Surviving Climate Disaster Through Impact Risk Assessment Analysis of Climate Change in Sukadana Village and Segala Anyar Village, Indonesia

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Abstract. This study analyses the risks associated with climate change impacts, including mitigation and adaptation strategies implemented by communities in Sukadana Village and Segala Anyar Village, Pujut District, Central Lombok. The research adopts the Sendai Framework for Disaster Risk Reduction as its analytical framework, focusing on risk identification, capacity building, and strengthening community resilience. Methodologically, the study employs a descriptive qualitative approach, with data collected through Focus Group Discussion (FGD), in-depth interviews, field observations, and document analysis. The findings reveal that both villages are vulnerable to drought due to their reliance on agriculture and limited water resources. The lack of community knowledge about mitigation and adaptation exacerbates the impacts of drought, aligning with Priority 1 of the Sendai Framework, which emphasises the identification and understanding of disaster risk. Nevertheless, these villages have undertaken mitigation efforts through the development of clean water infrastructure and natural resource conservation, as well as community capacity-building through the establishment of Climate-Conscious Communities (MSI), which supports Priority 3 of the Sendai Framework on strengthening community resilience.

Keywords: Climate Change; Climate Disaster; Sendai Framework.

INTRODUCTION

Climate change is an increasingly urgent global issue, with impacts on ecosystems and human life that profoundly affect sustainability. This phenomenon has led to erratic weather patterns, rising global temperatures, and changes in the frequency and intensity of natural disasters, particularly hydrometeorological events such as floods, droughts, whirlwinds, and heatwaves [1]. The Intergovernmental Panel on Climate Change (IPCC) report indicates that the global average temperature has increased by 1.1°C in the 21st century and is projected to continue rising, leading to adverse consequences, including increased frequency and severity of natural disasters and ecosystem degradation [2].

As a tropical country, Indonesia is highly vulnerable to climate change, which significantly increases the frequency of hydrometeorological disasters. Data from the National Disaster Management Agency (BNPB) shows that Indonesia experienced an increase in the frequency and intensity of hydrometeorological disasters from 2019 to 2021. In 2019, Indonesia recorded 3,814 disaster events, 85% of which were hydrometeorological, including floods, droughts, landslides, and whirlwinds. Relevant agencies and monitoring institutions recorded 4,650 disaster events in 2020 and, by 2021, documented an increase to 5,402. In 2024, these agencies reported that hydrometeorological disasters accounted for the majority of incidents, totalling 5,593, primarily floods, droughts, whirlwinds, and landslides [3].

The escalating frequency of hydrometeorological disasters due to climate change is increasingly evident in West Nusa Tenggara (NTB), particularly in Central Lombok Regency. Sukadana Village and Segala Anyar Village, located on the southern coast of Lombok, have experienced increased disaster intensity. For instance, a major flood in January 2021 inundated hundreds of homes and agricultural lands, which serve as the community's primary livelihood [4]. According to

data from the Central Lombok Regional Disaster Management Agency (BPBD), the agency recorded 398 disaster events in 2021, most of which were hydrometeorological in nature and damaged agricultural land and residential areas [5].

The communities in Sukadana Village and Segala Anyar Village are highly dependent on agriculture, with most residents working as rice, horticultural, and fish farmers. However, with climate change causing erratic rainfall patterns, longer dry seasons, and the threat of higher sea levels, these sectors are increasingly at risk. The decline in agricultural yields due to drought increases the community's vulnerability. Furthermore, reliance on the tourism sector for economic support increases the sector's vulnerability to climate change, as fluctuating environmental conditions can affect the area's tourism appeal [6].

The threat of climate change in Sukadana and Segala Anyar Villages is very real, particularly given the increased frequency of hydrometeorological disasters, including drought, floods, landslides, and sea waves. These villages are highly vulnerable owing to their coastal location and heavy dependence on agriculture and fisheries. The decline in agricultural yields due to seasonal uncertainty and prolonged dry seasons poses a tangible threat to residents' livelihoods. Moreover, the increasing threat of coastal abrasion can also damage coastal ecosystems and threaten essential infrastructure, such as roads and settlements. This vulnerability makes these villages increasingly dependent on stronger adaptation policies and more effective mitigation efforts to reduce the impact of climate change [6].

