Collaboration Purworejo Regency Government and MDMC in Flood and Landslide Disaster Management

Kolaborasi Pemerintah Kabupaten Purworejo dan MDMC dalam Penanggulangan Bencana Banjir dan Tanah Longsor

Kaamiliaa Dewi[1*], Herpita Wahyuni[2], Sakir[3]
[123] Department of Government and Administration Sciences, Faculty of Social and Political Sciences, Universitas Muhammadiyah Yogyakarta
[123] Brawijaya Street, Geblagan, Tamantirto, Kasihan District, Bantul Regency, Daerah Istimewa Yogyakarta zip. code. 55183
kaamiliaadewi01@gmail.com[1*], herpitawahyuni@yahoo.com[2], mas.sakir@fisipol.umy.ac.id[3]
Coresponding Author: kaamiliaadewi01@gmail.com[1*]

ARTICLE INFORMATION

Keywords
Disaster;
Collaborative Governance;
MDMC;

ABSTRACT
This research aims to identify ways to handle flood and landslide disasters in strengthening collaboration between the government and CSOs in Purworejo Regency. Often describe elements of cooperation in handling flood and landslide disasters. The research method applied is qualitative with a case study approach between CSO and the Purworejo Regency Government in disaster management in 2021-2022. The findings of this study show that efficient collaboration in disaster management can be implemented through three important steps, namely: the importance of creating trust between all parties from the beginning, showing a high level of commitment throughout the process, and this collaboration can create common understanding and outcomes that benefit the community and the government. For this reason, the Regional Disaster Management Agency of Purworejo Regency provides a more comprehensive picture of the effectiveness of collaboration in disaster management as well as the factors that contribute to overcoming flood and landslide disasters. However, the implementation of *Collaborative Governance* has not gone well, this can be seen from the constraints and lack of private sector participation in analyzing articles on flood and landslide disasters. We urgently need input from readers for the development of the next article.

Kata Kunci
Manajemen Bencana;
Tata Kelola Kolaboratif;
MDMC;

ABSTRAK
Penelitian ini bertujuan untuk mengidentifikasi cara penanganan bencana banjir dan longsor dalam memperkuat kolaborasi antara pemerintah dan OMS di Kabupaten Purworejo. Sering menggambarkan unsur-unsur kerja sama dalam penanganan bencana banjir dan longsor. Metode penelitian yang diterapkan bersifat kualitatif dengan pendekatan studi kasus antara OMS dengan Pemerintah Kabupaten Purworejo dalam penanggulangan bencana tahun 2021-2022. Temuan penelitian ini menunjukkan bahwa kolaborasi yang efisien dalam penanggulangan bencana dapat diimplementasikan melalui tiga langkah penting, yaitu: pentingnya menciptakan kepercayaan antara semua pihak sejak awal, menunjukkan komitmen tingkat tinggi sepanjang proses, dan kolaborasi ini dapat menciptakan pemahaman dan hasil bersama yang bermanfaat bagi masyarakat dan pemerintah. Untuk itu, Badan Penanggulangan Bencana Daerah Kabupaten Purworejo memberikan gambaran yang lebih komprehensif tentang efektivitas kolaborasi dalam penanggulangan bencana serta faktor-faktor yang berkontribusi dalam mengatasi bencana banjir dan tanah longsor. Namun, implementasi *Tata Kelola Kolaboratif* belum berjalan dengan baik, hal ini terlihat dari kendala dan minimnya partisipasi sektor swasta dalam menganalisis artikel tentang bencana banjir dan tanah longsor. Kami sangat membutuhkan masukan dari pembaca untuk pengembangan artikel berikutnya.

Article History
Send 20thMay 2025
Review 5thJuly 2025
Accepted 2th August 2025

Introduction

Purworejo Regency is a disaster-prone area, often facing high risks compared to other districts in Central Java, especially floods and landslides. Research on floods and landslides in Purworejo Regency is crucial because this area has a high level of risk, with around 84% of disaster events dominated by these two disasters spread across almost all sub-districts. The main causes in Purworejo Regency related to the increased risk of floods and landslides are community activities and infrastructure development that encourage the growth of villages and cities. On the other hand, the importance of the bonds formed between various groups is also emphasized, one of which is through the application of *Collaborative Governance* (Luh & Dewi, 2019).

The government's collaborative approach to disaster management in Purworejo Regency is very important because it involves various stakeholders, both local governments, local communities, non-governmental organizations, and the private sector. Collaboration between governments can be carried out in a more integrated manner and involve all parties, so that each individual has a clear role and responsibility in disaster mitigation and response efforts. In addition, this method also encourages openness, efficient communication, and decision-making that involves all parties, which ultimately strengthens the community's ability to adapt to flood and landslide risks. Through the synergy formed, it is hoped that disaster risk in Purworejo Regency can be significantly reduced, while strengthening social and environmental resilience in the area (Luh & Dewi, 2019).

The flood risk in Purworejo Regency in 2021-2022 includes 16 sub-districts that are vulnerable to flood risk, namely low, medium, and high. The low flood index does not contain disaster risk information (0), the moderate flood index reaches 15,430 areas (ha), and the highest flood index reaches 37,649 areas (ha). The third index category can have a total of 53,078 surface area (ha) and is included in the high-risk category. This study aims to find out the cooperation between the Purworejo Regency Government and MDMC in disaster management. Regarding the potential flood danger in Purworejo Regency, it can be seen in table 1.

Table 1. Potential flood hazards in Purworejo Regency

Potential Flood Hazards in Purworejo Regency					
District	Area (Ha)				
	Low	Keep	Tall	Total	Class
Bagelen	-	364	1.493	1.856	Tall
Banyuurip	-	3.247	1.630	4.877	Keep
Bayan	-	2.392	1.977	4.369	Keep
Bener	-	66	763	829	Tall
Bruno	-	179	233	412	Tall
Butuh	-	820	3.800	4.620	Tall
Gebang	-	623	2.069	2.692	Tall
Grabag	-	675	6.233	6.908	Tall
Kaligesing	-	100	1	101	Tall
Kemiri	-	2.067	850	2.917	Tall
Kutoarjo	-	1.794	1.800	3.594	Tall
Loano	-	171	789	960	Tall
Ngombol	-	817	5.167	5.984	Tall
Pituruh	-	1.208	2.703	3.911	Tall
Purwodadi	-	586	5.149	5.735	Tall
Purworejo	-	321	2.992	3.313	Tall
Kabupaten Purworejo	-	15.430	37.649	53.078	Tall

Source: (Irish, 2018).

