

RESEARCH ARTICLE



The Role of Local Communities in Managing Environmental Damage to Address Social Conflicts

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ABSTRACT

Environmental damage from palm oil production remains a pressing and significant global issue, driving ecosystem disruption and social conflicts. Local communities, as the first to experience its impacts, are central actors in addressing deforestation, pollution, and biodiversity loss. This study examines the role of local communities in the Subah sub-district, Indonesia, in managing environmental degradation and mitigating social conflicts associated with palm oil plantations. A mixed-methods approach was employed, combining a Likert scale questionnaire with 101 respondents and field observations to capture both quantitative trends and community perspectives. The study underscores the importance of empowering local communities by integrating their traditional knowledge and practices into broader environmental governance frameworks. Over 60% of respondents agreed that active participation improves environmental quality and reduces conflict, with nearly 70% reporting direct involvement in conflict resolution. For instance, community-led reforestation in Sabung Village restored biodiversity and strengthened social cohesion, while waterway cleanups in Mukti Raharja Village reduced pollution and eased tensions with plantation companies. These examples highlight how grassroots initiatives can foster both ecological restoration and social harmony. This study's novelty lies in its focus on community-driven environmental practices as dual strategies for ecological management and peacebuilding in palm oil-producing regions. The results suggest the need for participatory approaches, where companies collaborate with communities to promote sustainable practices, prevent environmental degradation, and ensure long-term social stability.

Introduction

The environmental damage initiated by oil palm plantations is increasingly disrupting ecosystems and leading to social conflicts within communities. Owing to the growing scarcity of natural resources and increasingly deteriorating environmental conditions, society faces tougher competition for the few resources available, damaging economic effects, changes in daily life, and pollution-induced health issues [1]. Effective environmental management strategies are crucial for the sustainability of the palm oil industry, which is heavily impacted by environmental issues [2]. Local communities directly impacted by environmental changes are becoming increasingly important players in addressing the damage caused by palm oil production. This shift in focus highlights the need for more inclusive and community-centered approaches to environmental management, as local communities are best positioned to understand the specific challenges and needs of their region. Because these changes impact residents, they are also the closest to them and rely heavily on the same resources, problem-solving, and social conflicts they generate [3].

This study focuses on the environmental factors associated with palm oil plantations. Several factors contribute to environmental deterioration. First, it worsens when private or state-owned enterprises process extensive plantation activities and apply large-scale technological methods [4,5]. The extensive use of technology in these processes can exacerbate the situation by increasing pollution and depleting resources. Thus, reliance on technology in palm oil production can deteriorate the environment and create tension [6].

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Second, on the most apparent level, involving locals in managing their environment enables subordinates to cultivate power, facilitating the involvement of individuals in decisions and ensuring that the community has fair solutions that are culturally relevant. Palm oil plantations are a significant contributor to land cover changes in agriculture [7]. However, they cause extreme environmental damage, leading to destruction that is impossible to repair [8].

Local communities possess unique insights and traditional knowledge that can be crucial in managing environmental resources sustainably [9], which can reduce the adverse impacts of environmental damage and respond to conflict events. Their direct interaction with the environment and resources makes them vital stakeholders in environmental governance [10,11]. This involvement helps ensure that environmental policies and practices are culturally relevant and practically applicable, thereby increasing their effectiveness. Furthermore, involving local communities in environmental management can mitigate social conflicts arising from resource scarcity and environmental degradation [12]. When communities are involved in decision-making processes, they develop a sense of ownership and responsibility, which can lead to more cooperative and peaceful interactions among community members.