Given this vulnerability, it is crucial to involve the community in planning and managing both climate change mitigation and adaptation. Potential adaptation measures include improving early warning systems for hydrometeorological disasters, providing training and education related to disaster mitigation, and strengthening disaster-resilient infrastructure. These adaptation policies align with the principles of the Sendai Framework, which emphasises the importance of disaster risk reduction and community resilience to climate change, ensuring active community involvement at every stage of policy planning and implementation [7]. This study, therefore, aims to identify and analyse the risks and impacts of climate change, and to examine the mitigation and adaptation strategies implemented by communities in Sukadana Village and Segala Anyar Village. This analysis will help researchers and policymakers assess vulnerability to hydrometeorological disasters and apply the Sendai Framework to strengthen local community resilience to climate change impacts.

METHOD

This study utilised a descriptive qualitative approach to describe social phenomena in depth within a specific context. This approach allowed researchers to comprehensively understand the assessment of climate change risk impacts, the level of vulnerability, and the mitigation and adaptation strategies implemented by the communities in Sukadana Village and Segala Anyar Village. The author [8] notes that descriptive qualitative research focuses on exploring phenomena in their natural context by relying on participants' perspectives. The researchers chose this method because the complexity of climate change and its societal impacts require an approach grounded in local communities' experiences, perceptions, and responses.

Types and Sources of Data. The data employed in this research consist of primary data and secondary data. Primary data were obtained through Focus Group Discussion (FGD), in-depth interviews, and direct observation. In-depth interviews were conducted with key and supporting informants who possess knowledge of climate change and the community's mitigation and adaptation efforts in the research locations. The researchers conducted observations to gain a clearer picture of the phenomena or events under study. At the same time, they collected secondary data from relevant sources, including books, journals, policy documents, village profiles, and program reports. The data obtained through in-depth interviews were then confirmed through observation and documentation, using data triangulation techniques to ensure the validity of the field findings [9].

Informant Determination Technique. The informant selection technique used was purposive sampling, in which informants were selected based on specific criteria relevant to the research objectives. These criteria included individuals or groups with knowledge or experience related to climate change, their vulnerabilities, and the mitigation and adaptation strategies implemented in each village.

Data Analysis. The researchers' collected data were subsequently analysed using a data analysis technique adapted from Miles and Huberman. This analysis process consisted of three stages:

Data Reduction: Data obtained through FGD, in-depth interviews, and observation were selected, filtered, and summarised to focus only on information relevant to the research questions.

Data Verification: The reduced data were verified to ensure consistency and to validate the emerging findings.

Conclusion Drawing: After completing the reduction and verification processes, the researchers further analysed the data to determine the impacts of climate change, community vulnerability, and the mitigation and adaptation strategies implemented in Sukadana Village and Segala Anyar Village.

RESULTS AND DISCUSSION

Climate Disaster Threats in Sukadana Village and Segala Anyar Village. This section outlines the profile of climate disaster threats occurring in Sukadana Village and Segala Anyar Village. The researchers collected information on disaster threats in the two villages through participatory Focus Group Discussions (FGDs) involving village-level stakeholders.

1) Priority Climate Disaster Threats in Sukadana Village. Based on the FGD results, Sukadana Village in Pujut District, Central Lombok, faces five types of disaster threats caused by climate change. Among these, drought emerges as the primary priority threat, scoring the highest total value [8]. The likelihood of drought is considered certain (score 4), and its impact is very severe. This drought is highly likely to have a significant effect on food security, the availability of clean water, and the social and economic lives of the village community. Within the framework of the Sendai Framework for Disaster Risk Reduction, drought is categorised as a threat that requires long-term countermeasures, with a focus on reducing disaster risk by mitigating the impacts of climate change.

The second priority threat is landslides, with a total score of 5. Although highly likely to occur, the impact is only anticipated to be somewhat severe. This landslide threat underscores the need for mitigation planning, such as improved drainage systems or reforestation in landslide-prone areas, to reduce long-term risks. In the context of the Sendai Framework, handling landslides should prioritise strengthening community resilience and reducing losses from such disasters.

Flooding ranks third in the village's disaster threat priority, with a total score of 4. This threat is considered only possible, with a somewhat severe impact. Although not the most pressing threat, flooding still needs to be addressed in village development plans, with a focus on strengthening drainage infrastructure and improving spatial planning. This aligns with disaster prevention and risk reduction, a critical pillar of the Sendai Framework.