Landslide risk in Purworejo Regency which has 16 sub-districts that are prone to flood risk, namely: low, medium, and high in Purworejo Regency. The low flood index is 25 surface area (ha), the moderate flood index is 18,216 surface area (ha), and the highest flood index is 25,822 surface area (ha). The three categories of indices can have a total of 44,068 surface area (ha) and are included in the high-risk category. Regarding the potential flood danger in Purworejo Regency, it can be seen in table 2.

Table 2. Potential landslide hazards Purworejo Regency

Potential Landslide Hazards in Purworejo Regency					
District	Area (Ha)				
	Low	Keep	Tall	Total	Class
Bagelen	-	1.111	2.407	3.518	Tall
Banyuurip	-	-	-	-	-
Bayan	-	-	-	-	-
Bener	-	31	8	39	Tall
Bruno	4	3.370	3.697	7.071	Tall
Butuh	9	3.458	5.407	8.873	Tall
Gebang	-	123	245	369	Tall
Grabag	-	-	-	-	-
Kaligesing	1	1.591	1.797	3.389	Tall
Kemiri	2	1.702	5.300	7.004	Tall
Kutoarjo	2	2.621	3.043	5.657	Tall
Loano	-	74	24	98	Tall
Ngombol	-	-	-	-	-
Pituruh	-	1.089	2.088	3.177	Tall
Purwodadi	-	-	-	-	-
Purworejo	7	3.046	1.815	4.868	Tall
Kab. Purworejo	25	18.216	25.822	44.068	Tall

Source: (Irish, 2018).

Losses caused by floods and landslides in Purworejo Regency from 2017 to 2021 often reached considerable losses, namely Rp 15.7 billion to Rp 15.73 billion. The National Disaster Management Agency (BNPB) noted that there were 42 fatalities due to floods and landslides in Purworejo Regency, with a number of victims who were injured and died as a result of the disaster. Losses caused by floods and landslides often include various aspects, including infrastructure damage and material losses caused by significant (Maharani, 2023).

Disaster management The Purworejo Regency Government collaborates with many organizations, including: the Indonesian Red Cross, the TNI and the National Police, Non-Governmental Organizations, universities and other organizations. This research includes risk reduction actions carried out by the Purworejo Regency Government with various parties, including MDMC to overcome floods and landslides (Ruswan, 2021). Based on data from the Indonesian Disaster Risk Index (IRBI) released by the National Disaster Management Agency (BNPB), Bantul Regency is classified as an area with a high disaster risk with a score of 187.20, so it is important to pay more attention to information and communication aspects regarding disasters in disaster management efforts (Lingganingrum & Sakir, 2024)

Previous research focused on disaster management often applying *Collaborative Governance* as well as the management implemented by the Purworejo Regency Government. Research by (Arianti & Satlita, 2018) discuss about *Collaborative Governance* in the Handling of Watershed Pollution due to floods and landslides in Purworejo Regency analyzed civil organizations in the management of water management pollution (watershed) due to floods and landslides.*Collaborative Governance* in flood and landslide disaster management in Purbalingga Regency (Rusmawan Teddy, 2023). One of the actions that can be taken by the community to reduce the risk level of landslide disasters is to prepare by knowing and implementing preparedness measures in the event of floods and landslides that disrupt community activities (Bila & Saputra, 2019). The Purworejo Regency Government is working hard to launch an adaptive toilet construction project in areas affected by floods and landslides so that residents can enjoy all the benefits (Hasna & Darumurti, 2023).

A number of articles have discussed further the disaster management policy so that the community must be resilient and responsive in supporting the implementation of the policy. With the community's concern for various problems, they can make a positive contribution to the management of government at the community level. However, the vulnerability of the community must also be considered; Along with the increasing

complexity of society, existing social network models will also be increasingly easily influenced by growth dynamics, education levels, income, and the impact of information technology (Pratama & Sakir, 2023). Figure 1 discusses about *Collaborative Governance* in disaster management.

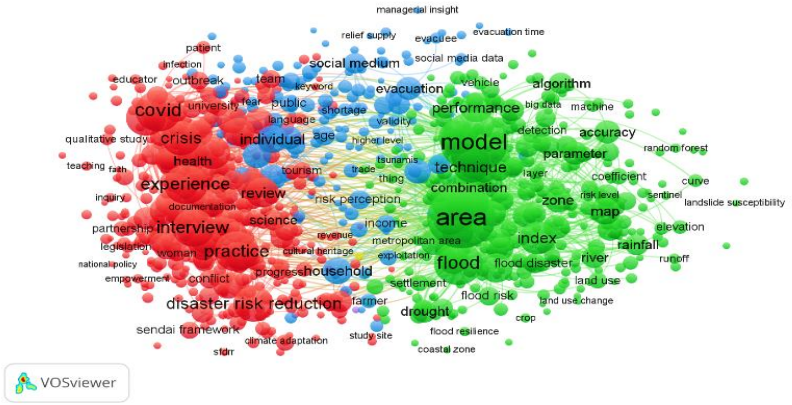

Figure 1. *Collaborative Governance* in Disaster Management

Source: Vos Viewer Analysis

Table 3. Frequency of Themes in Research (Scopus Database 2020-2024)

Word	Cluster
Area, Flood Risk	3
Disaster Risk Reduction, Disaster Risk Governance	1
Governance, Communication, Organization, Actors	2

Source: Vos Viewer Analysis

Based on the results of data processing carried out by the author using the VOSviewer application, there are other studies related to *Collaborative Governance*. It can be seen that the results of the VOSviewer analysis show that there is a relationship *between Collaborative Governance* and several themes such as **Area, Disaster Risk Reduction, Governance, Disaster Risk Governance, Communication, Organization, Flood Risk**, **Actor.** If associated with this research, it can be concluded that *optimal Collaborative Governance* occurs with a focus on collaboration, commitment, and partnership between stakeholders for flood and landslide disaster management in Purworejo Regency in 2021-2022.