This study examines the crucial role of local communities in mitigating environmental damage and resolving social conflicts. This study aims to demonstrate that local involvement is beneficial and essential for achieving sustainable environmental and social outcomes. While several studies have examined the environmental impacts of palm oil plantations and their role in social conflict, there is a lack of in-depth exploration of how local communities can directly influence both environmental management and conflict resolution. Most existing research focuses on top-down governance, corporate responsibility, and large-scale interventions; however, there is limited knowledge on how grassroots, community-led efforts can contribute to sustainable outcomes in regions heavily affected by environmental degradation. This study fills this gap by focusing specifically on the role of local communities as key stakeholders in managing environmental damage and reducing social conflict, especially in the context of palm oil plantations. This is one of the few studies to empirically examine the interaction between community participation, ability, and environmental management, providing new insights into the mechanisms through which local knowledge and grassroots involvement can contribute to both ecological conservation and social harmony. This study makes a significant contribution by demonstrating the critical importance of involving local communities and highlighting their unique insights and abilities to manage resources sustainably. Additionally, it provides empirical evidence on how local community initiatives can mitigate tensions between local populations and companies, thereby contributing to the resolution of social conflict.

Materials and Methods

Study Area

This study was conducted over three (3) months, from November 2023 to January 2024. Data were collected in Sabung Village and Mukti Raharja Village, a residential area adjacent to palm oil plantations in the Subah Subdistrict, Sambas Regency, West Kalimantan. This location was chosen as the study area because it is a palm oil production center in Sambas Regency, which causes environmental damage, including biodiversity loss, water and air pollution, and deforestation, and is one of the factors contributing to social conflict. A map of the study area is shown in Figure 1. The field research involved direct observation and interviews with research informants. The population in Sabung Village is 1,708 people or 480 households, and it has an area of 2,204 hectares; thus, it has a population density of 77.49 people/ha. Mukti Raharja Village has 1,798 people or 521 households with an area of 8,140 hectares, resulting in a population density of 22.09 people/ha.

Data Collection

Primary and secondary data were used in this study. Primary data were collected through interviews with 101 respondents, using Slovin's formula (Equation 1) with a Likert scale questionnaire ranging from 1 (strongly disagree) to 5 (strongly agree) to measure respondents' reactions to various statements related to the research variables. Secondary data were collected from existing literature to provide extra context and support the findings. This research focused on three variables to understand the role of local communities: community participation (X), community ability (Y), and environmental management (Z). Community participation was assessed to understand the extent to which communities were actively involved in addressing environmental damage and social conflicts. Involvement refers to the active participation and engagement of local communities in managing environmental damage and addressing social conflicts resulting from palm oil plantation activities. It encompasses a range of actions and responsibilities undertaken

by individuals and groups within the community to directly impact the resolution of environmental and social problems. Community ability (Y) refers to the community's capacity to respond to environmental damage and social conflicts, encompassing the skills, knowledge, and resources, like their ability to spot early signs of environmental degradation, communicating with stakeholders (e.g., local authorities and corporations), and organizing collective action. Community knowledge encompasses traditional ecological knowledge, local environmental familiarity, and an understanding of sustainable land-use practices. The available resources ranged from human resources to material resources (such as access to natural resource management). Environmental management (Z) refers to the efforts made by the community to address environmental damage and mitigate the impact of environmental degradation. The community engages in environmental management efforts, such as reforestation and sustainable land-use practices to reduce the negative impacts of palm oil plantations, prevent resource depletion, and foster conflict resolution through equitable resource management and environmental restoration.

