



Implementation Case Study

Disaster Mitigation: Reducing Risks through Community Empowerment in Urban Areas Prone to Disasters

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Abstract Community empowerment plays a critical role in disaster mitigation by strengthening local knowledge, skills, and collective capacity to manage disaster risks beyond reliance on government assistance. This study aims to examine how community empowerment activities function as urban disaster mitigation practices, using Panjang Sub-district, Bandar Lampung City, as an empirical case. Specifically, the research addresses two guiding hypotheses: (1) that post-disaster community empowerment activities enhance community awareness and preparedness, and (2) that post-disaster conditions stimulate stronger participation from communities and institutions in mitigation efforts. Panjang Sub-district was selected due to its recurrent exposure to floods and landslides. Data were collected through in-depth interviews (n = 10), non-participatory field observations, and analysis of official documents, all conducted between March and June 2023 following a series of flood events in late 2022 and early 2023. Interview data were obtained from purposively selected informants representing the Regional Disaster Management Agency, local government, community leaders, and affected residents. Findings demonstrate that community empowerment in Panjang operates as a staged and conditional process, implemented through enabling, strengthening, protection, support, maintenance, and evaluation mechanisms. The study's novelty lies in empirically showing that economic vulnerability and post-disaster livelihood insecurity shape the sequencing of empowerment, where material support and leadership legitimacy become prerequisites for effective disaster preparedness engagement. By grounding disaster mitigation analysis in clearly specified qualitative data sources, this study contributes original insights into how urban communities in disaster-prone areas co-produce preparedness through socially mediated empowerment processes.

Keywords: disaster, urban community, community empowerment, disaster mitigation

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1. INTRODUCTION

Indonesia is one of the countries in the world that is prone to disasters because it is located on the equator and is an archipelago so that it has a high potential for hydrometeorological-related disasters. Indonesia is an archipelago located on three world tectonic plates, namely the Australian, Pacific and Eurasian plates, enhancing its vulnerability to natural hazards (BNPB, 2014). Disasters are events that threaten and disrupt lives, caused by natural, non-natural, or human factors, leading to casualties, environmental damage, property loss, and psychological impacts (JDIH BPK, 2007). These events can disrupt lives economically, physically, socio-culturally, and psychologically. The resulting abnormal conditions affect individuals and communities, as well as public and economic institutions, particularly in disaster-prone areas (Sitorus et al., 2019).

If such conditions persist without adequate mitigation and preparedness measures, they have the potential to exacerbate existing social and economic vulnerabilities. Previous studies indicate that prolonged disaster impacts may be associated with increased livelihood insecurity (Krishnamurthy, 2012; He et al., 2018; Tora et al., 2022; Alam et al., 2020), disruptions to formal education activities (Segarra-Alméstica et al., 2022; Lassa et al., 2023; Wang, 2024), heightened public health risks (Nomura et al., 2016; Sandifer & Walker, 2018; Leppold et al., 2022), and instability in local employment opportunities (Elliott & Howell, 2017; He et al., 2018; Roth Tran & Wilson, 2025), especially in vulnerable regions. Rather than constituting inevitable outcomes, these risks underscore the importance of timely and coordinated disaster risk reduction efforts. In this context, disasters can exert broader pressures on community welfare and regional economic stability, particularly where institutional and community capacities remain limited (Tierney, 2012; Lin, 2015; Titz et al., 2018). Given the significant impacts associated with recurring disasters, all components of society especially those residing in disaster-prone areas—need to enhance their preparedness, as limited awareness and capacity at the community level may intensify disaster consequences (Rida, 2022).

One of the efforts that must be made by the community to reduce disaster risk is disaster mitigation. Disaster mitigation is a way or effort made to reduce disaster risk through physical, non-physical development and increased knowledge in dealing with disasters (Smit & Wandel, 2006; JDIH BPK, 2007; Sugiharyanto et al., 2014; Suherningtyas et al., 2021). Disaster mitigation aims to reduce disaster risk so that the impact of disasters can be minimized through physical development as well as knowledge and community awareness (JDIH BPK, 2007). Disaster mitigation can be carried out into several stages, namely the pre-disaster stage, during the disaster and after the disaster (JDIH BPK, 2007). So far, disaster mitigation has primarily focused on emergency response and post-disaster activities, while pre-disaster efforts have been neglected. The government has mainly centered on post-disaster recovery and rehabilitation for victims (Yunus et al., 2024), creating a reliance on government support. Ideally, the community, as a component directly affected by disasters, should understand and engage in efforts to reduce disaster risk to enhance preparedness, especially since Indonesia is a disaster-prone area (Tondobala, 2012).

A disaster-prone area is one with a high potential for being affected by disasters, especially natural hazards (JDIH BPK, 2007). Ideally, residents of these areas are prepared to deal with disasters, but many do not understand the risks and lack readiness. The community's unpreparedness has significant impacts, including casualties, health issues, environmental damage, and loss of property and livelihoods. Recently, Indonesia has experienced numerous natural hazards, resulting in casualties and other impacts. Notable events include landslides in Sumedang, West Java (2021), floods in South Kalimantan and South Sulawesi (2021), earthquakes in West Sulawesi (2021) (Hakim, 2021), tsunami disasters in the Sunda Strait (2018) and Serang Banten (2022) (Ramadhani, 2022), and floods in Bandar Lampung city (2023 and 2024) (detikNews, 2025). These events highlight the ongoing unpreparedness among many residents for disasters.

Disaster preparedness is crucial to minimize the risk of disasters and is part of disaster mitigation. One form of preparedness is community empowerment, which enables communities to address their own problems without relying on government programs. This process involves community participation in decision-making related to their lives and environment (Wardhono, 2018). Since communities are most affected by disasters, their participation is vital in addressing these challenges. Community empowerment in disaster mitigation helps build the capacity, independence, awareness, and knowledge necessary for effective disaster response (Wardhono, 2018). Thus, community empowerment is essential for ensuring that individuals are informed and prepared to act when faced with potential disasters affecting themselves, their families, and their environment.

Community empowerment is not a community movement that is casuistic, temporary, and reactive in handling disaster impacts. Community empowerment is an effort to reduce disaster risk which is used as the basis for development policies and strategies so that it is integrated in every policy and planning carried out by the government including the allocation of development budgets at every level (Mapos, 2017). One of the urban areas that makes community empowerment to minimize disaster risk is Panjang Sub-district, Bandar Lampung City. This is crucial because Panjang is vulnerable to both natural hazards, such as floods and landslides, and non- natural hazards, such as the transmission of the COVID virus during the pandemic.

Natural hazards, especially floods and landslides, threaten communities in Panjang Sub-district, Bandar Lampung City. High rainfall is a significant trigger for these disasters, typically occurring during the wettest month of the rainy season, characterized by high intensity and long duration, influenced by the northwest-southeast monsoon pattern (As-syakur et al., 2014).

Kelurahan Karang Maritim, Panjang Selatan, Panjang Utara, and Pidada are prone to landslides in Kecamatan Panjang. The main cause is slope and land use, with additional factors including rainfall, soil type, and rock type. Way Lunik village in Panjang sub-district regularly experiences flooding during rainfall and high tide due to poor drainage and population density, which leads to neglect of environmental hygiene and garbage accumulation in several rivers (Pratama, 2025).

After natural hazards that often occur every rainy season, various parties should carry out disaster mitigation activities. These activities can include socialization or counseling by disaster volunteers, academics, local officials, government agencies, and other groups that provide essential information for disaster management. Both structural and non-structural mitigation activities are important. Non-structural activities include counseling, socialization, creating disaster-prone maps, forming disaster risk reduction teams, and training evacuation teams. Structural activities involve building embankments in flood- and landslide-prone areas, ensuring environmental hygiene, and relocation (Sinambela et al., 2021).

Despite the growing focus on disaster mitigation policies at the national level (Djalante et al., 2017; Ayuningtyas et al., 2021), there remains a notable gap in both theory and practice regarding the implementation of community empowerment in urban areas vulnerable to disasters and its impact on preparedness. Most research has concentrated on policy frameworks (Ayuningtyas et al., 2021; Bang, 2021; Khaspuria et al., 2024; Mardiah et al., 2017; van Niekerk, 2014), technical mitigation strategies (Gireesh Kumar et al., 2021; Khaspuria et al., 2024; Rayawan et al., 2021), or responses following disasters (Leitmann, 2007; Cretney, 2016; Rayawan et al., 2021; Setyonugroho & Maki, 2024), while empirical studies on community-driven mitigation efforts, especially in urban settings, are scarce (Soltesova et al., 2014). Consequently, communities are often perceived as uniform and passive recipients of policy actions, with little exploration of the micro-level dynamics of empowerment as experienced and negotiated by local stakeholders. This study addresses this gap by highlighting community empowerment as a crucial but underexplored aspect of urban disaster mitigation (Titz et al., 2018; Imperiale & Frank, 2021). The novelty of this study lies in moving away from a normative, top-down approach to a process-oriented analysis that investigates daily practices, the involvement of various actors (such as local leaders, volunteers, and residents), and social interactions that influence preparedness. Through a case study of the Panjang Sub-district, this research illustrates that empowerment is both conditional and phased, influenced by socioeconomic limitations and the credibility of local leadership. This approach not only adds to the existing body of literature but also provides a process-based framework that connects macro-level disaster mitigation theories with the intricate contextual realities of localized urban community practices in Indonesia.

This paper is structured as follows. The next section presents the Study Region, describing the geographical, socioeconomic, and hazard characteristics of Panjang Sub-district as the empirical context of this research. It is followed by the Methodology section, which explains the research design, data collection techniques, and analytical procedures used to verify the proposed hypotheses. The subsequent sections present the empirical findings, discuss their theoretical implications in relation to disaster risk reduction literature, and conclude with key contributions and policy implications.

2. STUDY REGION

Panjang is one of subdistricts in Bandar Lampung, Indonesia. Based on the Regional Regulation of Bandar Lampung Municipality Number 04 of 2012, the geographical location and administrative area of Panjang subdistrict comes from Panjang subdistrict and Teluk Betung Selatan subdistrict with the following boundaries (see Figure 1): To the north, it is bordered by Sukabumi subdistrict. To the south, it is bordered by Teluk Lampung. In the east, it is bordered by South Lampung regency. In the west, it is bordered by Bumi Waras subdistrict (BPS Kota Bandar Lampung, 2024).