According to Ansel and Gash 2008, *Collaborative Governance* It is a way of managing government that involves many stakeholders, including the government, the

private sector, and the community. One of the activities implemented by the current government is the implementation of *Collaborative Governance* in response to natural disasters that may occur in various areas, which can cause material losses and also cause damage. By implementing *Collaborative Governance* Together they can create and manage government activities through coordination between the government, the community, and government agencies. Often there is still participation from various interest groups that is still not optimal, therefore efforts need to be made to increase the participation and commitment of various interest groups (Rusmawan Teddy, 2023). In addition, having a process of power, empowerment, and governance, democratic values are used to strengthen relations between groups (Nasrulhaq, 2020).This makes MDMC one of the institutions that handles disaster management in Purworejo Regency in the form of pre, during, or post-disaster in distributing aid to victims, strengthening communities in disaster resilience, and carrying out well drain movements during post-disaster times. In this study, it tries to fill the literature gap by focusing on the analysis of *Collaborative Governance* government with MDMC in disaster management in the local scope of Purworejo Regency. How are the Collaborative Efforts of the Purworejo Regency Government with MDMC in Disaster Management in Purworejo Regency in 2021-2022?

Literature Review

Disaster management according to (Danil, 2021) It is a process that involves various related parties, including: government, society, and the private sector in an effort to reduce the impact of disasters and restore post-disaster conditions. Disaster Management according to Law number 24 of 2007 Article 1 paragraph 5 is a set of disaster management that includes the participation and activities of various organizations that must work together to achieve the circumstances arising from the incident, and how often the policy must be implemented. decision (Arsyad, 2017). Disaster management can be done through cooperation between governments and community-based organizations (CSOs) in three stages: before the disaster, during the disaster, and after the disaster.

Cooperation between the government and civil society organizations in disaster areas can help increase the effectiveness and efficiency of disaster management while building the resilience and resilience of affected communities. This cooperation can be achieved through several ways, including communication, coordination, and shared responsibility between stakeholders. Various principles of cooperation can be used in disaster management, including participation, transparency, accountability, and inclusivity (Fatmasari, 2020). This

makes a disaster in Purworejo Regency have 4 main stages, namely: mitigation, preparedness, response, and recovery.

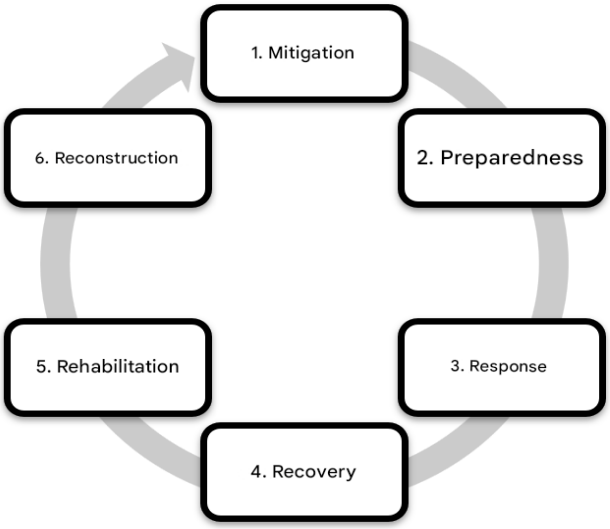

Figure 4. Disaster risk management

Source: Processed by author, 2025

Disaster mitigation

Disaster mitigation is an effort to reduce the risk and impact of disasters on people, the environment, and property. The impact of a disaster can be very damaging to both property and intangible objects and cause property losses, in the form of: structural damage, property loss, and economic loss. The following are disaster mitigation strategies that need to be considered: Mapping, Monitoring, Information Dissemination, Socialization and Counseling, and Early Warning. Disaster mitigation requires collaboration between the government, the community and the private sector in implementing disaster reduction strategies that can be used to reduce the risk of adverse impacts from disasters, such as: building disaster prevention infrastructure, strengthening community preparedness and building human resources. resource capacity in disasters in Purworejo Regency (Nandy, 2021) (Nugroho et al., 2022).

Preparedness

Disaster preparedness refers to preparedness and response activities carried out in the event of a disaster. This includes: planning, training and infrastructure necessary to mitigate the impact of disasters. In the context of disaster reduction, preparedness plays a critical role in reducing vulnerability and improving response to disasters. The benefits of good disaster

preparedness are to reduce fatalities, economic losses, and infrastructure damage due to disasters. Disaster reduction strategies related to planning include emergency planning, community training, disaster prevention infrastructure development, early warning systems, and disaster response plan development. In the context of disaster reduction, preparedness is an important aspect that needs to be highlighted. Good preparation can reduce the impact of disasters and protect communities and valuable assets. Therefore, disaster mitigation strategies should include efforts to improve preparedness through emergency planning, training, and safety infrastructure (Brida, 2023), (Yogi Cahyo, 2018).

Response

Disaster response is a series of actions to reduce the impact of a disaster and restore the post-disaster state. With the rapid response, evacuation, provision of humanitarian assistance, emergency medical treatment, and the establishment of evacuation posts. Applications in the field involve disaster management officers, volunteers, and other related parties working together in disaster response. Disaster response includes relief efforts, humanitarian assistance, infrastructure recovery, and economic recovery. Disaster mitigation strategies related to disaster response include emergency planning, community training, disaster prevention infrastructure development, early warning systems, and disaster response plan development. This includes coordination between regional disaster management agencies (BPBD), the Indonesian Red Cross, Social Service, Population Control, Family Planning, Women's Empowerment, and Child Protection, as well as the Military District Command (KODIM) 0708 Purworejo Regency (Brida, 2023), (Yogi Cahyo, 2018). The positive impact of the response to save lives, reduce damage, and provide assistance to victims. However, the shortcomings or negative impacts of the response are less than optimal (Ayu Anggita Sari et al., 2020).

Recovery

Disaster recovery is part of disaster management which includes efforts to restore post-disaster conditions as well as community and environmental recovery. The concept of disaster recovery includes various strategies such as physical rehabilitation, psychological rehabilitation, and economic recovery. Implementation on the ground involves a variety of groups working together to recover from the post-disaster situation, including disaster management officials, volunteers, and the general public. The positive impact of effective disaster recovery is that it can accelerate the recovery process and restore public and

environmental health. However, if coordination and response are inadequate, for example lack of financial support or community participation, disaster recovery may have little or no impact (Widiyanto, 2023), (BPBD, 2022). There are comprehensive stages after a disaster, namely:

Disaster rehabilitation is a series of activities to restore social and environmental conditions after a disaster occurs. The rehabilitation program includes the improvement and restoration of all aspects of public/community services to the level that should be in the post-disaster environment. Implementation on the ground involves a variety of groups working together to recover from the post-disaster situation, including disaster management officials, volunteers, and the general public. The positive impact of effective post-disaster rehabilitation is that it can accelerate the recovery process and restore the state of society and the environment. However, inadequate coordination and response, such as community participation, can result in ineffective or negative impacts on post-disaster rehabilitation (Coppola, 2015).