Although scoring the exact total value as flooding, whirlwinds (putting belonging) do not receive priority attention. With a small likelihood of occurrence and an impact considered somewhat severe, whirlwinds remain a threat that needs to be monitored, but they are not as urgent as drought or landslides. In this case, it is essential to strengthen emergency response capacity and community preparedness for unexpected disasters.

Finally, coastal flooding (banjir rob) has the lowest total score (3) among the other threats. Although there is a little possibility of occurrence, the impact is estimated to be not severe. This threat can be managed through the reinforcement of coastal infrastructure and climate change mitigation, in accordance with the principles of disaster risk reduction within the Sendai Framework.

In principle, the Sendai Framework promotes disaster risk reduction through four main priorities [10, 11]:

1) Strengthening the ability to identify disaster risks,

2) Strengthening community resilience,

3) Reducing losses from disasters, and

4) Enhancing disaster response capability.

In the context of Sukadana Village, a comprehensive approach is needed to reduce disaster risk and enhance community resilience to climate change impacts, in line with the principles outlined in the Sendai Framework.

The table below presents the FGD results on priority threats in Sukadana Village. It classifies various types of climate disaster threats by likeli-

hood of occurrence and estimated impact, assigns a score to each aspect, and calculates a total score by summing the likelihood and impact values to determine disaster threat management priorities.

Table 1 – Priority Climate Disaster Threats in Sukadana Village

Threat Type	Likelihood Score	Impact Score	Total Score	Priority Rank	Description
Drought	4	4	8	I	The participants selected drought as the priority threat.
Landslide	3	2	5	II	
Flooding	2	2	4	III	
Whirlwind (Angin Puting Beliung)	2	2	4	IV	
Coastal Flooding (Banjir Rob)	2	1	3	V	

Legend:

Likelihood of Occurrence	Score	Estimated Impact
Not likely to occur	1	Not severe
Small likelihood of occurrence	2	Somewhat severe
Highly likely to occur	3	Severe
Certain to occur	4	Very severe

2) Priority Climate Disaster Threats in Segala Anyar Village. Segala Anyar Village in Pujut District, Central Lombok Regency, faces three types of climate disaster threats: drought, inundation flooding, and whirlwinds. These were identified through an FGD conducted with key stakeholders at the village level. Stakeholders agreed on the mapping and identification of these climate disaster threats using two indicators: the likelihood of occurrence and the estimated impact of the disaster [12].

Of the three identified climate disaster threats in Segala Anyar Village, drought was recognised as the primary priority threat, with a total score of 7, significantly higher than the other threats (inundation flooding and whirlwinds). This score indicates that drought has a very high likelihood of occurrence (score 4) and a sufficiently severe impact (score 3); this highlights that drought is not only accurately predictable but also poses a serious threat to the livelihood of the village community, particularly concerning food security and the availability of clean water. Within the Sendai Framework for Disaster Risk Reduction, stakeholders must address this significant issue immediately through a systematic approach.

The Sendai Framework emphasises the importance of disaster risk reduction through proactive measures, including risk identification, loss reduction, resilience strengthening, and enhanced disaster response. With drought as the priority threat, the village needs to implement actions focused on mitigation and adaptation. Mitigation involves efforts to reduce the causes and impacts of drought, while adaptation concerns adjusting to the implications that have already occurred or are anticipated [10].

In this context, the first step, aligned with Priority 1 of the Sendai Framework (strengthening the ability to identify disaster risk), is to conduct further mapping of water resources and climate patterns in the village; this is crucial for better drought prediction using current climate data. Improved identification of weather patterns and rainfall distribution allows the village authorities to plan and prepare more effectively and to provide the community with more accurate information on when to prepare for drought.

Furthermore, Priority 2 of the Sendai Framework, which focuses on strengthening community resilience, is highly relevant in facing drought. The community must actively participate in mitigation efforts by adopting water-efficient agricultural techniques and constructing water-saving irrigation systems. The village can also enhance resilience by creating clean water reserve systems, such as reservoirs or recharge wells. Strengthening community capacity through education and training on wise water management will also reinforce their resilience to drought.