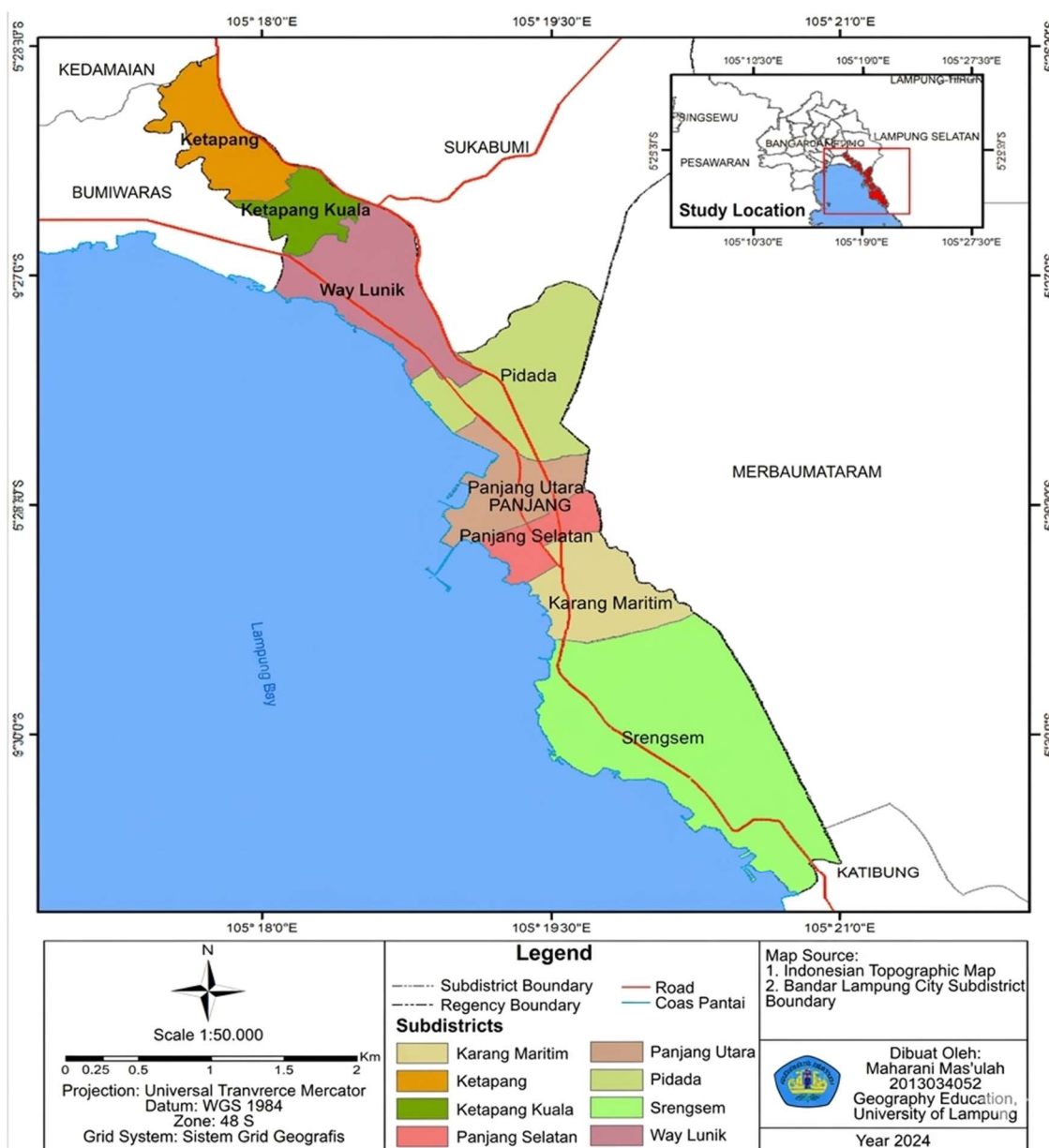


Figure 1. Location map of Panjang subdistrict (Maharani, 2024)

Panjang District has an area of 13.63 Km². With this area, Panjang District consists of 8 villages, namely: Srengsem, Panjang Selatan, Panjang Utara, Pidada, Karang Maritim, Way Lunik, Ketapang, Ketapang Kuala. Panjang is located at an average altitude of 25 meters above

sea level. Topographically, some of the area is lowland or coastal and some is hilly area (BPS Kota Bandar Lampung, 2024). Panjang Sub-district is a strategic area because it is a route passed by people coming from Sumatra to Java and from Java to Sumatra through the Bakauheni crossing port in South Lampung Regency. In addition, Panjang Sub-district is an area surrounded by factories from various industries so that Panjang is known as the center of industry in the Bandar Lampung city area (Hidayati, 2024).

The population in Panjang is quite large at 74,585 people with a population density of 5,492 people (BPS Kota Bandar Lampung, 2024). The density of the population can be seen from the number of settlements that are crowded together, both on the side of the road, narrow alleys and on the hills (Hidayati, 2024). Such conditions make the community in Panjang vulnerable to natural hazards, including floods and landslides (see Figure 2 and 3), especially when the environment is not clean and drainage in some places is not functioning properly.



Figure 2. Houses affected by landslides due to heavy rains in Panjang sub-district (Kumparan, 2019)



Figure 3. Flood disaster in Panjang sub-district, Bandar Lampung city (detikNews, 2025)

Panjang Sub-district has a medium high ground motion potential (PVMBG, 2019). This has resulted in many landslides, particularly in Pidada Village during the rainy season. Landslides have occurred multiple times, damaging houses and causing cliffs on several roads to collapse, which cut off residents' access to various locations in Panjang Sub-district (Syah et al., 2019). Here are some pictures of the floods and landslides that occurred in Panjang Sub-district, Bandar Lampung City.

Administratively, Panjang District is one of the 20 districts in Bandar Lampung City. According to the geological map of the Tanjung Karang Sheet (Mangga et al., 1993), the district is influenced by the active Lampung-Panjang fault, forming hilly terrain with steep slopes. Most residential areas and supporting infrastructure are built on these slopes, making them highly vulnerable to landslides (Syah et al., 2019). Additionally, floods frequently occur during heavy rainfall, primarily due to poor drainage systems that prevent rainwater absorption. Environmental degradation from land conversion into residential or industrial areas also reduces groundwater absorption capacity (Saputra, 2025).

This physical vulnerability is exacerbated by significant socio-economic vulnerability. Panjang Sub-district records the highest number of poor residents among the 20 sub-districts in Bandar Lampung City, as shown in Figure 4. This condition indicates a higher concentration of economically vulnerable households compared to other sub-districts. These economic constraints directly affect the community's capacity to participate in disaster mitigation programs and reinforce the cycle of vulnerability. Therefore, the combination of high physical hazard exposure and profound socio-economic vulnerability makes Panjang Sub-district a highly relevant study area for examining community empowerment in the context of urban disaster mitigation.

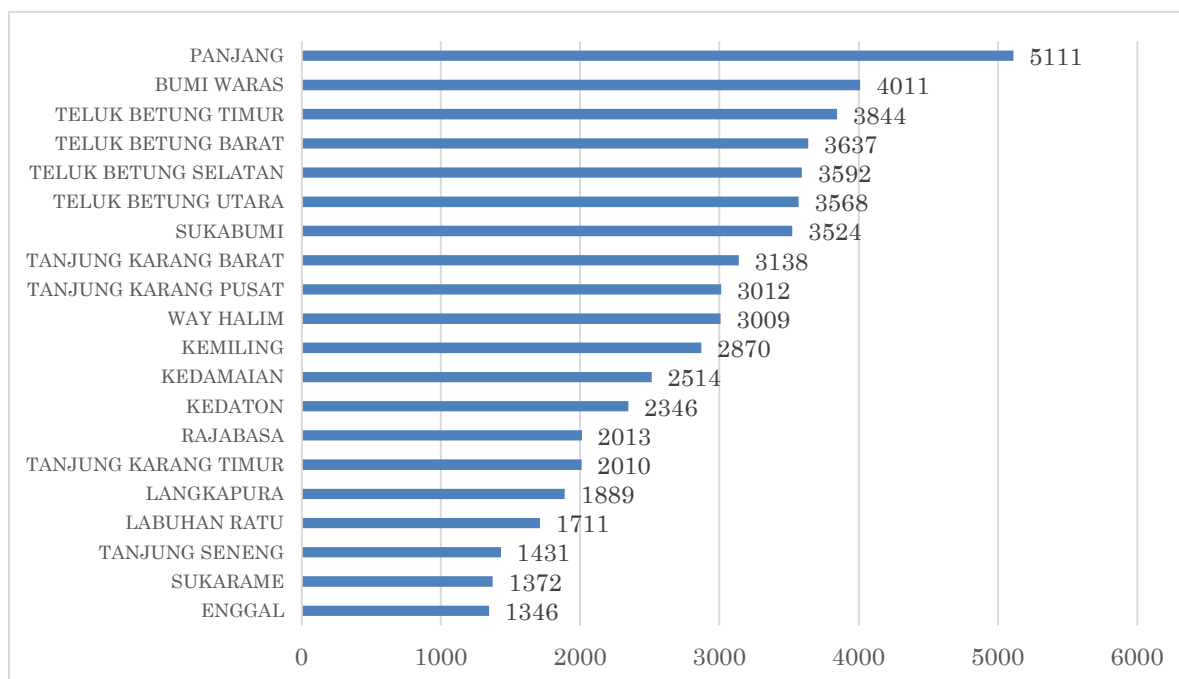


Figure 4. Number of Poor Residents in Bandar Lampung City (BPS Kota Bandar Lampung, 2022)

This research was conducted in Panjang Sub-district, one of the urban areas in Bandar Lampung City. Panjang has both highland and lowland topography, making it prone to flooding and landslides during heavy rainfall (BPS Kota Bandar Lampung, 2024). Observations indicate that Panjang is densely populated, with crowded settlements along roads, narrow alleys, and hills, many of which are slums with poor environmental hygiene, increasing the risk of flooding. The area frequently experiences natural hazards, including landslides and floods, which can cause physical damage and casualties, necessitating assistance from various parties (BPS Kota Bandar Lampung, 2022).

Figure 4 presents the number of poor residents by district in Bandar Lampung City based on official data from Statistics Indonesia (BPS). In this study, poverty is defined according to the BPS standard, namely individuals whose average monthly per capita expenditure falls below the official poverty line, which is calculated based on minimum food and non-food consumption needs (BPS Kota Bandar Lampung, 2022). Using this definition, Panjang District records the highest number of poor residents among the 20 districts in Bandar Lampung City, indicating a relatively higher concentration of economically vulnerable households compared to other districts.

3. DATA COLLECTION, MATERIALS AND METHODS

The method is the right way to solve research problems and achieve research objectives through systematic thought. Research involves various methods to address these problems (Rifa'i, 2023). The type of research used is descriptive qualitative, aiming to analyze and describe the community empowerment activities as a form of disaster mitigation in urban communities in Panjang District, Bandar Lampung City. This research seeks to carefully describe the characteristics of a symptom. The qualitative method produces descriptive data in the form of written or oral words from sources or informants and observes the behavior of the research subjects (Moleong, 2016; Ariyanto, 2023).