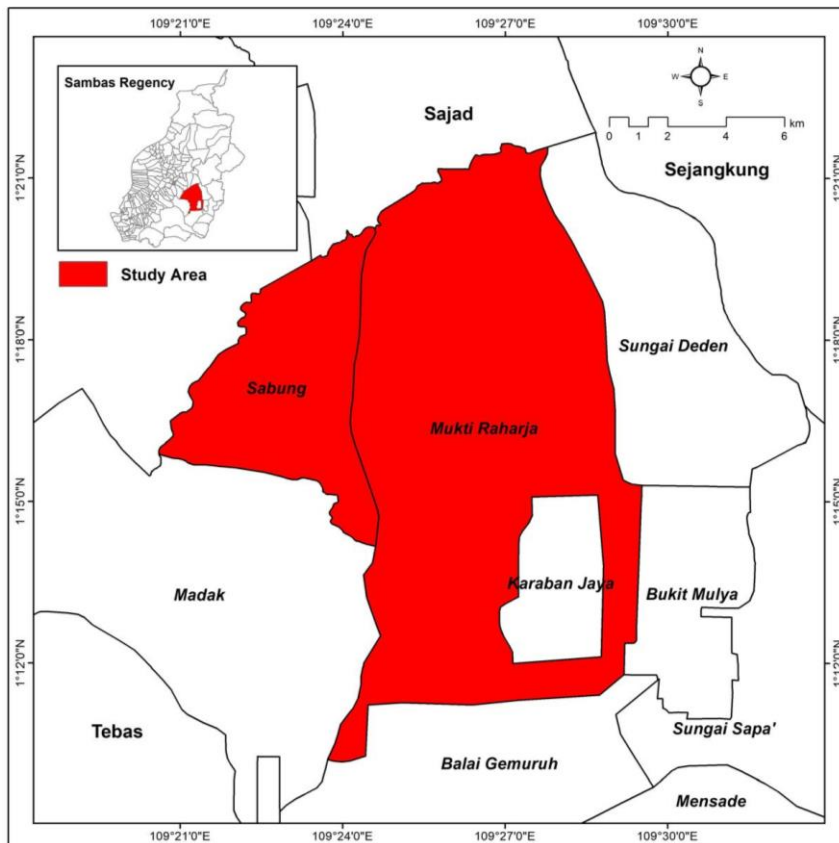


Figure 1. A map of the study area.

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

Information:

n : Number of samples

N : Number of populations

e : Error tolerance (10% or 0.1)

The selection of research respondents was based on inclusion criteria established at the beginning of the study: residing in Sabung Village or Mukti Raharja Village for at least five years, being affected by environmental damage affecting daily life, and being aware of ongoing social conflicts. The informants were selected using random sampling, if they met the predetermined inclusion criteria. From the 101 respondents, the sample size for each village was proportionally divided using proportionate stratified random sampling (Equation 2) and added with a 10% dropout number, which was used to increase the reliability of the research results and ensure sufficient sample size to maintain the statistical power of the research, resulting in 48 respondents from Sabung Village and 53 from Mukti Raharja Village (Table 1). The respondents were chosen per household.

$$n_i = \frac{N_i}{N} \times n \quad (2)$$

Information:

n_i : Number of samples of each study area

N_i : Number of members of a population unit

N : Number of populations + drop out 10%

n : Number of total samples

Table 1. Research respondents.

No.	Study area	Populations (people)	Population (households)	Respondent samples (households)
1.	Sabung	1,708	480	48
2.	Mukti Raharja	1,798	521	53
Total		3,506	1,001	101

Data Analysis

The research data obtained from the responses to statements using a Likert scale for each research variable were analyzed descriptively and quantitatively. Quantitative analysis was performed using Microsoft Excel software to score and tabulate the data. The findings are presented in a table format, detailing each statement related to the research variable and the number of respondents for each Likert scale rating (1–5) corresponding to their experiences. This illustrates the variation in respondents' answers to each statement. An interpretation of the results for each research variable follows this. The interpreted data will be discussed, supported by secondary data and references, to reinforce the findings of the field research.

Results and Discussion

Results

The activities of palm oil plantations by companies in the research area have caused significant social conflicts, primarily because of environmental damage. Deforestation, loss of biodiversity, soil erosion, water pollution, and road damage caused by these plantations have severely impacted local communities whose livelihoods depend on the natural environment. In Figure 2, environmental damage, such as deforestation in the study area resulting from palm oil plantation activities, is illustrated. Figure 3 shows the conditions of the road leading to the palm oil plantation settlement in Sabung Village. The figure shows a road in a damaged, uneven, and pothole-ridden state. This damage worsens during the rainy season, as the road becomes muddy and flooded, disrupting the community's mobility, as it is the only road leading to the market or town. In Figure 4(a), the water quality declined due to land clearing activities for palm oil plantation purposes. This water flow eventually flows into the river, affecting the water quality of the community. Figure 4(b) shows the accumulation of palm oil leaves and branches in the water flow. This often leads to clogged water channels, resulting in dirty water.