Post-disaster reconstruction according to (Law Number 24) is a stage of disaster management which includes efforts to restore infrastructure and public space damaged by disasters. The concept of reconstruction includes the reconstruction of all infrastructure and facilities as well as institutions in the social and cultural fields, ensuring order and reviving community participation in all fields of life. Implementation on the ground involves various parties such as disaster management agencies, volunteers, and communities, who work together to rebuild infrastructure and public spaces damaged by disasters. The positive impact of effective post-disaster reconstruction is that it can accelerate the recovery process and restore the condition of the community and the environment. If coordination and response are inadequate, suboptimal post-disaster reconstruction can cause gaps or negative impacts, such as lack of community participation in flood and landslide disaster management in Purworejo Regency in 2021-2022 (Coppola, 2015)

Theory *Collaborative Governance* from (Ansell, 2008) It is relevant to be used in this study because it is able to explain the dynamics of multi-stakeholder collaboration in disaster management. The theory emphasizes the importance of initial conditions, such as resource imbalances and inter-stakeholder trust, as well as collaborative processes that include building trust, commitment, and shared ownership. This is in line with various literature (Affan, 2021) and (Muhammad, 2022) that highlighting the importance of communication, active participation, and coordination between stakeholders in disaster management. Indicators such as mutual understanding, face-to-face dialogue, and the

achievement of intermediate results are also in accordance with practice in the field. Therefore, Ansell and Gash's theories provide a robust framework for analyzing the effectiveness of collaboration in the context of disaster management policy.

Method

The research method used in this study is a qualitative method, with data sources derived from various news, planning documents, Purworejo Regency government programs, as well as previous studies that discuss the collaboration policy between the local government and the Muhammadiyah Disaster Management Center (MDMC) in disaster management in Purworejo Regency. The data collected does not come from literature review alone, but from actual data that supports the research results, such as program implementation reports, policy documents, relevant previous research results, and news related to disaster management efforts in the field. Thus, this study focuses on the analysis of policy implementation and collaboration that actually occurs in the research area, so that the results obtained can describe real conditions in the field. This approach allows researchers to deeply understand the dynamics of cooperation between the government and MDMC, the challenges faced, and the effectiveness of the strategies implemented in reducing disaster risk. In addition, the data obtained also provides a concrete picture of the role of each party in disaster management, so that the resulting recommendations can be more targeted and applicable to increase capacity and coordination in dealing with disasters in Purworejo Regency.

The stage of this research is Data Collection, which is a stage that aims to collect primary data and secondary data. The second stage is Data reduction, which is a stage that aims to select data that has been previously collected. Next, the Data Analysis stage, which is a stage that aims to categorize and analyze data that has been previously reduced. The last stage is in the form of Drawing Conclusions which aims to draw the meaning and value of the data that has been analyzed. So that this research is divided into 4 stages, namely: 1) Data Collection which aims to collect data both in the form of books, graphic data, scientific articles that are in accordance with the theme of the study; 2) Data reduction that aims to sort and select data that is in accordance with the purpose of the study, and problem formulation; 3) Data analysis is an important stage where data is analyzed to obtain value and meaning to answer the formulation of the problem; 4) Conclusion are drawn for the generalization of existing results. The flow of the research stage is described in Figure 2.

Figure 2. Research Stages

Source: Processed by author, 2025

This study uses secondary data from observations, interviews with various parties, and analysis of relevant documents such as government documents, research institutions, or community organizations in Purworejo Regency. The snowball method is used to obtain more in-depth information about flood and landslide disaster management by utilizing recommendations from the first subject to other similar subjects. Qualitative data analysis techniques are used to identify patterns, themes, and insights related to earthquake risk reduction through interviews, observations, and documents. This process helps to design mitigation strategies according to the local context, with steps: data collection, data reduction, analysis using Vosviewer, data presentation, and conclusion drawn. The following are the variables, indicators, and parameters in table 4.

Table 4. Research Parameter Indicators

Variabel	Indicator	Parameter
Initial conditions	Knowledge resource power imbalance	1. Incentives for barriers to participation 2. Prehistory Cooperation or conflict (Initial level of trust)
Collaborative process	1. Building trust 2. Commitment to the process	1. Understanding each other 2. Dependency 3. Shared process ownership 4. Openness to the development of common achievements
	Mutual understanding	1. Mission clear 2. Definition of a shared problem 3. Identify shared values
Outcome	1. Outcome menengah	1. Small wins 2. Strategic plan 3. Joint Fact Findings
	2. Face-to-face dialogue	1. Negotiate on the basis of good faith

Source: (Ansell, 2008)

The initial condition of limited educational resources in disasters often causes a change process that can be used to encourage collaboration between stakeholders, but there are still problems that are used as a factor in the management of floods and landslides that occurred in 2021-2022. In the early stages, cooperation that can cause conflicts often involves information technology systems, this is used to identify the risk of floods and landslides, provide information related to disasters that occur, and reduce risks that occur in Purworejo Regency in 2021-2022. Flood and landslide disaster management often has a

number of obstacles that can make it difficult for collaboration between teams, including: budget limitations, lack of coordination, and lack of communication between stakeholders. For this reason, the government, the community, and business actors work together in identifying risks and making efforts to develop solutions to overcome the challenges of floods and landslides that occurred the following year in Purworejo Regency. There is a face to face process in the collaborative process in Figure 3.

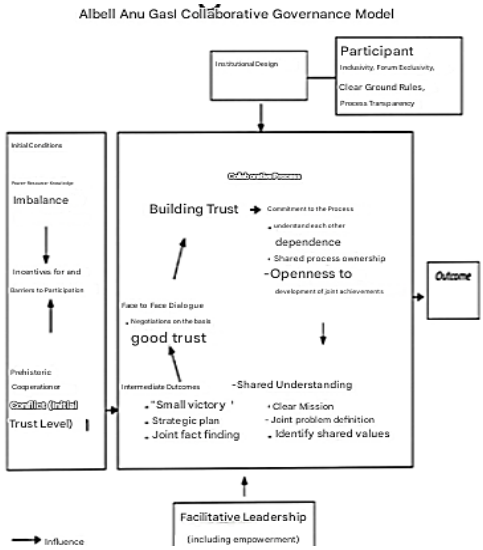

Figure 3. The Concept of Collaborative Government
Source: (Danastry & Kurniawan, 2021).