Guided by the research objectives, this study proposes the following hypotheses: (1) community empowerment initiatives conducted after disasters enhance community awareness and readiness for disaster risk reduction, and (2) post-disaster scenarios foster greater involvement of local communities and institutions in disaster mitigation efforts. These hypotheses are not mere conjectures but are rooted in the established disaster risk management literature. The first hypothesis is consistent with the principles of Community-Based Disaster Risk Management (CBDRM), which suggest that empowerment activities—such as training, participatory drills, and building local capacity—are essential for boosting community awareness and converting it into tangible preparedness actions (Seng, 2012; Gaillard & Mercer, 2013). The second hypothesis is underpinned by the concept of "focusing events" in disaster studies, where a major disaster serves as a catalyst that disrupts normalcy, increases risk perception, and opens a window for enhanced collective action and participation in mitigation efforts (Birkland & Warnement, 2014; Tierney, 2025).

In this qualitative study, these hypotheses were verified through systematic data triangulation rather than statistical testing. For Hypothesis 1, verification will involve gathering evidence from (a) interview narratives where participants clearly express increased knowledge, altered attitudes, or intentions to adopt preparedness measures; (b) direct observations of preparedness behaviors (e.g., community members cleaning drains, conducting evacuation drills, or maintaining emergency supplies); and (c) relevant documents (e.g., minutes of community meetings discussing disaster plans, photographs of drills). For Hypothesis 2, verification will be established by (a) analyzing interview transcripts for causal narratives linking the post-disaster experience to a deliberate decision to engage in mitigation activities, (b) observing and documenting increased attendance and active participation in community-led mitigation programs compared to pre-disaster periods, and (c) identifying the emergence of new community-based organizations or institutional collaborations formed specifically in response to the disaster. These analytical strategies ensured that the conclusions drawn were robustly supported by empirical data collected from the field.

3.1 Data Collection Technique

Data collection carried out in answering research problems is by means of in-depth interviews, observation and documentation studies.

3.1.1 In-Depth Interview

In-depth interviews are dialogues between researchers and informants related to the research focus. The quality of the interview results is determined by the interviewer, respondent or informant, questions, and the situation at the time of the interview (Kartini, 1996). In qualitative research, interviews can be conducted face-to-face, by telephone, or through focus group interviews (Ahmadi & Narbuko, 1997).

In this study, interviews occurred as dialogues between researchers and interviewees, either in-person or by telephone if additional information was needed. These interviews involved directly visiting informants at their residences and conducting focus group discussions (FGD) by dividing informants into several groups in the same setting, specifically at the Panjang sub-district meeting hall (see Figure 5).



Figure 5. FGD with community, government officials and community leaders in Panjang Sub-district, Bandar Lampung City

All interviews and FGDs were conducted between March and June 2023, following a series of flooding events that affected Panjang Sub-district in late 2022 and early 2023. Conducting the study in a post-disaster context allowed respondents to reflect on their experiences, responses, and learning processes related to disaster mitigation, which is known to influence perceptions and attitudes toward disaster prevention.

The tools used for interviews included recording devices, cameras, stationery, and interview guidelines. The guidelines served as a framework for researchers to conduct questions and answers with informants. The questions aimed to address the main points related to the research problems. While conducting interviews, questions may evolve to explore information in depth, but the interviewer must keep the interviewee focused on the main point. The interview guidelines must be well understood by the researcher, as they are responsible for asking and explaining to the informant. Through interviews, researchers can gather and comprehend information related to research problems that cannot be fully obtained through observation or documentation (Mahmudah, 2021).

This study conducted in-depth interviews with 10 purposively selected informants. The complete profiles and key quotations from each informant, coded to ensure confidentiality and facilitate referencing, are presented in Table 1.

Interviews were conducted with 10 informants selected through purposive sampling. Selection criteria included: (1) direct involvement in post-flood disaster mitigation or recovery activities; (2) active participation in community empowerment programs; and (3) institutional roles related to disaster management or local governance. Based on these criteria, informants consisted of community members affected by flooding, local community leaders, sub-district government officials, and representatives of the Bandar Lampung City Disaster Management Agency (BNPB). This approach ensured that the data reflected diverse perspectives while remaining closely aligned with the study's objectives.

3.1.2 Observation

Observation is a data collection technique involving direct observation of all activities related to the research problem, including recording to obtain complete and concrete data (Sugiyono, 2016).

This study employed non-participatory observation, meaning that researchers did not take part in community activities but positioned themselves as external observers to minimize intervention bias. Nevertheless, researchers sought to interpret observed activities by situating them within the social and post-disaster context of the community.

Observations were conducted between March and June 2023, concurrently with the interview process. Field observations focused on: (1) post-disaster environmental conditions, including flood-affected residential areas; (2) community-led clean-up and recovery activities; (3) existing mitigation infrastructure such as drainage systems, evacuation routes, and warning signage; and (4) the implementation of community empowerment and disaster preparedness programs. Observations were carried out through systematic field notes, photographic

documentation, and cross-referencing with interview findings. The observation data functioned as triangulation material, supporting and validating information obtained from interviews by providing direct empirical evidence of post-disaster mitigation practices in Panjang District.

Table 1. Informant Profiles and Key Research Quotations

No.	Informant Code	Community Role	Key Quotation (Summary)	Main Theme
1	TM-01	Community Leader	"Together with residents, we prepared a proposal for assistance and submitted it to nearby companies. The requested support included basic food packages and funds to help the most vulnerable families."	FULFILLING (Basic Needs)
2	RT-01	Neighborhood Head	"Seeing the residents' condition, we could not only talk about disasters. We agreed to organize activities that could support the local economy, such as skills training and small businesses."	FULFILLING (Basic Needs)
3	CAM-01	Secretary of Panjang Subdistrict	"Mitigation programs will be difficult to implement if the community's economy is unstable. Therefore, we initiated entrepreneurship training so residents could have additional income."	FULFILLING (Basic Needs)
4	KEL-01	Village Official	"The training concept was developed collaboratively with residents. The risks discussed were those they personally experienced, making the learning process more participatory and contextual."	EMPOWERING
5	BPBD-01	Staff of the Bandar Lampung City Regional Disaster Management Agency	"Our training was not conducted only once, but repeatedly and adapted to local conditions. We collaborated with academics to ensure the material was relevant to the actual risks faced by the community."	EMPOWERING
6	W-01	Resident	"We did not only listen to the material; we directly practiced evacuation simulations and first aid. That made us more confident if a disaster occurs."	EMPOWERING
7	W-02	Resident	"When the flood occurred, we lost belongings, our homes were damaged, and psychologically we were affected because we had to evacuate."	PROTECTION
8	W-03	Resident	"We received basic food packages from a program distributed by the Mayor of Bandar Lampung. This assistance was very helpful, especially during difficult economic conditions."	FULFILLING (Basic Needs)
9	TM-02	Community Leader	"After the training, residents formed small teams such as evacuation and first aid groups. These groups remain active even after the training ended."	EMPOWERING
10	W-04	Resident	"The presence of the government and the quick assistance made residents feel cared for, so they were willing to remain involved in future preparedness activities."	PROTECTION

3.1.3 Documentation

Documentation is a record of past events, consisting of data collected from written documents, reports, and official letters. It can also include images, sketches, and other works.

Written documentation may take the form of history, profiles, and diaries (Usman & Akbar, 2022). In this study, documentation is not treated as an independent research method, but as supplementary data that supports and corroborates findings from interviews and observations.

The documents collected consist primarily of public and official documents, including government reports, policy documents, program implementation records, institutional profiles, archival photographs, and publicly accessible records related to disaster mitigation activities (see Figure 6) in the Panjang Sub-district. Public documents are prioritized due to their higher reliability, transparency, and verifiability compared to private or personal records.

Written documentation used in this study includes historical records, official profiles, relevant previous research publications, and government-issued documents, while photographs are used to illustrate and contextualize observed mitigation activities and infrastructure. These materials function as supporting evidence to strengthen data triangulation and enhance the credibility of the qualitative analysis, rather than as primary data sources for analysis.



Figure 6. Flood Mitigation in Panjang Sub-district carried out by the Bandar Lampung city government

3.2 Data Analysis Technique

Referring to the qualitative nature of this research, data analysis follows the interactive model proposed by Miles and Huberman (1994). Qualitative data analysis in this study is not merely descriptive but is explicitly directed at answering the research objective, namely, to explain how urban community empowerment activities in Panjang Sub-district function as disaster risk mitigation practices. The analysis focuses on interpreting meanings embedded in interview transcripts, field observations, and documents rather than on numerical measurement (Herdiansyah, 2013). According to Miles and Huberman (1994), qualitative data analysis is conducted interactively and continuously throughout the research process so that emerging findings can be consistently aligned with the research questions. In this study, the interactive process (Figure 7) ensures that the analysis remains focused on identifying forms, processes, and outcomes of community empowerment activities related to disaster mitigation, rather than producing general theoretical descriptions. The stages applied include data reduction, data

presentation, and conclusion drawing/verification (Sugiyono, 2016), all of which were operationalized using data collected specifically from interviews, observations, and documents in the Panjang case study.

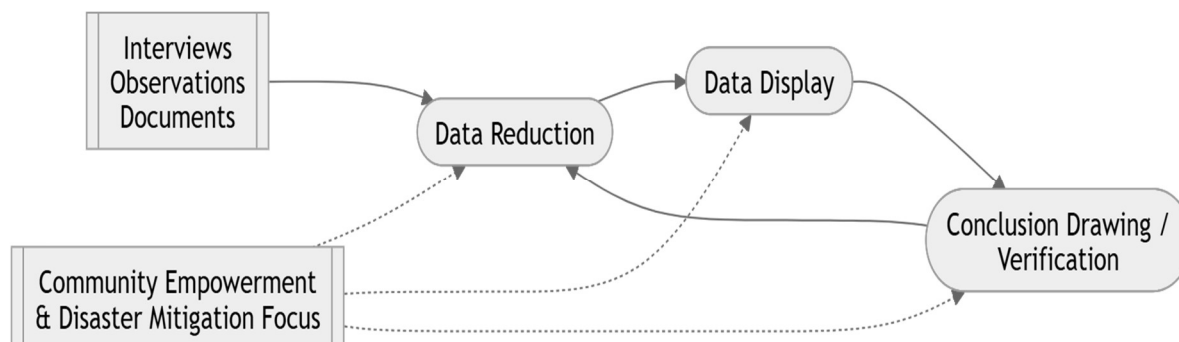


Figure 7. Interactive qualitative data analysis model applied to examine community empowerment as disaster risk mitigation in Panjang Sub-district (Miles & Huberman, 1994)

3.2.1 Data Reduction

Data reduction involves selecting, focusing, and simplifying raw field data to ensure relevance to the research objectives. In line with the analytical flow shown in Figure 7, data reduction in this study specifically filtered interview statements, observational notes, and documents that describe community participation, institutional roles, types of empowerment activities, and perceived mitigation outcomes in Panjang Sub-district. This step ensured that only data directly related to disaster mitigation practices at the community level entered the subsequent stages of analysis, while data unrelated to disaster mitigation or community empowerment processes were excluded to maintain analytical focus.