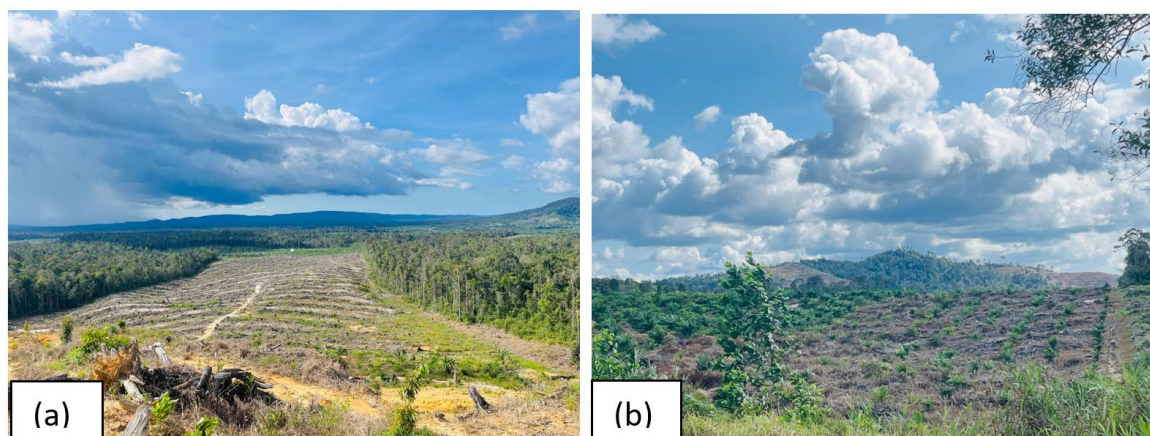


Figure 2. Deforestation because of palm oil plantation: (a) Sabung Village, (b) Mukti Raharja Village (November 2023).



Figure 3. Road damage in Sabung Village (January 2024).

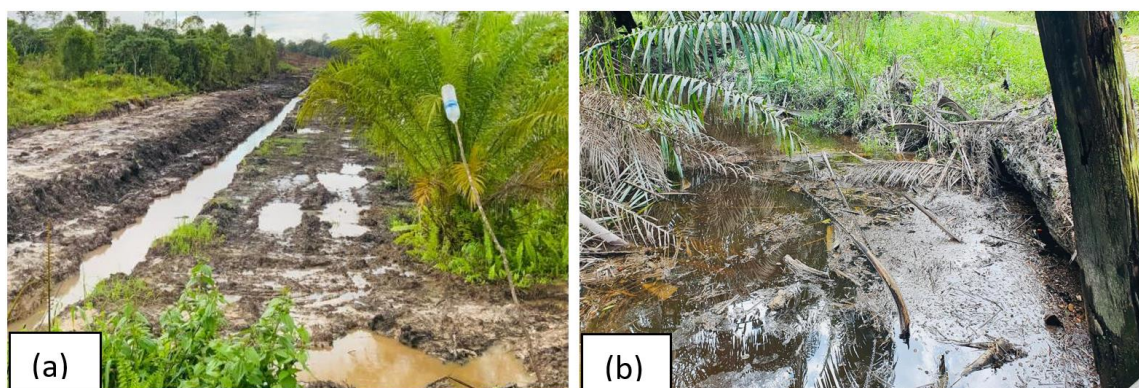


Figure 4. Water pollution in Mukti Raharja Village (January 2024).