In the context of disaster management, the concept of *Collaborative Governance* It can be applied to a variety of situations, including mitigation, preparedness, and post-disaster recovery. Multi-stakeholder collaboration can strengthen community participation in disaster prevention and mitigation and improve the effectiveness and efficiency of decision-making. Collaboration can also strengthen preparedness and response, including developing emergency response plans, educating the public, and using available resources effectively. This process can encourage collaboration between various stakeholders, including government, society, and the private sector. In addition, the implementation of collaborative management requires the support of various policies and laws that support collaboration between different interest groups (Muhammad, 2022). In addition, involving many stakeholders, who are often affected by local communities as a result of being affected by disasters, is often used to create a system that is more responsive with stakeholders from governmental and non-governmental organizations, but becomes a "multi-stakeholder organization" (Affan, 2021). Meanwhile, according to Holzer, *Collaborative Governance* as follows.

A theory that emphasizes the importance of cooperation between the government, the private sector and the social sector when making decisions about natural resources and public policies. In the context of disaster management, the concept of collaborative management can be used to improve coordination and cooperation between various actors involved in pre-disaster, disaster mitigation, and post-disaster functions. Cooperation between governments and CSOs can help increase the effectiveness and efficiency of disaster management while building the capacity and resilience of communities affected by disasters (Fardiah et al., 2023). Governments can play an important role in building trust, promoting information and encouraging the active participation of various stakeholders in the decision-making process. Holzer et al.'s research found that there are several collaborative management models that can be used in the context of shared services, including hierarchical models, market models, and collaborative models (Nelvi Rahmadani, 2022).

The research presented by Florini and Pauli discusses the concept of collaborative management and its application in various contexts, including disaster management. In addition, in the context of disaster management, the concept of collaborative management can be used to improve coordination and cooperation between various actors involved in pre-disaster, mitigation, and post-disaster. Florini and Pauli's research found many factors that support and hinder the implementation of collaborative management such as communication, trust, commitment, understanding, and results. This collaboration can be done in several ways, including communication, coordination, and the sharing of responsibilities between stakeholders. The government can play an important role in building trust, promoting information and encouraging the active participation of various stakeholders in the decision-making process (Dian Tamitiadini, 2019).

In addition, *Collaborative Governance* put forward by Florini and Pauli emphasized the importance of cooperation between the government and civil society organizations, this can increase effectiveness and efficiency while building disaster capacity and community resilience, as well as identifying several collaborative management principles that can be used in disaster management, such as participation, transparency, accountability, and inclusivity. These principles can build trust and strengthen cooperation between governments and civil society organizations in disaster prevention. Therefore, *Collaborative Governance* is one of the important ways to deal with complex problems, especially related to public policy and public affairs, including flood and landslide disaster management in Purworejo Regency in 2021-2022.

Result and Discussion

Flood and Landslide Problems in Purworejo Regency

Floods and landslides are problems that often occur in Purworejo Regency and require serious attention. To reduce disasters, the government and the community must be able to carry out prevention, countermeasures, mitigation and socialization. One of the preventive efforts is to collect disaster data accurately and quickly. In addition, mitigation activities include control, recovery, repair and reconstruction. The disaster management agency provides training to volunteers in disaster areas, consisting of the Government, MDMC and the role of the community (Sidik, 2024).

Cooperation between the government, MDMC, and the community is essential to improve regional preparedness and resilience to disasters. With regular training, volunteers can understand evacuation procedures, emergency response, and methods to provide assistance to victims effectively. In addition, the development of mitigation infrastructure, such as early warning systems and drainage improvements, is also part of the strategy to reduce the risk of floods and landslides. With optimal cooperation, it is hoped that disaster management in Purworejo Regency can take place faster and more precisely, so that the impact caused can be reduced and the community can recover better after the disaster occurs (Sidik, 2024). Disaster risk index of Central Java Province in figure 5.

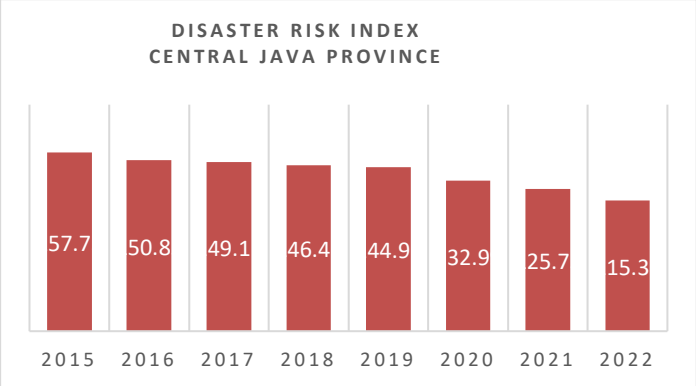

Figure 5. Central Java Province Disaster Risk Indeks
Source: (W. Adi et al., 2023).

The decrease in the value of the disaster risk index shows that there has been progress in the effectiveness of disaster mitigation and management efforts in Central Java Province. The local government together with a number of related parties continue to improve preventive measures, such as strengthening the early warning system, increasing the capacity of human resources through volunteer training, and developing disaster-resistant

infrastructure. On the other hand, the concern and direct involvement of the community in protecting the environment and complying with safety protocols is also an important factor in minimizing the impact of disasters. However, challenges still exist given the high level of vulnerability of regions to various types of natural disasters, so continuous cooperation between governments, communities, and the private sector is needed to strengthen regional resilience and reduce overall risks. Furthermore, there is the 6th image regarding the Purworejo Regency disaster in 2017-2021, as follows:

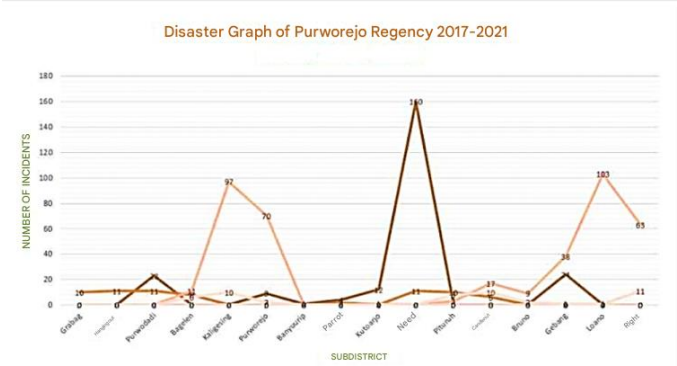

Figure 6. Disaster Graph of Purworejo Regency
Source: BPS Purworejo Regency, 2021

The 2017-2021 Purworejo Regency disaster graph has a high graph value of 180 incidents, often residents around Butuh Regency choose to change places in order to avoid the disaster that is happening. With the existence of the disaster risk index in Central Java Province and the Disaster Graph in Purworejo Regency, there is good collaboration with MDMC in carrying out disaster management in the form of: pre, during, and post-disaster. In addition, it is necessary to carry out an effective communication system carried out by the Government with MDMC in regulating and providing information with various stakeholders involved in disaster management, stakeholders involved in the form of: the Indonesian Red Cross, TNI and Polri organizations, as well as Non-Governmental Organizations, universities and other organizations.