3.2.2 Presentation of Data (Data Display)

Data presentation is the next stage following data reduction. As represented in Figure 7, reduced data were systematically organized after iterative review, and displayed in narrative form supported by tables and figures derived from the Panjang field data. These presentations highlight concrete linkages between specific empowerment activities, involved community actors, and observed mitigation practices, enabling systematic comparison across data sources (interviews, observations, and documents) and facilitating interpretation in direct relation to the research questions.

3.2.3 Conclusion Drawing (Verification)

Drawing conclusions is the final stage of data analysis. Conclusions are developed inductively from recurring patterns identified during data reduction and presentation. Consistent with the interactive loop illustrated in Figure 7, conclusion drawing was not treated as a terminal step, but as a process repeatedly verified against field evidence. Verification was conducted continuously by comparing emerging interpretations with field data and follow-up confirmations from informants. The conclusions therefore represent case-specific, empirically

grounded explanations of how community empowerment activities in Panjang District contribute to disaster risk mitigation, rather than generalized assumptions.

3.3 Data Validity Technique

Data validity is a critical component of this qualitative research to ensure that analytical conclusions are credible and empirically grounded (Moleong, 2016). In this study, data validity is directly integrated into the data analysis process to strengthen the trustworthiness of interpretations related to community empowerment and disaster mitigation practices, rather than serving as a separate or purely procedural requirement (Sugiyono, 2016). The study applies triangulation to verify consistency between data analysis results and empirical evidence. Triangulation ensures that interpretations derived from the Miles & Huberman analytical stages are supported by multiple data sources, methods, and time frames.

3.3.1 Source Triangulation

Source triangulation is used to examine consistency across different informants. Findings derived from interviews with the Bandar Lampung City Disaster Management Agency (BNPB) were cross-checked with statements from local government officials, community leaders, and residents to validate interpretations of empowerment activities as disaster mitigation efforts in Panjang District.

3.3.2 Triangulation of Methods

Method triangulation verifies findings by comparing data obtained through different techniques. Interview data were systematically compared with observations, FGDs, and documentation to confirm whether reported empowerment activities were consistent with observed practices and documented programs related to disaster mitigation.

3.3.3 Time Triangulation

Time triangulation involves data collection at different periods. In this study, follow-up interviews conducted at different times within the post-disaster context were used to verify the stability of participants' responses. This process strengthens analytical conclusions by ensuring that interpretations are not based on temporary conditions or situational bias. Researchers and informants agree on the appropriate time for follow-up interviews to ensure a relaxed and open atmosphere for data confirmation.

4. RESULTS

This study set out to test two hypotheses concerning the dynamics of community empowerment for disaster mitigation in an urban, disaster-prone setting. The findings, derived from a comprehensive analysis of interviews, field observations, and official documentation, provide robust empirical support for both hypotheses. The data reveal a complex reality where

community empowerment is not a monolithic or uniformly applied intervention but a deeply contextual process. The central finding is that community participation in Panjang Sub-district is not automatic or guaranteed; rather, it is heavily conditional upon two primary factors: the perceived legitimacy of local leaders and the degree to which mitigation programs can be meaningfully integrated into the everyday economic interests and survival strategies of residents. When programs were perceived as abstract socialization exercises lacking direct, tangible benefits, a marked decrease in participation was consistently observed. This suggests that community capacity is not a static resource to be simply "built," but a dynamic state negotiated through rational cost-benefit calculations made by residents who must constantly prioritize immediate livelihood needs over longer-term, less certain goals like disaster preparedness.

These physical and socioeconomic vulnerabilities provided the contextual foundation for this study, as disaster mitigation efforts in Panjang District emerged not in a vacuum, but as adaptive responses shaped by recurring hazard exposure and the lived experiences of post-disaster recovery. The approach to minimizing these risks was twofold, encompassing both structural and non-structural mitigation. While non-structural measures like community empowerment are often favored for their lower cost, structural mitigation remains an essential component of a comprehensive risk reduction strategy (Wahid, 2023). Research findings from field observations and document analysis indicate that the structural mitigation efforts implemented in Panjang District were multifaceted and targeted specific geotechnical and hydrological vulnerabilities. These efforts included: (1) the improvement and maintenance of road drainage systems, with a focus on ensuring watertightness to prevent water seepage into the soil, which could destabilize slopes, and to prevent overflow onto road surfaces during high-intensity rainfall; (2) systematic slope cutting on steep hillsides to reduce the angle of repose and the associated landslide risk, coupled with strict enforcement of building prohibitions on these modified slopes to prevent overloading them with additional weight; (3) regular drainage maintenance and repair throughout the sub-district, particularly in densely populated areas, to enhance water flow management, clear blockages from debris and waste, and prevent localized flooding that could weaken building foundations; and (4) the proactive filling and compacting of visible soil cracks, especially in hilly areas, to create a barrier against water infiltration, which is a primary trigger for slope failure and land movement. While these physical interventions are crucial for reducing hazard exposure, the data indicated that their impact extended beyond the purely technical.

Structural mitigation efforts in the Panjang District are clearly visible through slope cutting and drainage improvement. For example, based on field observations conducted in 2023, the researcher observed: *"In the hilly areas of Panjang District, the researcher observed slopes that had been cut so that their gradient appeared gentler compared to the surrounding areas. No permanent buildings were observed on the slopes. There were visible traces of heavy equipment work, and the soil surface appeared compacted"*. This indicates the presence of physical interventions aimed at reducing the landslide risk.

The second, and more extensive, approach was non-structural mitigation, centered on community empowerment. This process was spearheaded by the Regional Disaster

Management Agency (BPBD) of Bandar Lampung City, which operated in close collaboration with local government officials at the sub-district and urban village levels, as well as with community leaders and academic volunteers. The objective of these initiatives was to address the multifaceted disaster threats and the specific vulnerabilities of at-risk groups by building human and social capacity. The community empowerment process in Panjang District formally adopted the 5P approach proposed by Suharto (2005)—Enabling, Empowering, Protection, Supporter, and Maintenance—as a guiding framework for the activities carried out by various stakeholders in collaboration with relevant institutions. The implementation of this framework unfolded in a distinct, observable sequence.

4.1 Enabling

The first step involved creating a conducive environment that would allow the community's inherent potential to develop optimally (Suharto, 2005). Research findings from in-depth interviews revealed that urban communities in Panjang perceived their mobility and agency as severely limited by economic constraints. The daily struggle for economic survival forced them to prioritize basic needs—such as food, shelter, and daily income—over participation in empowerment programs that did not offer immediate material returns. This finding, which emerged strongly from resident interviews, was powerfully corroborated through method triangulation. Observations of low turnout at daytime training sessions provided direct, visible evidence of the economic prioritization that residents reported in interviews, validating the claim that work commitments are a significant barrier to participation. This condition is inextricably linked to the high level of poverty in Panjang District, which, according to data from the Central Statistics Agency (BPS Kota Bandar Lampung, 2022), is the highest in Bandar Lampung City.

Economic constraints are a major barrier to community participation. Mr. AL (resident) emphasized: *“Regarding participation in empowerment or disaster preparedness activities, we actually want to join. But economic limitations make it difficult for us to leave our daily work, especially if transportation costs are involved.”* This condition was reinforced by Mr. AS (community leader): *“For residents, the most important priorities right now are food, school fees, and household needs. Empowerment programs are often not seen as urgent if basic needs have not yet been met.”*

The relevance of Figure 4, which illustrates this poverty concentration, is paramount as it empirically links socioeconomic vulnerability with delayed or selective participation in disaster mitigation. It clarifies why empowerment initiatives in Panjang could not begin with technical training but required an initial "enabling" phase focused on livelihood security before any behavioral change related to preparedness could be expected. This economic reality resulted in initially low community enthusiasm for participating in disaster mitigation programs initiated by the government or other institutions. In response, local leaders and officials, such as neighborhood heads (RT), community heads (Kaling), and village chiefs (Lurah), organized and facilitated socio-economic programs. A key activity was entrepreneurship training, where

student volunteers and academics were invited to serve as trainers to enhance residents' skills and potentially open new income streams.

Furthermore, in a display of proactive agency, residents, along with local leaders and RT representatives, collectively submitted aid proposals to nearby industries, requesting basic necessities and financial assistance to support the most impoverished families. Other forms of direct material support were also mobilized, including the distribution of food packages provided by the Mayor of Bandar Lampung City, as documented in Figure 8. With this economic support and the visible concern from their leaders, residents became demonstrably more focused and motivated to participate in the subsequent community empowerment programs. Their increased awareness of the importance of disaster risk mitigation was amplified by encouragement from these respected community figures. For the residents of Panjang, local leaders and government officials are not just administrators; they are role models. The process of electing neighborhood heads (RTs) typically involves choosing individuals whom residents admire and trust, ensuring that instructions and guidance from these figures are generally well received.



Figure 8. Distribution of Basic Necessities by the Bandar Lampung City Government in Panjang District (Source: Research Informant)

4.2 Empowering

This stage focused on enhancing community knowledge and skills to help them address problems more independently (Suharto, 2005). The underlying logic is that strengthening knowledge and skills enables communities to manage challenges without excessive reliance on external government assistance, fostering resilience. Research findings indicated that to minimize disaster risks, the BPBD of Bandar Lampung City, in collaboration with local government officials and community leaders, conducted extensive disaster awareness campaigns throughout Panjang District. These campaigns were designed to highlight the community's specific disaster vulnerabilities and to stress the imperative for collective, coordinated efforts to address them. Several awareness programs were organized, featuring

speakers from BPBD Bandar Lampung, with local government officials providing logistical support and community leaders, RTs, and neighborhood heads actively disseminating information and encouraging participation.

Many of these programs were held at the Panjang District meeting hall, a neutral and accessible venue that attracted significant local participation, as shown in Figure 9. In addition to these broader socialization activities, a more intensive and repeated initiative was the conduct of hands-on training programs. These sessions were conducted repeatedly by the BPBD in collaboration with academic volunteers, and their novelty lay not in the training content itself, but in its distinctive implementation. The training was characterized by: (1) Context-Based Awareness Raising, which emphasized locally experienced hazards and community-identified risks over generic national guidelines, enabling residents to recognize neighborhood-specific early warning signs; (2) Applied Skill Development, which focused on hands-on, simulation-based learning for evacuation procedures, first aid, shelter management, and emergency communication, effectively bridging the gap between theoretical knowledge and practical application; (3) Community-Led Organization, which strengthened local capacity by forming and nurturing locally rooted response groups, such as first aid teams and evacuation units, that were designed to operate beyond the duration of the training program; (4) Adaptive Emergency Response and Preparedness, where training modules were specifically adapted to the unique dynamics of an urban disaster environment (e.g., traffic congestion, high-rise buildings); (5) Structured Formation of Disaster Volunteers, where volunteer recruitment was embedded within the training process, producing community members who were not only technically proficient but also socially recognized as legitimate local disaster responders; (6) Participatory Risk Management Improvement, which facilitated community-driven risk identification and vulnerability assessment, empowering participants to actively map risks and prioritize mitigation strategies based on their lived experience; and (7) Cross-Sector Coordination and Collaboration, a novel feature involving the direct, joint participation of government agencies, academic institutions, and civil society actors in exercises, thereby strengthening both horizontal and vertical coordination channels for future emergencies.