Next, within the context of Priority 3 of the Sendai Framework (reducing disaster losses), it is essential to plan measures to mitigate the social and economic losses caused by drought. One key step is enhancing the resilience of the agricultural sector by introducing drought-resistant crop varieties. Additionally, adopting more water-efficient agricultural technologies will help reduce agrarian losses, which are often the sector most affected by drought. Such steps can significantly reduce the economic impact of the drought disaster.

Stakeholders must also apply Priority 4 of the Sendai Framework (enhancing disaster response capability) to drought management. The village should have an effective early warning system that provides the community with accurate information on the drought threat and the necessary steps to take. Drought response also involves distributing clean water to the most affected communities and providing food to prevent famine. Strengthening the capacity of village governance and the community to respond to drought through training and simulations is also vital to improving preparedness for this disaster.

To reduce disaster losses and strengthen community resilience, it is also important to encourage cooperation among the government, the community, and the private sector in developing infrastructure that supports mitigation. Collaborative programs involving various parties will be more effective in mitigating the impacts of drought, such as by building efficient irrigation infrastructure and improving clean water distribution systems. This increased collaboration will also align government efforts with active community participation to address drought more effectively. Overall, by referencing the Sendai Framework, drought in Segala Anyar Village must be viewed as a priority threat that requires immediate attention, with an approach grounded in disaster risk reduction, community resilience, and sustainable natural resource management. Through mitigation, adaptation measures, and capacity building, the village can be better prepared to face the increasingly tangible impacts of drought driven by climate change, thereby improving its resilience against future disasters.

Table 2 – Priority Climate Disaster Threats in Segala Anyar Village

Threat Type	Likelihood Score	Impact Score	Total Score	Priority Rank	Description
Drought	4	3	7	I	Stakeholders selected drought as the priority threat.
Inundation Flooding	2	4	6	II	
Whirlwind	1	4	5	III	

Legend:

Likelihood of Occurrence	Score	Estimated Impact
Not likely to occur	1	Not severe
Small likelihood of occurrence	2	Somewhat severe
Highly likely to occur	3	Severe
Certain to occur	4	Very severe

Analysis of Vulnerability, Risk, and Capacity of Sukadana and Segala Anyar Communities. In the face of drought, both Sukadana and Segala Anyar Villages face various challenges that heighten their vulnerability to climate disasters. Based on data processed from the FGD results, the researchers analysed community vulnerability, risk, and capacity in the two villages by relating them to the Sendai Framework for Disaster Risk Reduction, which outlines four main priorities: strengthening risk identification, reducing disaster losses, strengthening community resilience, and enhancing disaster response capabilities [10].

1) Vulnerability of Sukadana Village. In the context of Sukadana Village, its vulnerability to drought is evident from several significant factors. One major factor is the weak community knowledge regarding drought mitigation and adaptation. This limited knowledge makes it diffi-

cult for the community to anticipate and respond appropriately when drought occurs. Furthermore, policies and programs focusing on drought risk reduction are also relatively weak; this suggests a policy gap that could otherwise encourage the village to adapt to the increasingly tangible effects of climate change. Under Priority 1 of the Sendai Framework (strengthening the ability to identify disaster risk), Sukadana Village needs to enhance community knowledge and awareness related to drought risk.

Additionally, the reduction of natural water sources and prolonged dry seasons further worsen the vulnerability. This condition increases pressure on farmers, who lack the capacity to manage dryland. Consequently, land becomes unproductive, and spring water levels decrease, aggravating the situation. Under Priority 2 of the Sendai Framework (focused on reducing disaster losses), the village needs to introduce more water-efficient agricultural techniques and implement better natural resource conservation measures.

2) Vulnerability of Segala Anyar Village. Segala Anyar Village faces similar vulnerabilities to Sukadana Village, particularly regarding the low level of community knowledge about drought mitigation and adaptation. The community does not fully grasp the importance of mitigation and adaptation practices in facing drought, making them more susceptible to its impacts. This situation leaves Segala Anyar Village less prepared to anticipate drought, consistent with the Sendai Framework's emphasis on strengthening the ability to identify and manage risk.

Moreover, farmers lack alternative livelihoods that can withstand the dry season, and the quality of agricultural land is deteriorating. This decline in soil quality makes the village's agriculture more vulnerable to prolonged drought. Reduced natural water sources serve as an additional factor aggravating this vulnerability. In this regard, the town requires more strategic policies in natural resource management and technical assistance to enhance their agricultural capacity [13].