Global climate change is one of the main factors in increasing rainfall intensity and weather patterns. Purworejo Regency often faces great challenges due to extreme weather conditions and climate change, the increasing frequency and severity of natural disasters. In addition, rising sea surface temperatures and global warming will change weather patterns, causing high rainfall and landslides. Local governments and related organizations are working together to improve early warning systems. Developing advanced technology and

improving people's ability to respond to emergencies is a priority. Mitigation measures taken by the government, active community participation and behavior change are also important in reducing future disasters. By combining conservation efforts and active community participation, Purworejo Regency can increase disaster resilience for the better (Ibrahim et al., 2020).

The inequality of knowledge resources in flood disaster management in Purworejo Regency as a whole is one of the main challenges before the establishment of cooperation or collaboration between the government and various parties. In the initial condition, flood disaster management in Purworejo still relies heavily on the internal capacity of local governments and BPBD, which is often limited to equipment, human resource training, and effective communication systems. Although efforts to provide assistance, provide logistics, and open public kitchens have been carried out, coordination between volunteers and community organizations is still sporadic and has not been optimally integrated. Many volunteers work independently, so there is often overlap or even a lack of assistance at some affected points (Zulkarnain et al., 2023).

The main driver of cooperation with other parties, both from the government, the private sector, and community organizations, arises from the need to strengthen communication, accelerate aid distribution, and increase the capacity of human resources through joint training. In addition, experience in flood management has repeatedly shown that partial and uncoordinated handling results in low disaster management effectiveness, especially when conventional communication infrastructure is disrupted by disasters. Problems that arose before the collaboration included weak cross-sector coordination, limited equipment and logistics, and the lack of effective communication forums between the government, volunteers, and the community (Iqra & Tahir, 2022).

There are still community organizations and private parties that have not been involved in a structured manner in the disaster management system, so the potential of existing resources cannot be utilized optimally. With government cooperation or collaboration, it is hoped that the effectiveness of disaster management will increase through the integration of resources, the preparation of a reliable emergency response communication system, and joint training and simulations to improve the preparedness of all parties. Another hope is the creation of transparency, joint evaluation, and decentralization of disaster management so that each party can participate according to their capacity and the community becomes more resilient in dealing with future disasters (Iqra &

Tahir, 2022). There is a discussion about the following disaster mitigation and management efforts.

Disaster Mitigation and Management Efforts

Flood disaster management in Purworejo Regency is an important part of disaster risk management. Strong educational resources in Purworejo Regency on flood disaster prevention are key in disaster mitigation and helping affected communities. However, many factors to consider, such as motivation to participate, history of cooperation or conflict (initial level of trust), and barriers to participation can affect the group's motivation to engage in collaborative work. Incentive barriers to participation can affect the success of flood disaster management in the Purworejo area. This is due to the inequality of power and resources so that it affects the incentives of the parties to carry out cooperative activities. In addition, there is a history of cooperation and conflict (first-level trust) that can affect the group's incentives to participate in flood and landslide disaster management in Purworejo Regency. This is due to the lack of action from each stakeholder, the need for a cooperation agreement between relevant stakeholders (Arinata et al., 2023).

Mutual understanding in efforts to manage flood and landslide disasters in Purworejo Regency is very important to achieve effective and efficient management. This includes the concern and commitment of all community members and related organizations to the main mission, namely minimizing the impact of disasters, maintaining the safety of community members, and accelerating the post-disaster recovery process. To realize this mission, all parties ranging from local governments, social institutions, to the general public must clearly understand their respective roles and responsibilities This mutual understanding includes the identification of risks and potential disasters in vulnerable areas, knowledge of mitigation tasks, preparedness, emergency response, and recovery, as well as handling procedures such as evacuation routes and emergency communication(Darmi, 2020).

The activities carried out include field training on preparedness, evacuation simulations, disaster risk socialization, and the construction of mitigation infrastructure such as embankments and waterways. However, obstacles such as limited resources, lack of coordination between institutions, and low public awareness are still often encountered. To overcome this, the Purworejo Regency Government together with various parties continue to strive to increase community capacity through continuous education, strengthening coordination between agencies, and optimizing information technology for disaster monitoring (Darmi, 2020).

The active involvement of the community in each stage of mitigation is the main focus to create comprehensive understanding and preparedness, so that flood and landslide disaster mitigation can be carried out in a more organized manner and have a positive impact on community safety. In the flood and landslide disaster management carried out by MDMC in Purworejo Regency in 2021-2022, there is a clear definition of the problem and it is mutually agreed upon by the community and related agencies. This will help the community and related organizations to understand and address negative issues. In addition, it will also be clear to see the values received by the community and related institutions in handling flood and landslide disasters in Purworejo Regency. These values are the foundation for all members of the community and related organizations to participate and carry out their duties in the field of disaster management. This will help communities and related organizations to reduce disaster risk and help affected communities (Febriana, 2012). There is a discussion about the government and MDMC as follows.

Government and MDMC Collaboration

The collaboration between the Purworejo Regency Government and MDMC during 2021 to 2022 has succeeded in bringing many advances in handling flood and landslide disasters. They trained around 500 volunteers in 15 disaster-prone villages to be better prepared for emergency situations. Thanks to evacuation exercises and simulations, disaster response time can be shortened from one hour to just 25 minutes. In addition, an early warning system was built in five landslide-prone locations and 3-kilometer drainage channels were repaired, so that waterlogging was reduced by up to 40%. In terms of assistance, they distributed more than a thousand food packages and hundreds of hygiene kits to flood victims, as well as established 10 emergency posts in collaboration with the local BPBD to facilitate coordination and disaster management (Sururi et al., 2023).