Figure 9. Disaster awareness campaign at the Panjang District Meeting Hall (Source: Research Informant)

Participation-based training enhances community preparedness. Mr. SP (BPBD officer) explained, “Our training is not conducted only once, but repeatedly and tailored to local conditions. We collaborate with academics to ensure the materials are relevant to the actual risks faced by the community.” Its effectiveness was directly experienced by Mr. IH (resident): “We did not just listen to the material but directly practiced evacuation simulations and first aid. That made us more confident in the event of a disaster.”

4.3 Protection

Vulnerable groups are the primary priority in disaster responses. Mr. SP (BPBD officer) emphasized: “*Those most affected are low-income communities living on hillsides, riverbanks, and in densely populated areas. They experience the greatest impact of floods and landslides.*” This multidimensional impact was expressed by Mr. AL (resident): “*When floods occur, we lose belongings, our homes are damaged, and psychologically we are also affected because we have to evacuate.*”

This stage refers to the direct assistance provided to vulnerable communities who are immediately affected by disaster impacts. The communities most disproportionately impacted by natural hazards are invariably the poor. In the context of Panjang District, the most vulnerable groups were identified as those residing in precarious hilly areas prone to landslides, in slum settlements constructed along riverbanks susceptible to flooding, and in densely populated areas characterized by poor sanitation and inadequate drainage systems. When natural hazards such as floods and landslides occurred, their effects were felt immediately and acutely by the residents of Panjang District, particularly the impoverished, impacting them in both material (loss of property, income) and non-material (psychological distress, disruption of social networks) ways. In response, the BPBD of Bandar Lampung City, supported by government officials and local leaders, mobilized swiftly to assist those affected. The assistance provided was multi-pronged and included the immediate relocation of disaster-affected residents to designated evacuation shelters, the distribution of various forms of aid from multiple government and private sources, and the organization of community-wide efforts to help residents clean up mud and debris from flood-affected areas to mitigate the disaster's long-term impact and enable them to resume their daily activities as quickly as possible. Additionally, the BPBD, supported by local authorities, established temporary health posts, rehabilitation centers, relief centers, and evacuation shelters specifically aimed at helping residents cope with the immediate aftermath of the disaster. Furthermore, in a show of institutional-community partnership, government officials, local leaders, and community members collaborated to form ad-hoc disaster response groups, first aid teams, evacuation teams, and disaster monitoring groups to manage the crisis.

4.4 Supporter

This stage involves providing the guidance, resources, and assistance necessary for the community to fulfill its roles and life functions effectively in the context of disaster

management (Suharto, 2005). In Panjang District, the BPBD of Bandar Lampung City played a central coordinating role, working in concert with government officials and local leaders to plan and carry out community empowerment activities, ensuring their effective implementation and alignment with broader disaster mitigation goals. A key finding was the receptiveness of local government officials, who provided necessary venues and facilities for awareness programs or training sessions, demonstrating institutional buy-in. To ensure these activities ran smoothly and achieved their target objectives, they were also actively supported by the grassroots-level network of neighborhood units (RT), community leaders (LK), and other respected local figures. These individuals played an indispensable role in mobilizing participation by actively encouraging, informing, and personally inviting other community members to engage in the initiatives.

4.5 Maintenance

This stage refers to the efforts undertaken to achieve and sustain a conducive condition for disaster resilience through continuous empowerment activities, ensuring harmony, balance, and long-term sustainability (Suharto, 2005). In Panjang District, maintenance efforts were innovatively carried out through a layered network of WhatsApp groups established within each neighborhood. These digital platforms served as a vital, low-cost communication hub for community members to discuss and address various issues in their areas in real-time. The groups were structured hierarchically: there were community WhatsApp groups for each Neighborhood Unit (RT), groups that connected all RTs within a given village with the village head (lurah), and a top-level group that linked all village heads with the sub-district head (camat). The critical role of these networks was definitively captured through timing triangulation. In the pre-disaster phase, these groups were a medium for information sharing. However, observations during the immediate post-disaster phase revealed their evolution into essential, real-time coordination tools for evacuation and resource management, a function that was only hinted at in initial interviews. This temporal analysis confirmed that the value of such tools is fully realized only when a disaster strikes. These WhatsApp groups enabled rapid coordination during emerging disaster-related issues, served as a primary medium for sharing official and verified disaster-related information, and functioned as a continuous communication channel for rebuilding and refining disaster mitigation programs based on the community's ongoing experiences. The tangible results of these maintenance and empowerment activities were also evident in the formal establishment of disaster response community groups in each village. These groups were created to provide timely information on early signs of disasters, implement localized risk reduction measures, maintain communication with local residents to sustain preparedness levels, and represent the community's interests in external disaster-related activities. These disaster response groups were typically formed at the village level based on recommendations from each RT, ensuring their legitimacy and grassroots connection. As frontline responders, these groups were tasked with coordinating and communicating with a wide range of stakeholders, including village administrations, RT leaders, and local community heads.

4.6 Evaluation

The evaluation revealed a gap between program design and residents' priorities. Mr. YK (Neighborhood Head/RT) criticized: *"Some residents feel that mitigation activities are not yet an urgent necessity, so participation remains low."* Meanwhile, Mr. ED (resident) added: *"Training sessions are available, but supporting facilities such as equipment and infrastructure are still limited, making optimal implementation difficult."* These findings are consistent with field observations showing passive attitudes among residents during the evaluation discussions.

Although not formally included as a stage in Suharto's (2005) original 5P framework, evaluation was observed as an essential, albeit informal, practice for ensuring the effectiveness and sustainability of community empowerment activities. In this study, evaluation refers to the ongoing assessment of whether the community empowerment activities conducted thus far have been effective in achieving their stated objectives. The findings from this evaluation process were intended to serve as actionable recommendations for relevant stakeholders to implement more meaningful and targeted improvements. The evaluation process itself involved regular discussions and dialogues between the BPBD of Bandar Lampung City, sub-district officials, urban village leaders, and other relevant parties. Crucially, these discussions also actively engaged neighborhood units (RT), general community members, and local figures to create a participatory review process. The goal was to analyze the various challenges and obstacles encountered during the community empowerment process. By identifying these barriers, stakeholders could gain valuable insights to develop the best possible solutions and ensure the smoother implementation of future community empowerment initiatives. The evaluation results perfectly illustrate the value of information source triangulation. The primary barriers identified—low perceived urgency and lack of supporting facilities—represent a clear divergence between institutional and community perspectives. As noted by Mr. YK (RT) and Mr. ED (resident), the community's view of the program's relevance and practicality differed from the institutional view of its technical success. This divergence, uncovered by triangulating sources, is the core insight that must inform future program adjustments.

The evaluation results highlighted two primary barriers that had hindered the effectiveness of community empowerment efforts. As noted by Harahap (2023), development programs rarely run perfectly, and obstacles are inevitable. The first significant obstacle was the prevailing mindset among some community members who continued to perceive disaster mitigation activities as unimportant or as a lower priority compared to their daily economic struggles, leading to a persistent lack of participation from this segment. The second major challenge was the insufficient availability of supporting facilities, both material (e.g., adequate training equipment, funds for local mitigation projects) and non-material (e.g., consistent expert guidance), to carry out both structural and non-structural mitigation efforts aimed at minimizing disaster risks.

5. DISSCUSSION

The findings of this study provide robust empirical support for the two proposed hypotheses, but their significance extends far beyond simple confirmation. This research makes an original contribution to disaster management scholarship by empirically demonstrating that community empowerment in post-disaster urban contexts operates as a staged, conditional, and socially mediated process, rather than a uniform, top-down, or linear intervention. Instead of treating empowerment as a generic, one-size-fits-all capacity-building mechanism, this study reveals the intricate interplay between post-disaster socioeconomic vulnerability, the legitimacy of leadership at the neighborhood level, and the dynamics of multi-actor collaboration. These factors interact dynamically to shape community participation trajectories and ultimately determine disaster preparedness outcomes in the complex setting of an urban, disaster-prone area like Panjang Sub-district. The key novelty of this work lies in identifying empowerment not merely as a collection of disparate activities, but as a sequential process that unfolds unevenly across its enabling, empowering, protection, maintenance, and evaluation stages. The progression through these stages is highly dependent on local socioeconomic constraints and the level of institutional trust (Ariyanto, 2026). This "sequencing effect"—where livelihood security and material support must precede meaningful engagement in preparedness activities—has received limited empirical attention in existing disaster mitigation literature. Our temporal triangulation provides critical evidence for this effect, revealing that community engagement is profoundly context-dependent and shifts dynamically across the disaster timeline. Specifically, we found that in the pre-disaster phase, economic constraints overwhelmingly dominated participation barriers, creating a situation where abstract risk preparedness was deprioritized. However, in the post-disaster phase, the visceral experience of the event catalyzed a shift; experiential learning made mitigation a tangible priority, fundamentally altering community cost-benefit calculations. This temporal insight underscores the necessity for flexible DRR programming that is deliberately scheduled and aligned with community livelihood cycles, rather than adhering to rigid, pre-set calendars.

These hypotheses served to frame the qualitative inquiry by directing analytical attention toward the observable patterns of empowerment practices, the nuanced dynamics of community participation, and the locally embedded mitigation strategies, as both narrated and enacted by the research participants. The central finding that community participation is conditional—dependent on leader legitimacy and the integration of mitigation into residents' economic interests—directly extends and enriches the discourse on integrated disaster risk management that has developed in recent studies. For instance, while building upon the foundational arguments of Seng (2012) and Gaillard and Mercer (2013) regarding the critical importance of community-based approaches, this study offers a much more detailed micro-level perspective on precisely how such approaches are realized, negotiated, and sometimes contested in the urban Indonesian context. A key insight is that the "community" is not a homogeneous entity with a single set of interests. Instead, it consists of a diverse array of actors with varying and often competing economic motivations—a crucial nuance that is frequently overlooked in macro-level analyses that tend to treat communities as monolithic blocks. Furthermore, our results stand in contrast to more traditional, technocratic views of community

capacity. As highlighted by scholars like Manyena (2006) and Simonovic (2015), capacity is often understood as a set of pre-existing resources that can be identified and mobilized. However, our research demonstrates that in densely populated, economically constrained urban settings, capacity is far from static; it is conditional and dynamically shaped by the everyday cost-benefit calculations of residents. This conditional nature of capacity is starkly illustrated by the temporal shift in our data. Pre-disaster, residents' capacity for engagement was severely limited by the immediate demands of economic survival. Post-disaster, their capacity was reconfigured by new priorities stemming from direct experience with loss and damage. Thus, this study not only reaffirms the importance of empowerment but also adds a critical layer of complexity to our understanding of how capacity is socially constructed, negotiated, and practiced in situ, contributing to a richer, more realistic understanding of community-centered integrated disaster-risk management.