3) Risks in Sukadana Village. The risks faced by Sukadana Village are pretty complex. One primary risk is disruption to community health due to poor implementation of Clean and Healthy Living Behaviour (PHBS) during drought. The clean water crisis becomes a significant problem, further disrupting the community's daily life. On the economic side, crop and harvest failures threaten farmers' livelihoods, leading to reduced income and increased household expenditures on clean water; this exacerbates families' financial conditions, making it challenging to meet other basic needs. Within Priority 3 of the Sendai Framework (emphasising the strengthening of community resilience), Sukadana Village needs to improve water infrastructure and introduce more efficient water management methods. Social risk also emerges with the presence of social jealousy when clean water aid arrives, indicating that aid distribution during drought needs to be more coordinated and equitable; this highlights the need for better planning in disaster aid distribution and fairer resource management to reduce social tensions [14].

4) Risks in Segala Anyar Village. Segala Anyar Village also faces various risks related to drought. Lack of clean water poses a significant risk, disrupting essential activities such as bathing, washing, and sanitation. Furthermore, household expenditures increase as residents have to purchase clean water to meet daily needs. Crop and harvest failures pose a risk to farmers' livelihoods, worsening the community's economic condition. Dusty village roads also become a problem, deteriorating the community's quality of life, especially during the prolonged dry season.

It is essential to highlight that the social and economic risks faced by both villages demonstrate a high dependence on the agricultural sector, which is vulnerable to climate change, and a lack of income diversification that could withstand drought.

5) Capacity of Sukadana Village. Despite its high vulnerability, Sukadana Village possesses several capacities that can be leveraged to address the drought threat. One is its proximity to health services and facilities, such as the Village Maternity Clinic (Polindes) and the Community Health Post (Pustu), which facilitate community access to medical care during drought-related health issues. Additionally, government and NGO clean water aid serves as an external capacity that supports the community in surviving the clean water crisis. The village also has the Climate-Conscious Community (MSI) institution, which plays a crucial role in raising public awareness about climate change risks and local mitigation methods. The MSI institution also contributes to the conservation of water springs and provides

capital support to farmers to implement more climate-adaptive agricultural practices. Communal efforts (Gotong Royong) to procure boreholes are an initiative that can enhance the village's capacity to independently provide a clean water reserve.

6) Capacity of Segala Anyar Village. Segala Anyar Village also has capacities that can be utilised to face drought. One is its proximity to village health services, which eases access to healthcare for communities affected by drought. Like Sukadana Village, clean water aid from BPBD and volunteers is an essential external capacity that helps maintain the community's survival during a clean water crisis. Furthermore, this village has a Climate-Conscious Community (MSI) institution, similar to Sukadana Village, that aims to increase community awareness of climate change.

Climate Change Mitigation and Adaptation Strategies in Sukadana and Segala Anyar Villages. In addressing the drought threat, the communities in Sukadana and Segala Anyar Villages have implemented mitigation and adaptation strategies that encompass various aspects of life, including livelihoods, water resources, and community resilience. Based on the Sendai Framework for Disaster Risk Reduction, which includes four main priorities (risk identification, loss reduction, resilience strengthening, and response enhancement), the analysis of mitigation and adaptation strategies in these two villages will be elaborated across five main aspects: human, economic, physical/infrastructure, natural, and socio-cultural [10].

1) Human Aspect: Community Knowledge and Capacity. One of the main strategies for drought mitigation and adaptation in both villages is enhancing community knowledge and capacity. The communities in Sukadana and Segala Anyar Villages still exhibit vulnerability regarding knowledge of drought mitigation and adaptation. Therefore, an educational approach is crucial to raise their awareness about the importance of climate-friendly water and agricultural management. Increasing community capacity to understand climate change adaptation methods is an essential element of Priority 1 of the Sendai Framework (strengthening the ability to identify disaster risk). In both villages, institutions like the Climate-Conscious Community (MSI) exist, increasing community knowledge of climate change and locally feasible mitigation methods. By strengthening the community's capacity to identify and understand drought risk, they can be better prepared to face it; this also enhances the Priority 3 component of the Sendai Framework (strengthening community resilience) by ensuring they have the necessary knowledge and skills to survive a drought disaster.