The success of this collaboration shows the importance of synergy between local governments and humanitarian organizations in dealing with disasters. With proper training, the community becomes more responsive and able to reduce the risk of loss when a disaster occurs. The development of infrastructure such as early warning systems and drainage channels also helps prevent greater disaster impacts. In addition, the distribution of aid and the establishment of emergency posts ensure that victims receive fast and appropriate assistance. All of these efforts strengthen community resilience and accelerate the recovery process after a disaster. Thus, this collaboration is a good example to be applied in other

disaster-prone areas (Zulkarnain et al., 2023). There is table 5 regarding data supporting the achievements of Purworejo's collaboration with MDMC in 2021-2022.

Table 5. Data to Support the Achievements of Purworejo's Collaboration with MDMC in 2021-2022

Collaboration Aspects	Year	Achievements	Activities
Prevention & Mitigation	2021-2022	500 Residents & Village Officials	Disaster Risk Management Training
Early Warning System	2021	10 disaster-prone points	Installation of landslide and flood detection devices
Emergency	2021-2022	1,000 parcel logistics	Distribution of emergency relief
Post-Disaster Recovery	2022	50 units of residents' houses repaired	Rehabilitation of damaged houses
Community Education	2022	20 schools & 15 villages receive evacuation training	Disaster socialization in schools and villages
Institutional Strengthening	2021-2022	25 villages have standby teams	Formation of a disaster preparedness team
Risk Mapping	2021	Flood & landslide risk map in 5 sub-districts updated	Assessment of regional vulnerability

Source: Processed by author, 2025

The government took steps to prevent and reduce the impact of floods and landslides, with around 500 residents and village officials participating in disaster risk management training in 2021–2022. This is a proactive step to improve community preparedness. On the other hand, in 2021, landslide and flood detection devices have been installed in ten disaster-prone locations as an early warning system, so that people can be better prepared to face disaster threats. In the emergency response phase between 2021 and 2022, as many as 1,000 logistical assistance packages have been distributed to meet the basic needs of disaster victims.

At the post-disaster recovery stage, repairs were made to 50 affected residents' houses through a rehabilitation program in 2022 as an effort to restore people's lives. Disaster education was also carried out through socialization in 20 schools and 15 villages, as well as evacuation training in 2022. The goal is for residents and students to know the steps that need to be taken when a disaster occurs. On the other hand, institutional strengthening is carried out by forming 25 disaster response teams at the village level in 2021–2022 to increase the capacity of local organizations.

The government has anticipatory efforts to do this in 2021. The efforts made by the government can be used as an assessment of flood and landslide risk in 5 sub-districts of Purworejo Regency through regional vulnerability analysis. The results are an important basis for future disaster management planning. Overall, these activities demonstrate comprehensive efforts to reduce the impact of disasters and increase community resilience. There is table 6 regarding the mapping of flood and landslide-prone locations in Purworejo Regency in 2021–2022.

Table 6. Mapping of Flood and Landslide Prone Locations in Purworejo Regency in 2021–2022

Types of disasters	Damage	Year	District	Casualties
Landslide	10 houses were severely damaged	2021	True	2 died
Flash Flood	5 houses washed away, 15 ha of rice fields flooded	2021	Purwodadi	-
Landslide	8 houses damaged, roads broken	2022	Squirt	1 Wounds
Floods & Landslides	20 houses damaged, 5 bridges collapsed	2022	Kaligesing	3 died
Flood	5 houses were lightly damaged	2022	Krendetan	-
Landslide	7 houses affected	2021	Jetis	-

Source: Processed by the author, 2025.

Natural disasters that occurred in Purworejo Regency from 2021 to 2022, often Purworejo Regency faced several natural disasters, including floods, flash floods, and landslides that caused damage to houses, infrastructure such as roads and bridges, agricultural land, and caused casualties and injuries. In 2021, for example, there was a landslide in Bener which resulted in 10 houses being destroyed and 2 people dying, floods in Purwodadi which resulted in 5 houses being destroyed and 15 hectares of rice fields submerged, and a landslide in Jetis which resulted in 7 houses being affected. The following year, a landslide in Ngombol damaged 8 houses and cut off road access, resulting in 1 person being injured. Meanwhile, floods and landslides in Kaligesing damaged 20 houses, destroyed 5 bridges, and killed 3 people.

The flood that occurred in Krendetan also caused 5 houses to be slightly damaged. Given the magnitude of the impact, the cooperation between the Purworejo Regency Government and the Muhammadiyah Disaster Management Center (MDMC) is very important in the context of effective and organized disaster management. Local governments have the power, resources, and access to policies to deal with emergencies and rehabilitation,

while MDMCs have a network of volunteers, experience in disaster response, and the ability to mobilize logistics and psychosocial assistance.

Forms of cooperation that can be carried out include coordination of emergency response through joint posts, infrastructure improvements, education and disaster mitigation in the community, health and psychosocial services, as well as handling damage and casualties to ensure targeted assistance. Through this collaboration, disaster response becomes faster and more efficient, aid can be distributed evenly, community resilience to disasters is increased, and volunteer networks and resources can be strengthened. There is table 7 regarding the installation of an early warning system (ews) in Purworejo Regency.

Table 7. Installation of Early Warning System (EWS) in Purworejo Regency

Institution	Year	District	Type of EWS	Status
BPBD Purworejo & BPPTKG	2021	Kaligesing	Landslide Early Warning System	Active
BPBD + Ministry of PUPR	2020	True	River Flood Sensor	Active
BPBD & BNPB	2022	Purwodadi	Flood Detection Tool	Active
BPBD + LIPI	2021	Squirt	EWS Landslide	Passive (damaged)
BMKG & Purworejo Regency Government	2023	Bagelen	Extreme Weather Systems	Active
BPBD + ITB	2022	Loano	Ground Motion Sensor	Active
Ministry of PUPR	2021	Banyuurip	EWS Flood	Active

Source: Processed by author, 2025

The cooperation of various institutions in disaster management in Purworejo Regency is evidenced by the installation and operation of the flood and landslide early warning system (EWS). The parties involved such as: BPBD Purworejo, Ministry of Public Works and Housing, BNPB, LIPI, BMKG, and the district government showed that disaster management in this area was carried out comprehensively and involved many stakeholders. In 2021-2022, a number of disaster-prone sub-districts, such as Kaligesing, Bener, Purwodadi, Ngombol, and Loano, have installed EWS to anticipate landslides and floods. Most of the equipment is still functioning, although there was one landslide EWS in Ngombol that was inactive due to damage.