The role of structural mitigation was also found to be more nuanced and socially significant than a simple matter of hazard reduction. While these physical measures are undeniably essential for reducing exposure to hazards (Wahid, 2023), the findings indicate that they also function as a powerful material credibility mechanism. The visible, tangible construction of improved drainage systems and the physical alteration of dangerous slopes served as a concrete demonstration of the government's commitment and capability. This, in turn, reinforced community confidence in official institutions and increased residents' willingness to trust and engage in subsequent non-structural mitigation initiatives, such as the training programs. This empirical insight provides a sophisticated extension of Hypothesis (1) by showing that physical infrastructure does not merely shape the physical environment; it also indirectly shapes the social environment of preparedness by legitimizing empowerment initiatives in the eyes of residents.

The staged nature of the empowerment process is most clearly illustrated in the analysis of the "Enabling" stage. The relevance of Figure 4, which documents the high poverty concentration in Panjang, is not merely descriptive; it is explanatory. It empirically links socioeconomic vulnerability with delayed participation in disaster mitigation, thereby clarifying why empowerment initiatives in Panjang were forced to adopt an initial phase focused on livelihood support before any behavioral change related to preparedness could be expected. This finding is novel because it demonstrates that economic vulnerability does not simply reduce participation; it fundamentally conditions the sequencing of empowerment. Our temporal data confirms that during the pre-disaster period, residents' engagement was blocked by the opportunity cost of participating in training—time spent in a DRR session was time not spent earning a living. The provision of entrepreneurship training and food packages was not a peripheral activity but a prerequisite for building trust and freeing up the human capacity required for subsequent disaster preparedness engagement. This directly supports and deepens the interpretation of Hypothesis (2) by showing that post-disaster conditions (economic hardship) must be explicitly addressed to secure participation in longer-term mitigation.

In the "Empowering" stage, the novelty of the disaster prevention education lies not in the simple existence of training, but in its highly participatory, context-specific, and multi-actor configuration. This model stands in stark contrast to standardized, generic disaster education

programs that are often disseminated from the top down (Kitagawa, 2021; Nasliati et al., 2025). The training in Panjang was characterized by its grounding in locally experienced hazards, its emphasis on hands-on simulation, and its collaborative design involving government, academia, and community members. Crucially, the timing of this training in the post-disaster phase was a key factor in its success. Our findings show that experiential learning, triggered by the recent flood, dramatically shifted community priorities. The abstract threat of a future flood became a concrete, lived memory. This made the context-specific training not just interesting but also immediately relevant and essential for survival. These findings confirm Hypothesis (1) by showing that preparedness is enhanced not merely through a one-way transfer of information, but through the co-production of disaster knowledge and response capacity at a time when the community is most receptive. This collaborative process ensures that the knowledge is relevant, trusted, and more likely to be applied during a real emergency.

The "Protection" stage revealed another critical dynamic. The swift and effective provision of direct assistance to vulnerable populations functioned as a reinforcing mechanism that sustained and deepened community trust in institutions. When residents saw that the government and their leaders would respond effectively and compassionately in their time of greatest need, it built social capital and reinforced the legitimacy of the entire empowerment process. This trust is crucial for maintaining participation in longer-term, less immediately rewarding mitigation efforts, an outcome that provides strong, practical support for Hypothesis (2) by illustrating how responsive post-disaster actions encourage continued community engagement.

Findings from the "Supporter and "Maintenance" stages provided additional critical insights that are often missing from formal disaster management plans. The "Supporter" stage findings indicate that leadership legitimacy at the most granular, neighborhood (RT) level acts as a critical mediator between broad institutional initiatives and actual community participation. Without the trust and active mobilization by these hyper-local leaders, even well-designed programs would likely fail to attract participants. This is an insight that is rarely emphasized in disaster mitigation literature, which tends to focus on formal institutions at the district or national level. The novel contribution in the "Maintenance" stage lies in identifying the role of digital informal communication networks (WhatsApp groups) as low-cost, high-impact tools for sustaining disaster preparedness, especially in economically constrained urban communities where formal communication channels may be weak or inaccessible.

Finally, the "Evaluation" stage findings revealed that the ultimate effectiveness of empowerment is constrained less by a community's technical capacity to learn and more by the perceived relevance of the program and the availability of material support. This highlights a persistent gap between the design of empowerment programs by external agencies and the lived priorities of community members. The identified barriers—a mindset of unimportance and a lack of supporting facilities—suggest that for empowerment to be truly sustainable, it must be continuously adapted to align with community needs and backed by tangible resources.

Overall, this study contributes novel empirical insights by demonstrating that post-disaster community empowerment is far from a simple, linear intervention. It is a complex, staged,

conditional, and socially mediated process. The findings confirm both hypotheses and significantly extend disaster mitigation scholarship by showing how poverty, leadership legitimacy, participatory training models, and informal communication infrastructures interact to jointly shape disaster preparedness. Critically, our temporal analysis shows that these interactions are not static; they evolve. The "when" of an intervention is as important as the "what." Therefore, DRR strategies must be dynamically timed, leveraging post-disaster windows of opportunity when experiential learning peaks, while ensuring pre-disaster activities are economically viable and directly supportive of community livelihoods.

6. CONCLUSION

Based on the research findings and discussion above, it can be concluded that Panjang District is one of the areas in Bandar Lampung City that is highly vulnerable to natural hazards, particularly floods and landslides that recur during the rainy season. Consequently, several stakeholders—most notably the Regional Disaster Management Agency (BPBD) of Bandar Lampung City, supported by local government institutions—have initiated community empowerment activities as part of disaster mitigation efforts. These activities aim to enhance public knowledge, understanding, and capacity in responding to disaster risks, positioning the community not merely as an object but as an active subject in disaster management through a bottom-up approach.

Beyond this general finding, this study reveals case-specific insights that could only be captured through direct engagement with post-disaster communities in Panjang District. The findings demonstrate that community empowerment does not function as a uniform or linear intervention, but rather as a conditional and staged process shaped by local socioeconomic vulnerability, leadership legitimacy, and post-disaster experience. In Panjang, disaster preparedness engagement only became meaningful after immediate livelihood concerns were addressed, indicating that economic security operates as a prerequisite for sustained participation in disaster mitigation. This insight highlights a critical gap between formal disaster mitigation designs and the lived priorities of urban poor communities.

Community empowerment activities in Panjang District unfold through several interconnected stages: enabling, strengthening, protecting, supporting, maintaining, and evaluating. The enabling stage is uniquely characterized by livelihood-oriented assistance that builds trust and creates psychological readiness for disaster preparedness. The strengthening stage goes beyond conventional awareness-raising by employing context-specific, participatory training rooted in residents' lived disaster experiences, rather than standardized disaster education models. The protection stage reveals that community-based disaster response groups function not only as emergency actors but also as symbols of institutional presence and care, reinforcing long-term community trust.

A distinctive contribution of this case study lies in identifying neighborhood-level leadership (RT and community heads) as a decisive mediator between institutional initiatives and

community participation. Instructions and encouragement from trusted local leaders proved more influential than formal directives, shaping residents' willingness to engage in empowerment programs. Furthermore, the maintenance stage demonstrates that informal digital communication networks (WhatsApp groups) operate as low-cost yet high-impact infrastructures for sustaining preparedness, coordination, and early warning dissemination in economically constrained urban settings.

The evaluation stage further reveals that the primary constraints to empowerment effectiveness are not technical capacity deficits, but perceived relevance and material feasibility from the community's perspective. This finding underscores the importance of aligning disaster mitigation programs with everyday survival realities rather than treating preparedness as a purely technical or behavioral issue.

Overall, this study contributes novel empirical evidence by showing that post-disaster urban community empowerment is a socially mediated, trust-dependent, and livelihood-contingent process. These insights extend disaster mitigation scholarship by demonstrating how poverty, leadership legitimacy, participatory training, and informal communication infrastructures interact to shape disaster preparedness trajectories in urban disaster-prone contexts—insights that are not readily visible through policy analysis or post-disaster outcome assessments alone.

REFERENCES

- Ahmadi, A., & Narbuko, C. (1997). *Metodologi Penelitian (Research Methodology)*. Jakarta: Bumi Aksara.
- Alam, G. M. M., Alam, K., Mushtaq, S., Sarker, M. N. I., & Hossain, M. (2020). Hazards, food insecurity and human displacement in rural riverine Bangladesh: Implications for policy. *International Journal of Disaster Risk Reduction*, 43, 101364. <https://doi.org/10.1016/j.ijdrr.2019.101364>
- Ariyanto, K. (2023). Assessing the Implications of Agricultural Development from the Perspective of Sustainable Livelihoods: Dryland Farming Community in Singosari, Lampung. *Masyarakat: Jurnal Sosiologi*, 28(2), 1–26. <https://doi.org/10.7454/MJS.v28i2.13566>
- Ariyanto, K. (2026). Bridging ecology and culture: Human behavior, knowledge, and nature. *Reviews in Anthropology*, 0(0), 1–20. <https://doi.org/10.1080/00938157.2026.2612930>
- As-syakur, A. R., Adnyana, I. W. S., Mahendra, M. S., Arthana, I. W., Merit, I. N., Kasa, I. W., Ekayanti, N. W., Nuarsa, I. W., & Sunarta, I. N. (2014). Observation of spatial patterns on the rainfall response to ENSO and IOD over Indonesia using TRMM Multisatellite Precipitation Analysis (TMPA). *International Journal of Climatology*, 34(15), 3825–3839. <https://doi.org/10.1002/joc.3939>
- Ayuningtyas, D., Windiarti, S., Hadi, M. S., Fasrini, U. U., & Barinda, S. (2021). Disaster Preparedness and Mitigation in Indonesia: A Narrative Review. *Iranian Journal of Public Health*, 50(8), 1536–1546. <https://doi.org/10.18502/ijph.v50i8.6799>