2) Economic Aspect: Livelihood Diversification and Capital Support. The agricultural sector strongly influences the economic conditions in both villages and relies heavily on water availability. One important mitigation strategy is livelihood diversification so that the community is not entirely dependent on agriculture, which is highly vulnerable to drought. However, based on the data, farmers in both villages lack alternative livelihoods during droughts, thereby increasing their vulnerability to significant economic impacts.

To address this issue, local authorities can implement an economic adaptation strategy by providing capital support for farmers, as Sukadana Village has already done through agricultural support programs. This support can include training on more water-efficient farming techniques or introducing drought-resistant agrarian products [13]. Loans from banks and Village-Owned Enterprises (BUMDES) in Segala Anyar Village also serve as examples of economic adaptation efforts to diversify household income. In the context of Priority 2 of the Sendai Framework (focusing on reducing disaster losses), this approach helps decrease community reliance on a single vulnerable income source.

3) Physical/Infrastructure Aspect: Provision of Clean Water Infrastructure. In the face of drought, effective infrastructure management is key to supporting village resilience. In Sukadana Village, clean water aid from the government and NGOs, as well as the conservation of water springs, can help reduce its vulnerability to water shortages. The community also undertakes communal efforts (Gotong Royong) to procure boreholes, a vital infrastructure initiative that provides an independent water supply.

In Segala Anyar Village, a similar strategy is implemented through the construction of boreholes and water storage tanks to ensure access to clean water during the dry season. This infrastructure helps mitigate the impact of the clean water crisis, a primary risk during drought. Both villages demonstrate how an infrastructure-based approach can enhance community resilience in the face of drought, aligning with Priority 4 of the

Sendai Framework, which focuses on improving disaster response capability.

4) Natural Aspect: Conservation and Natural Resource Management. In both villages, natural resource management is critical. Reduced water sources pose a significant challenge for the community. Therefore, one implemented mitigation strategy is the conservation of water springs, implemented by the community in Sukadana Village with support from various parties. This conservation is vital to ensure water resources are maintained and do not further diminish, thereby significantly reducing the impact of drought. Additionally, in Segala Anyar Village, more efficient agricultural land management is also a critical adaptation step. By constructing boreholes and implementing sustainable natural resource management, the community can reduce its reliance on limited water resources, thereby reflecting a nature-based adaptation strategy that strengthens community resilience to drought impacts. Better natural management is part of Priority 2 of the Sendai Framework, which aims to reduce disaster losses by maintaining the sustainability of ecosystems and natural resources.

5) Socio-Cultural Aspect: Communal Effort (Gotong Royong) and Institution. In both villages, communal effort (Gotong Royong) is one of the most essential socio-cultural strategies in facing drought. Gotong Royong, a long-standing tradition, is evident in the procurement of boreholes in Sukadana Village and the construction of water storage tanks in Segala Anyar Village. This socio-cultural strategy demonstrates how values of collectivism and togetherness are utilised to overcome drought disasters collaboratively [15].

Furthermore, the Climate-Conscious Community (MSI) institution in both villages plays a significant role in drought mitigation and adaptation. This institution raises community awareness of the importance of behavioural changes related to climate change and collective disaster mitigation. In the context of Priority 3 of the Sendai Framework, which emphasises strengthening community resilience, this institution significantly increases community participation in disaster mitigation efforts.

CONCLUSIONS

Based on the research findings, the study concludes that Sukadana Village and Segala Anyar Village are highly vulnerable to drought because their economies rely heavily on agriculture and have limited water resources, and that limited community knowledge and inadequate mitigation policies further exacerbate this vulnerability. This condition results in increased living costs and a decline in socio-economic welfare. Nevertheless, both villages have implemented various adaptation and mitigation measures, including climate change education, the development of clean water infrastructure, and the establishment of the Climate-Conscious Community (MSI) institution. These efforts reflect the application of Priority 3 and Priority 4 of the Sendai Framework through strengthening resilience and enhancing disaster response.

Collaboration among the government, the community, and external partners, along with the use of efficient technologies for water and agricultural management, is key to developing community-based adaptation strategies that reduce the impacts of drought and enhance preparedness for climate change. Despite these findings, this research has several limitations that future studies should address to yield richer empirical, theoretical, and methodological insights. Empirically, future researchers should expand the study's scope to include villages with diverse characteristics of climate disasters. Methodologically, future research could use quantitative or mixed-methods approaches to yield more comprehensive results.

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