Local communities have played an active role in managing environmental damage to mitigate these conflicts. They organized conservation efforts, engaged in participatory land-use planning, and collaborated with stakeholders to address the environmental and social impacts. These actions have helped reduce tensions and foster a more sustainable coexistence between the community and company. The active involvement of local communities in environmental management is crucial for addressing social conflicts and ensuring environmental sustainability and social equity.

Community Participation in Managing Environmental Damage

Community participation is crucial for managing environmental damage, especially in areas affected by large-scale palm oil industry activities. Community participation can be a positive approach as mitigation to reduce the risk of environmental damage [13]. In the study area, it is evident that the daily lives of the local communities are closely tied to the state of the environment. As the most frequently affected stakeholders, communities often bear the burden of environmental damage. In response to these detrimental effects, communities are increasingly taking proactive steps to address and mitigate the damage. If the damage persists for an extended period, it will likely lead to social conflict between communities and palm oil plantations. However, the sustainability of these efforts hinges on their capacity to affect systemic change and engage in meaningful dialogue with key stakeholders, including palm oil plantations. Failure to address environmental degradation risks exacerbates existing social tensions, potentially leading to conflict between communities and industrial interests.

Table 2 shows the respondents' responses to five statements related to the variable of community participation. For statement 1, more than 60% of respondents agreed that active community participation in environmental improvement activities was highly beneficial. This involvement enhances environmental quality and reduces the likelihood of social conflicts in their area of residence, as illustrated by the local

reforestation efforts initiated by community members. For instance, in Sabung Village, a community-led project to replant native tree species such as Ramin (*Gonystylus bancanus*) and Jelutung (*Dyera costulata*), and parennials, such as Rambutan (*Nephelium lappaceum*), Jeruk Siam (*Citrus nobilis*), Rubber tree (*Hevea brasiliensis*), and Banana (*Musa paradisiaca*). This was organized following severe deforestation caused by palm oil expansion. This initiative not only helped restore biodiversity but also fostered community unity and awareness of the importance of environmental stewardship.

In statement 2, over 60% of the respondents believed that community efforts in environmental improvement significantly contributed to reducing social conflicts, demonstrating a positive correlation between environmental actions and social harmony. A notable example is Mukti Raharja Village, where communities have engaged in cleaning up polluted waterways affected by palm oil runoff and litter. This collective action not only improved water quality but also diminished tensions between the community and palm oil companies, as it demonstrated the community's commitment to restoring their environment.

For statement 3, nearly 70% of respondents reported participating in efforts to resolve social conflicts resulting from environmental damage. This high level of engagement indicates strong community commitment to addressing environmental and social issues. In statement 4, 33 respondents (33%) disagreed with the statement that their involvement in the decision-making process was effective in reducing social tensions. One case in point is the holding of customary-based meetings in Sabung and Mukti Raharja Villages, which were led by customary elders and attended by local communities and village stakeholders to discuss disputes over access to resources. The results of these meetings often form the basis for discussions with the plantation, allowing collaborative problem-solving that addresses environmental and social issues.

For statement 5, almost 60% of the respondents agreed that their participation improved their ability to respond to and reduce social conflicts. This underscores the importance of community engagement in building resilience and adaptive capacities. A tangible example is regular meetings held every six months between the community and the company, and every three months between the traditional elders and the company. These meetings serve as a forum for maintaining relationships and providing an opportunity for the company to present its activities, while the community expresses its aspirations. Community participation in these meetings was very high. Community leaders have suggested maintaining regular communication and holding joint discussions with all relevant parties to resolve social conflicts.

Table 2. Respondents' responses to the community participation variable.