- Bang, H. N. (2021). A gap analysis of the legislative, policy, institutional and crises management frameworks for disaster risk management in Cameroon. *Progress in Disaster Science*, 11, 100190. <https://doi.org/10.1016/j.pdisas.2021.100190>
- Birkland, T. A., & Warnement, M. K. (2014). Focusing Events in Disasters and Development. In N. Kapucu & K. T. Liou (Eds.), *Disaster and Development: Examining Global Issues and Cases* (pp. 39–60). Springer International Publishing. https://doi.org/10.1007/978-3-319-04468-2_3
- BNPB [National Disaster Management Agency]. (2014). *Rencana nasional penanggulangan bencana 2015-2019 (National Disaster Management Plan 2015–2019)*. Badan Nasional Penanggulangan Bencana (National Disaster Management Agency).
- BPS Kota Bandar Lampung [Central Bureau of Statistics of Bandar Lampung City]. (2022). *Kota Bandar Lampung Dalam Angka (Bandar Lampung City in Figures) 2022*. <https://bandarlampungkota.bps.go.id/id/publication/2022/02/25/0890a0fd32082cf574db32af/kota-bandar-lampung-dalam-angka-2022.html>
- BPS Kota Bandar Lampung [Central Bureau of Statistics of Bandar Lampung City]. (2024). *Kecamatan Panjang Dalam Angka (Panjang Subdistrict in Figures) 2024*. <https://bandarlampungkota.bps.go.id/id/publication/2024/09/26/ebe28b8fd579fc04445e5ccd/kecamatan-panjang-dalam-angka-2024.html>
- Cretney, R. M. (2016). Local responses to disaster: The value of community led post disaster response action in a resilience framework. *Disaster Prevention and Management*, 25(1), 27–40. <https://doi.org/10.1108/DPM-02-2015-0043>
- detikNews. (2025). *11.223 Orang Terdampak Banjir di Bandar Lampung (People Affected by Flooding in Bandar Lampung)*. <https://news.detik.com/berita/d-7739868/11-223-orang-terdampak-banjir-di-bandar-lampung>
- Djalante, R., Garschagen, M., Thomalla, F., & Shaw, R. (2017). Introduction: Disaster Risk Reduction in Indonesia: Progress, Challenges, and Issues. In R. Djalante, M. Garschagen, F. Thomalla, & R. Shaw (Eds.), *Disaster Risk Reduction in Indonesia: Progress, Challenges, and Issues* (pp. 1–17). Springer International Publishing. https://doi.org/10.1007/978-3-319-54466-3_1
- Elliott, J. R., & Howell, J. (2017). Beyond Disasters: A Longitudinal Analysis of Natural Hazards' Unequal Impacts on Residential Instability. *Social Forces*, 95(3), 1181–1207. <https://doi.org/10.1093/sf/sow086>
- Gaillard, J. C., & Mercer, J. (2013). From knowledge to action: Bridging gaps in disaster risk reduction. *Progress in Human Geography*, 37(1), 93–114. <https://doi.org/10.1177/0309132512446717>
- Gireesh Kumar, P., Tejaswini, V., Kesava Rao, P., & Jaya Shankar, G. (2021). Disaster mitigation and its strategies in a global context—A state of the art. *Materials Today: Proceedings, International Conference on Mechanical, Electronics and Computer Engineering 2020: Materials Science*, 45, 6488–6492. <https://doi.org/10.1016/j.matpr.2020.11.369>
- Hakim, R. N. (2021). *5 Bencana Alam di Awal 2021, dari Longsor Sumedang hingga Gempa Sulbar (5 Natural Disasters in Early 2021, from the Sumedang Landslide to the West Sulawesi Earthquake)*. <https://nasional.kompas.com/read/2021/01/18/12393831/5-bencana-alam-di-awal-2021-dari-longsor-sumedang-hingga-gempa-sulbar?page=all>

- Harahap, A. B. (2023). Strategi Pemberdayaan Masyarakat Petani Kopi Desa Sibio-bio Kecamatan Marancar dalam Meningkatkan Kesejahteraan Petani (Strategy for Empowering Coffee Farming Communities in Sibio-bio Village, Marancar District, to Improve Farmers' Welfare). *Jurnal At-Taghyir: Jurnal Dakwah Dan Pengembangan Masyarakat Desa*, 5(1), Article 1. <https://doi.org/10.24952/taghyir.v5i1.5107>
- He, L., Aitchison, J. C., Hussey, K., Wei, Y., & Lo, A. (2018). Accumulation of vulnerabilities in the aftermath of the 2015 Nepal earthquake: Household displacement, livelihood changes and recovery challenges. *International Journal of Disaster Risk Reduction*, 31, 68–75. <https://doi.org/10.1016/j.ijdr.2018.04.017>
- Herdiansyah, H. (2013). *Wawancara, Observasi dan Focus Groups: Sebagai Instrumen Penggalan Data Kualitatif (Interviews, Observation, and Focus Groups: As Instruments for Qualitative Data Collection)*. Jakarta: Rajawali Pers.
- Hidayati, D. A. (2024). Kapasitas Ketahanan dan Kekuatan Modal Sosial Masyarakat Miskin Perkotaan Kecamatan Panjang Kota Bandar Lampung dalam Menghadapi Bencana Covid-19 (The Resilience Capacity and Strength of Social Capital of the Urban Poor in Panjang District, Bandar Lampung City in Facing the COVID-19 Disaster). *Fakultas Ilmu Sosial Dan Ilmu Politik Universitas Lampung*. <http://digilib.unila.ac.id/id/eprint/83077>
- Imperiale, A. J., & Frank, V. (2021). Conceptualizing community resilience and the social dimensions of risk to overcome barriers to disaster risk reduction and sustainable development. *Sustainable Development*, 29(5), 891–905. <https://doi.org/10.1002/sd.2182>
- JDIH BPK [Audit Board of Indonesia Legal Documentation and Information Network]. (2007). *Undang-undang (UU) Nomor 24 Tahun 2007 tentang Penanggulangan Bencana*. Database Peraturan (Law (Act) Number 24 of 2007 on Disaster Management. Regulatory Database) | JDIH BPK. <http://peraturan.bpk.go.id/Details/39901/uu-no-24-tahun-2007>
- Kartini, K. (1996). *Pengantar Metodologi Riset Sosial (Introduction to Social Research Methodology)*. Bandung: Mandar Maju.
- Khaspuria, G., Ranjan, A., Sahil, ., Soni, P., & Dadhich, K. (2024). Natural Disaster Mitigation Strategies: A Comprehensive Review. *Journal of Scientific Research and Reports*, 30(8), 20–34.
- Kitagawa, K. (2021). Conceptualising 'Disaster Education.' *Education Sciences*, 11(5), 233. <https://doi.org/10.3390/educsci11050233>
- Krishnamurthy, P. K. (2012). Disaster-induced migration: Assessing the impact of extreme weather events on livelihoods. *Environmental Hazards*, 11(2), 96–111. <https://doi.org/10.1080/17477891.2011.609879>
- Kumparan. (2019). *10 Rumah di Panjang Terkena Dampak Longsor Akibat Hujan Lebat (10 Houses in Panjang Affected by Landslide Due to Heavy Rain)*. kumparan. <https://kumparan.com/lampunggeh/10-rumah-di-panjang-terkena-dampak-longsor-akibat-hujan-lebat-1551163571543569541>
- Lassa, J., Petal, M., & Surjan, A. (2023). Understanding the impacts of floods on learning quality, school facilities, and educational recovery in Indonesia. *Disasters*, 47(2), 412–436. <https://doi.org/10.1111/disa.12543>
- Leitmann, J. (2007). Cities and Calamities: Learning from Post-Disaster Response in Indonesia. *Journal of Urban Health*, 84(1), 144–153. <https://doi.org/10.1007/s11524-007-9182-6>

- Leppold, C., Gibbs, L., Block, K., Reifels, L., & Quinn, P. (2022). Public health implications of multiple disaster exposures. *The Lancet Public Health*, 7(3), e274–e286. [https://doi.org/10.1016/S2468-2667\(21\)00255-3](https://doi.org/10.1016/S2468-2667(21)00255-3)
- Lin, T.-H. (2015). Governing Natural Disasters: State Capacity, Democracy, and Human Vulnerability. *Social Forces*, 93(3), 1267–1300. <https://doi.org/10.1093/sf/sou104>
- Maharani, M. (2024). *Pemetaan Daerah Rawan Tanah Longsor di Kecamatan Panjang Kota Bandar Lampung (Mapping of Landslide-Prone Areas in Panjang District, Bandar Lampung City)* [Skripsi, Fakultas Keguruan dan Ilmu Pendidikan (Undergraduate Thesis, Faculty of Teacher Training and Education)]. <https://digilib.unila.ac.id/82574/>
- Mahmudah, F. N. (2021). *Analisis Data Penelitian Kualitatif Manajemen Pendidikan Berbantuan Software Atlas.Ti Versi 8 (Qualitative Research Data Analysis in Educational Management Assisted by Atlas.Ti Version 8 Software)*. Yogyakarta: UAD PRESS.
- Mangga, S. A., Suwarti, T., & Gafoer, S. (1993). *Peta Geologi Lembar Tanjungkarang, Sumatera, skala 1: 250.000 (Geological Map of the Tanjungkarang Sheet, Sumatra, scale 1:250,000)*. Bandung: Pusat Penelitian dan Pengembangan Geologi.
- Manyena, S. B. (2006). The concept of resilience revisited. *Disasters*, 30(4), 434–450. <https://doi.org/10.1111/j.0361-3666.2006.00331.x>
- Mapos. (2017, November 16). Pemberdayaan Masyarakat Dalam Penanggulangan Bencana (Community Empowerment in Disaster Management). *Mamuju Pos*. <https://mamujupos.com/pemberdayaan-masyarakat-dalam-penanggulangan-bencana>
- Mardiah, A. N. R., Lovett, J. C., & Evanty, N. (2017). Toward Integrated and Inclusive Disaster Risk Reduction in Indonesia: Review of Regulatory Frameworks and Institutional Networks. In R. Djalante, M. Garschagen, F. Thomalla, & R. Shaw (Eds.), *Disaster Risk Reduction in Indonesia: Progress, Challenges, and Issues* (pp. 57–84). Springer International Publishing. https://doi.org/10.1007/978-3-319-54466-3_3
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. United State of America: Sage Publications.
- Moleong, L. J. (2016). *Metodologi Penelitian Kualitatif (Edisi Revisi) (Qualitative Research Methodology (Revised Edition))*. Bandung: Remaja Rosdakarya.
- Nasliati, Bisri, M. B. F., Sasaki, D., & Oktari, R. S. (2025). Indonesia Disaster Education Repository House (IN-DEPTH) as a knowledge management system platform for disaster education. *International Journal of Disaster Risk Reduction*, 123, 105502. <https://doi.org/10.1016/j.ijdr.2025.105502>
- Nomura, S., Parsons, A. J. Q., Hirabayashi, M., Kinoshita, R., Liao, Y., & Hodgson, S. (2016). Social determinants of mid- to long-term disaster impacts on health: A systematic review. *International Journal of Disaster Risk Reduction*, 16, 53–67. <https://doi.org/10.1016/j.ijdr.2016.01.013>
- Pratama, R. (2025). *Rumah Warga Way Lunik Bandar Lampung Terendam Banjir (Way Lunik Residents' Homes in Bandar Lampung Submerged by Flood)*. <https://lampung.tribunnews.com/2025/01/17/rumah-warga-way-lunik-bandar-lampung-terendam-banjir>
- PVMBG [Center for Volcanology and Geological Hazard Mitigation]. (2019). *Wilayah Potensi Gerakan Tanah di Provinsi Lampung bulan Januari (Potential Landslide Areas in*

