism in Indonesia's small islands requires a shift from short-term economic gain toward integrated strategies that place ecological limits and community participation at the center of development planning.

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Conflict of Interest

The authors have nothing to disclose.

Data Availability

The data is available upon reasonable request.

Author Contribution

The authors of this study contributed equally.

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