No.	Description of each statement	Likert's score					Total respondents
		1	2	3	4	5	
1.	Active community participation in environmental activities has improved environmental quality.	0	7	20	46	28	101
2.	Community involvement in ecosystem restoration efforts has helped reduce social conflicts.	0	9	24	40	28	101
3.	The community is actively involved in resolving social conflicts related to environmental damage.	0	11	22	38	30	101
4.	Community participation in decision-making processes regarding responses to environmental damage can reduce social tensions.	0	33	24	25	19	101
5.	Active community participation has enhanced their ability to respond to and mitigate social conflicts related to environmental damage.	0	16	28	32	25	101

Community Ability in Managing Environmental Damage

Effective environmental management is crucial for achieving sustainable development and preventing social conflicts. Understanding the community's perceptions of their environmental management abilities is essential for developing strategies that enhance their knowledge, skills, and collaborative efforts. Table 3 presents the respondents' perceptions of the four statements related to community ability in environmental management.

In statement 1, most respondents (58%) agreed or strongly agreed that the community had sufficient knowledge to maintain and manage the environment. However, 29% remain neutral, and 13% disagree, suggesting that while many recognize the community's knowledge, there is still room for improvement or greater consensus. In statement 2, a significant majority (60%) agree or strongly agree that the community can recognize and identify environmental damage caused by palm oil plantations. However, 30% remain neutral, and 10% disagree, indicating that while most are confident in their abilities, a notable minority may need further education or resources. Providing targeted education and resources can empower these

individuals to become more informed and proactive environmental stewards. By bridging this knowledge gap, communities can collectively work to mitigate environmental degradation, fostering a deeper understanding of the complex relationship between human activities and ecological health [14,15].

In statement 3, most respondents (78%) agree or strongly agree that the community's communication and collaboration skills have helped them respond well to social conflicts. Communicating and collaborating on issues related to environmental damage and the threat of social conflicts with relevant parties, such as corporate stakeholders and others, represents one of their responses. It is highly beneficial for reducing the potential for social conflicts and is very useful in finding solutions to resolve ongoing conflicts. Only a tiny percentage (2%) disagree, indicating a consensus on the effectiveness of these skills. In statement 4, a significant majority (68%) agree or strongly agree that the community's ability to recognize signs of environmental damage has helped identify problems before they escalate into conflicts. Furthermore, some respondents added that by identifying the sources and perpetrators of the damage, they would be able to determine the steps or stances to take. Community capability can be enhanced by providing education and guidance to the public, as well as increasing opportunities for community involvement in addressing emerging environmental issues. This can yield better results if supported by the government to promote awareness and collaboration with the community [16]. However, 26% remain neutral, and 6% disagree, suggesting that while the community's proactive measures are largely effective, further reinforcement is needed to ensure comprehensive recognition and action.

The survey data reveal that the community perceives itself as knowledgeable and capable of managing environmental damage and addressing related social conflicts, particularly those arising from palm oil plantation activities. Most respondents agree that the community is effective in recognizing environmental issues and communicating with relevant parties; however, a notable portion remains neutral, indicating areas for improvement. Enhancing education and awareness, strengthening recognition skills, improving involvement in decision-making, and reinforcing communication and collaboration can further bolster the community's efforts [12].

Table 3. Respondents' responses to the community ability variable.

No.	Description of each statement	Likert's score					Total respondents
		1	2	3	4	5	
1.	The community has sufficient knowledge about how to maintain and manage the environment.	0	13	29	34	25	101
2.	The community can recognize and identify environmental damage caused by palm oil plantation activities.	0	11	30	49	11	101
3.	The community's ability to communicate and collaborate with relevant parties has helped them respond well to social conflicts.	0	2	21	50	28	101
4.	The community's ability to recognize signs of environmental damage has helped identify problems before they escalate into conflicts.	0	6	26	44	25	101

Environmental Management by Community in Managing Environmental Damage

Effective environmental management is crucial for safeguarding natural resources and ensuring the well-being of communities, particularly in areas affected by industrial activities such as palm oil plantations. Communities are at the forefront of these efforts, utilizing their local knowledge and proactive engagement to address environmental challenges. The survey data in Table 4 provide insights into respondents' perceptions related to environmental management by the community in managing ecological damage.