- Lampung Province in January). Bandung: Pusat Vulkanologi dan Mitigasi Bencana Geologi.
- Ramadhani, F. (2022). *6 Fakta Tsunami Tanjung Lesung, Bencana yang Dipicu Amuk Letusan Anak Krakatau (6 Facts About the Tanjung Lesung Tsunami, a Disaster Triggered by the Eruption of Anak Krakatau)*. <https://www.tempo.co/politik/6-fakta-tsunami-tanjung-lesung-bencana-yang-dipicu-amuk-letusan-anak-krakatau-236915>
- Rayawan, J., Tipnis, V. S., & Pedraza-Martinez, A. J. (2021). On the connection between disaster mitigation and disaster preparedness: The case of Aceh province, Indonesia. *Journal of Humanitarian Logistics and Supply Chain Management*, 11(1), 135–154. <https://doi.org/10.1108/JHLSCM-12-2019-0081>
- Rida, S. (2022). *Pemberdayaan Masyarakat dalam Mitigasi Bencana pada Wilayah Rawan Bencana di Desa Kunjir Kecamatan Rajabasa Kabupaten Lampung Selatan (Community Empowerment in Disaster Mitigation in Disaster-Prone Areas in Kunjir Village, Rajabasa Subdistrict, South Lampung Regency)* [Diploma, Universitas Islam Negeri Raden Intan Lampung]. <https://repository.radenintan.ac.id/19206/>
- Rifa'i, Y. (2023). Analisis Metodologi Penelitian Kualitatif dalam Pengumpulan Data di Penelitian Ilmiah pada Penyusunan Mini Riset (Analysis of Qualitative Research Methodology in Data Collection for Scientific Research in the Preparation of Mini Research). *Cendekia Inovatif Dan Berbudaya*, 1(1), Article 1. <https://doi.org/10.59996/cendib.v1i1.155>
- Roth Tran, B., & Wilson, D. J. (2025). The Local Economic Impact of Natural Disasters. *Journal of the Association of Environmental and Resource Economists*, 12(6), 1667–1704. <https://doi.org/10.1086/735533>
- Sandifer, P. A., & Walker, A. H. (2018). Enhancing Disaster Resilience by Reducing Stress-Associated Health Impacts. *Frontiers in Public Health*, 6. <https://doi.org/10.3389/fpubh.2018.00373>
- Saputra, B. Z. (2025). *Penyebab Banjir di Panjang Bandar Lampung, Ada Perusahaan Diduga Tutup Drainase (Causes of Flooding in Panjang, Bandar Lampung: A Company Suspected of Blocking Drainage)*. <https://lampung.tribunnews.com/2025/02/08/penyebab-banjir-di-panjang-bandar-lampung-ada-perusahaan-diduga-tutup-drainase>
- Segarra-Alméstica, E., Caraballo-Cueto, J., Cordero, Y., & Cordero, H. (2022). The effect of consecutive disasters on educational outcomes. *International Journal of Disaster Risk Reduction*, 83, 103398. <https://doi.org/10.1016/j.ijdr.2022.103398>
- Seng, D. S. C. (2012). Improving the Governance Context and Framework Conditions of Natural Hazard Early Warning Systems. *IDRiM Journal*, 2(1). <https://doi.org/10.5595/001c.11712>
- Setyonugroho, G. A., & Maki, N. (2024). Policy implementation model review of the post-disaster housing reconstruction in Indonesia case study: Aceh, Yogyakarta, and Lombok. *International Journal of Disaster Risk Reduction*, 100, 104181. <https://doi.org/10.1016/j.ijdr.2023.104181>
- Simonovic, S. P. (2015). Systems Approach to Management of Disasters – A Missed Opportunity? *IDRiM Journal*, 5(2). <https://doi.org/10.5595/001c.11677>
- Sinambela, M., Hasibuan, A., Makbul, R., Armus, R., Marlyono, S. G., Simarmata, M. M., Kuswanto, K., Fatmayanti, A., Manalu, V., & Bachtiar, E. (2021). *Mitigasi dan*

- Manajemen Bencana (Disaster Mitigation and Management)*. Medan: Yayasan Kita Menulis.
- Sitorus, E., Mahendra, D., & Batu, A. M. R. L. (2019). *Buku Materi Pembelajaran Manajemen Gawat Darurat dan Bencana (Learning Material Book on Emergency and Disaster Management)*. Skripsi. Program Studi Diploma Tiga Keperawatan Fakultas Vokasi Universitas Kristen Indonesia (Diploma Three Nursing Study Program, Faculty of Vocational Studies, Indonesian Christian University). <http://repository.uki.ac.id/2714/>
- Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change, Resilience, Vulnerability, and Adaptation: A Cross-Cutting Theme of the International Human Dimensions Programme on Global Environmental Change*, 16(3), 282–292. <https://doi.org/10.1016/j.gloenvcha.2006.03.008>
- Soltesova, K., Brown, A., Dayal, A., & Dodman, D. (2014). Community participation in urban adaptation to climate change: Potential and limits for community-based adaptation approaches. In *Community-Based Adaptation to Climate Change*. Routledge.
- Sugiharyanto, S., Wulandari, T., & Wibowo, S. (2014). Persepsi Mahasiswa Pendidikan IPS Terhadap Mitigasi Bencana Gempa Bumi (Students' Perceptions of Earthquake Disaster Mitigation in Social Studies Education). *JIPSINDO (Jurnal Pendidikan Ilmu Pengetahuan Sosial Indonesia)*, 1(2), Article 2. <https://doi.org/10.21831/jipsindo.v2i1.2887>
- Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D (Quantitative, Qualitative, and R&D Research Methods)*. Bandung: Alfabeta.
- Suharto, E. (2005). *Membangun masyarakat, memberdayakan rakyat: Kajian strategis pembangunan kesejahteraan sosial dan pekerjaan sosial (Building Communities, Empowering People: A Strategic Study of Social Welfare Development and Social Work)*. Bandung: Refika Aditama.
- Suherningtyas, I. A., Pitoyo, A. J., Permatasari, A. L., & Febiarta, E. (2021). Kapasitas Ketahanan Masyarakat Dalam Menghadapi Bencana Pandemi Covid-19 Di Wilayah Perkotaan (Studi Kasus: Kampung Krasak RT 16, RW 04, Kelurahan Kotabaru, Kecamatan Gondokusuman, Kota Yogyakarta) (Community Resilience Capacity in Facing the COVID-19 Pandemic Disaster in Urban Areas (Case Study: Kampung Krasak RT 16, RW 04, Kotabaru Subdistrict, Gondokusuman District, Yogyakarta City)). *Jurnal Ketahanan Nasional*, 27(1), Article 1. <https://doi.org/10.22146/jkn.62013>
- Syah, A., Putra, A. D., Dani, I., & Ashruri, A. (2019). *Kajian Potensi Longsor Sera Upaya Pengurangan resiko bencana Melalui edukasi Mitigasi Berbasis Masyarakat di kelurahan Pidada Bandar Lampung (Study of Landslide Potential and Disaster Risk Reduction Efforts through Community-Based Mitigation Education in Pidada Subdistrict, Bandar Lampung)*. Repository Universitas Lampung (University of Lampung Repository). <http://repository.lppm.unila.ac.id/35941/>
- Tierney, K. (2012). Disaster Governance: Social, Political, and Economic Dimensions. *Annual Review of Environment and Resources*, 37(Volume 37, 2012), 341–363. <https://doi.org/10.1146/annurev-environ-020911-095618>
- Tierney, K. (2025). *Disasters: A Sociological Approach*. United States: John Wiley & Sons.
- Titz, A., Cannon, T., & Krüger, F. (2018). Uncovering ‘Community’: Challenging an Elusive Concept in Development and Disaster Related Work. *Societies*, 8(3), 71. <https://doi.org/10.3390/soc8030071>

- Tondobala, L. (2012). Pendekatan untuk Menentukan Kawasan Rawan Bencana di Pulau Sulawesi (Approach to Identifying Disaster-Prone Areas in Sulawesi Island). *Sabua : Jurnal Lingkungan Binaan Dan Arsitektur*, 3(2), Article 2. <https://doi.org/10.35793/sabua.v3i2.245>
- Tora, T. T., Degaga, D. T., & Utallo, A. U. (2022). Impacts of livelihood assets on livelihood security in drought-prone Gamo lowlands of southwest Ethiopia. *Geography and Sustainability*, 3(1), 58–67. <https://doi.org/10.1016/j.geosus.2022.02.002>
- Usman, H., & Akbar, P. S. (2022). *Metodologi Penelitian Sosial (Edisi Ketiga) (Social Research Methodology (Third Edition))*. Jakarta: Bumi Aksara.
- van Niekerk, D. (2014). A critical analysis of the South African Disaster Management Act and Policy Framework. *Disasters*, 38(4), 858–877. <https://doi.org/10.1111/disa.12081>
- Wahid, K. A. (2023). Kajian Upaya Mitigasi Struktural dan Nonstruktural Bencana Banjir di Kota Kendari (Study of Structural and Non-Structural Flood Disaster Mitigation Efforts in Kendari City). *Journal of Geographical Sciences and Education*, 1(1), Article 1. <https://doi.org/10.69606/geography.v1i1.49>
- Wang, J. (2024). Impact of natural disasters on student enrollment in higher education programs: A systematic review. *Heliyon*, 10(6). <https://doi.org/10.1016/j.heliyon.2024.e27705>
- Wardhono, H. (2018). *Strategi Pemberdayaan Masyarakat untuk Ketangguhan Komunitas Pesisir (Kajian terhadap Pelaksanaan dan Pengembangan Program Sekolah Laut) (Community Empowerment Strategies for Coastal Community Resilience (A Study on the Implementation and Development of the Sea School Program))*. Fakultas Ilmu Administrasi Universitas Dr. Soetomo (Faculty of Administrative Sciences, Dr. Soetomo University). <http://repository.unitomo.ac.id/1223/>
- Yunus, A. Y., Ahmad, S. N., Latief, R., Mansyur, M., Mulfiyanti, D., Badrun, B., Syarif, M., Rachman, R. M., Sya'ban, A. R., Wulansari, I., Aryadi, A., & Gusty, S. (2024). *Bencana Alam dan Manajemen Risiko Bencana (Natural Hazards and Disaster Risk Management)*. Tohar Media. <https://repository.unifa.ac.id/id/eprint/1136/>