In statement 1, most respondents (70%) agree or strongly agree that community participation in environmental management can minimize social conflicts. Meanwhile, conflict resolution, on the one hand, can also enhance community participation in palm oil plantations [17]. However, 23% remain neutral, and 7% disagree, indicating a generally positive perception with some room for increasing consensus. Palm oil companies can play a role in mitigating environmental damage and preventing further harm [12]. Additionally, conflict resolution can further enhance community participation in managing the impacts of palm oil plantations, leading to positive feedback. Involving palm oil companies in environmental restoration and damage prevention is also seen as an important step [18].

In statement 2, 59% of respondents agree or strongly agree that the community has taken actions to minimize losses caused by palm oil plantations. However, a considerable portion (31%) remain neutral, and 10% disagree, suggesting that while actions are recognized, they may not be universally acknowledged or sufficient. This suggests a need for improved communication about the actions taken and possibly more

effective or visible measures. This can be done by creating a comprehensive communication plan so that all community members are informed about ongoing and planned environmental management activities [19]. This may include regular updates through community meetings, newsletters, social media, and local media. The informant community holds regular meetings every two weeks, although these meetings are often held informally. Being transparent about actions taken and their impact can build trust and awareness in society. Additionally, the parties involved in managing natural resources have a social responsibility for the local environment, and transparency is very important in ensuring that this responsibility is fulfilled [20].

In statement 3, 70% of respondents agree or strongly agree that the community effectively manages natural resources to prevent environmental damage. This shows the high public trust in environmental conservation and sustainability efforts and strategies. These respondents most likely observe and appreciate the proactive actions taken by communities to maintain and protect the natural world around them. Nevertheless, 25% remain neutral, and 5% disagree, indicating a strong but not unanimous perception of effectiveness. In statement 4, a slight majority of respondents (47%) agree or strongly agree that sustainable environmental management by the community was critical to resolving social conflicts. A significant portion remained neutral (33%) or disagrees (20%), indicating the need for more clarity or evidence on the effectiveness of community-led sustainability efforts. This is because palm oil plantation activities have mainly caused environmental degradation [21,22], so the restoration and management of the environment must be undertaken. It is the responsibility of the companies responsible for the damage, rather than the community, being tasked with managing it.

In statement 5, 72% of respondents agree or strongly agree that sustainable environmental management by companies is critical to resolving social conflicts. This implies that corporate responsibility for mitigating environmental damage and promoting sustainable practices can significantly alleviate tensions and foster community harmony. This perspective acknowledges that many environmental conflicts stem from corporations' actions, particularly in industries such as palm oil production, where environmental degradation is prevalent [23]. Recognizing the significant impact these corporations have on the environment highlights the importance of holding them accountable for sustainable practices [24]. However, 19% remained neutral, and 9% disagreed, indicating strong support but also highlighting the importance of corporate responsibility in environmental management. By embracing responsibility, palm oil corporations can mitigate their ecological footprint, reduce pollution, and conserve natural resources, thereby contributing to global sustainability efforts [25].

Table 4. Respondents' responses to the environmental management variable.

No.	Description of each statement	Likert's score					Total respondents
		1	2	3	4	5	
1.	Community participation in environmental management can minimize social conflicts.	0	7	23	50	21	101
2.	The community has taken actions to minimize losses caused by palm oil plantation activities.	0	10	32	34	25	101
3.	The community effectively manages natural resources in their area to prevent environmental damage.	0	5	26	45	25	101
4.	Sustainable environmental management by the community is critical to resolving social conflicts.	0	21	33	35	12	101
5.	Sustainable environmental management by companies is critical to resolving social conflicts.	0	9	19	45	28	101

Discussion

The results of this study demonstrate the significant role that local communities play in managing the environmental damage caused by palm oil plantations, while also addressing the social conflicts that arise from such environmental degradation. The findings align with previous research, which also emphasized the importance of local community involvement in mitigating environmental impacts through traditional knowledge and grassroots initiatives [12]. Community involvement leading to improved environmental management and conservation arises naturally within the community as a sense of ownership and responsibility towards the environment. The better the community participation, the better the management of the environment. Therefore, community participation is necessary and serves as a crucial instrument for achieving environmental sustainability [26]. However, more effective involvement in decision-making is needed to ensure that community efforts are fully utilized and social tensions are minimized. Sustainable

environmental management by communities and companies is essential for long-term social harmony and ecological health.

Previous research has suggested that community-led environmental management is a form of environmental awareness [27], and participation can be achieved through decision-making processes [28–30], access to environmental information, and involvement in implementing environmental policies. Involving communities in decision-making helps tailor solutions to local contexts, increasing effectiveness and acceptance among community members. For example, other research has noted that local communities play a key role in addressing environmental degradation by applying traditional ecological knowledge, which is consistent with the finding that community ability and participation are crucial for environmental management [12]. However, challenges and barriers remain in its implementation, such as limited access to information, lack of community awareness, and insufficient government and private sector support.

Therefore, efforts must be made to increase community involvement in preventing environmental damage by improving access to environmental education and information, and creating more dynamic and impactful platforms for community engagement [18]. Communities can participate in preventing environmental damage through decision-making processes, access to environmental information, and involvement in implementing environmental policies. Therefore, efforts must be made to enhance community involvement in preventing environmental damage by improving access to environmental education and information, and creating more dynamic and impactful platforms for community engagement [31]. However, this study expands on previous research by providing empirical evidence of the direct correlation between community-led initiatives and the reduction of social conflicts. While another study [2] highlighted the environmental impacts of palm oil plantations, this study specifically demonstrated how community ability and efforts, such as reforestation and waterway cleaning, also contribute to social cohesion by reducing tensions between communities and palm oil companies.

In Sabung Village, the community has proactively addressed the deforestation caused by palm oil expansion using their traditional knowledge. This can lead to a reforestation project with native trees, restoring the ecosystem and strengthening their collaboration with NGOs. In Mukti Raharja Village, where water pollution from palm oil plantations is a major environmental issue, the community regularly cleaned rivers polluted by palm oil litter, an initiative that successfully reduces environmental damage.

Effective communication channels can facilitate the exchange of information, resources, and support, thereby enhancing a society's ability to resolve environmental and social conflicts. Collaborative efforts can also help pool resources and expertise, thereby making environmental management more efficient and comprehensive. By building strong relationships and demonstrating the benefits of sustainable practices, communities can gain support for their initiatives and ensure long-term sustainability [32].

Furthermore, both villages engaged in community-led awareness programs that taught sustainable farming practices and environmental conservation techniques. These grassroots efforts show how communities can build trust, pool resources, and ensure the long-term success of their initiatives [15]. In Sabung Village, they started a collective forest management program by planted a mix of native trees and fruit-bearing plants to restored biodiversity and provided economic benefits. Meanwhile, in Mukti Raharja Village held waste management workshops for both villagers and palm oil workers in collaboration with local universities. This is consistent with earlier research [8], which noted the adverse effects of palm oil plantations on peatland ecosystems, emphasizing the need for effective environmental management practices to mitigate such negative impacts.

Conclusions

Local communities are key to addressing environmental damage and social conflicts caused by palm oil plantations. When communities actively use their environmental knowledge and work with companies, they can significantly improve the environment and reduce tension. This kind of shared environmental management is crucial for protecting natural resources and promoting social harmony. Through grassroots efforts and partnerships, communities can find sustainable ways to coexist with these plantations. Coordinated actions are necessary to ensure the long-term healths of both the ecosystems and people's livelihoods, which highlights the need to empower local communities in environmental decision-making.

Author Contributions

MDV: Conceptualization, Data Curation, Formal Analysis, Writing - Review & Editing; **HH:** Writing - Review & Editing, Supervision; **EF:** Writing - Review & Editing, Supervision.

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Conflicts of Interest

There are no conflicts to declare.

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