This shows serious efforts from local governments and national partners to increase public awareness of disasters. In collaboration with the Muhammadiyah Disaster Management Center (MDMC), the well-functioning existence of EWS greatly supports

MDMC in carrying out rapid response, evacuation, and disaster mitigation education for the community. Additionally, MDMC can leverage EWS data to speed up decision-making processes during disasters and manage aid and volunteers more efficiently. In addition, this collaboration also strengthens the maintenance of EWS, trains the community to understand early warnings, and conducts disaster simulations on a regular basis. Through this synergy, the implementation of flood and landslide management in Purworejo becomes more planned, responsive, and data-based, so that it can reduce the risk of casualties and losses. Although the Early Warning System (EWS) has been installed, there are still several weaknesses that need to be considered, one of which is the need to increase the installation of EWS at several strategic points so that it can be more effective in the event of a disaster. In addition, the lack of information about direct community involvement is also an obstacle, because the active participation of the community is very important in running the EWS system well

Conclusion

Purworejo Regency is an area that is vulnerable to disasters and often has a high risk compared to other districts in Central Java, especially floods and landslides. In dealing with floods and landslides, the Purworejo Regency Government collaborates with many organizations, including the Indonesian Red Cross (PMI), the TNI and the National Police, non-governmental organizations (NGOs), universities and other organizations. The disaster management measures outlined need to be explained in more detail so that they can be understood properly. This includes the type of support provided, the parties involved in providing support, and the prevention efforts carried out. For example, support in the form of providing logistics, announcements, or education to the community. Additionally, it is important to explain where actions are implemented, whether in schools as part of education and preparedness programs, or directly on site when disasters occur. It is also important to determine who is doing these actions, whether it is the local government, volunteers, social institutions, or local communities. This collaboration must be carried out by coordinating and synchronizing in advance with government programs in disaster management. Although the coordination between BPBD Purworejo and various parties is quite good, this study found an important problem, namely the lack of cooperation between community organizations and the private sector when facing disasters. Therefore, this research is to increase cooperation and better coordination between agencies, this is done to strengthen disaster management efforts in Purworejo Regency.

Acknowledgent

Thank you Universitas Muhammadiyah Yogyakarta for supporting the publication of this work.

Reference

Affan, I. (2021). The Urgency of Community Participation in the Implementation of Regional Government. *DE LEGA LATA Journal of Law*, *6*(1), 139.

Ansell, C. & G. A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, *18*(4), 543–571.

Arianti, D., & Satlita, L. (2018). The Collaborative Governance on the Development of Mangrove Baros Conservation in the Village of Tirtohargo Kretek District Bantul Regency. *Journal of Public Policy and Administration Research*, *3*(6), 809–827. https://journal.student.uny.ac.id

Arinata, F. S., Nusantoro, E., Mulawarman, M., Antika, E. R., Nitami, L. Z., Karomah, A., & Yunanto, C. M. (2023). Landslide Disaster Disaster Knowledge and Preparedness Improvement Program for Elementary School Students. *GANESHA: Journal of Community Service*, *3*(1), 90–96. https://doi.org/10.36728/ganesha.v3i1.2424

Arsyad, M. (2017). Disaster Management Module Flood Disaster Management Training. *Water Resources Education and Training Center and Construction*, 77.

Ayu Anggita Sari, A. A. S. and D. H., Ruparathna, R., Hewage, K., Thomson, J., Jackson, T., Baloi, D., Cooper, D. R., Hoejmose, S. U., Adrien-Kirby, A. J., Sierra, L. A., Pellicer, E., Yepes, V., Giunipero, L. C., Hooker, R. E., Denslow, D., Nations, U., Nijaki, L. K., Worrel, G., ICLEI, ... Anne, A. (2020). The Role Of The Regional Disaster Management Agency In Flood Disaster Management In Gresik Regency. *Sustainability (Switzerland)*, *Vol. 2*, *No*(2), 21–35. http://www.unpcdc.org/media/15782/sustainable procurement practice.pdf%0Ahttps://europa.eu/capacity4dev/unep/document/briefing-note-sustainable-public-procurement%0Ahttp://www.hpw.qld.gov.au/SiteCollectionDocuments/ProcurementGuideIntegratingSustainabilit

Bila, A., & Saputra, B. (2019). Collaborative Governance Strategy in Government. *Journal of Administrative Transformation*, *9*(2), 196–210.

BPBD. (2022). Disaster Management - BPBD NTB Province | Towards NTB Resilient to Disasters. In *2022*. West Nusa Tenggara Province Regional Disaster Management Agency. https://bpbd.ntbprov.go.id/pages/penanganan-bencana

Flanges. (2023). *Disaster Mitigation and Preparedness Strategies*. Flanges. https://brida.badungkab.go.id/artikel/51110-strategi-mitigasi-dan-kesiapsiagaan-bencana

Coppola, D. M. (2015). Introduction to International Disaster Management: Third Edition. *Oxford, Elsevier Inc*. https://books.google.co.id/books?id=M3lQEAAAQBAJ&printsec=frontcover&hl=id#v=onepage&q&f=false

Danastry, A. G., & Kurniawan, T. (2021). Collaborative Governance on Fixed Broadband Network Penetration in Indonesia. *JIAP (Scientific Journal of Public Administration)*, *7*(2), 158–163.

Danil, M. (2021). Disaster Management. *Disaster Mitigation Proceedings*, Disasters, 7–14.

Darmi, T. M. A. (2020). Analysis Of The Implementation Of Disaster Mitigation Programs At The Regional Disaster Management Agency. *Journal of Public Policy and Administration*, *2*(1), 17–23.

Dian Tamitiadini, I. A. W. W. A. D. (2019). *Disaster Communication: Theory and Practical Approach to Disaster Studies in Indonesia - Dian Tamitiadini, Isma Adila, Wayan Weda Asmara Dewi - Google Books* (p. 4). https://books.google.co.id/books?hl=id&lr=&id=bE3SDwAAQBAJ&oi=fnd&pg=PR5&dq=Sehingga+mitigasi+dikatakan+sebagai+tindakan+berkelanjutan+untuk+jangka+panjang+dalam+mengurangi+resiko+dari+dampak+bencana+terhadap+manusia,+properti+dan+infrastruktur+&ots=PYypK

Fardiah, D., Darmawan, F., Rinawati, R., Edya Martina Supaat, V., Sandi Ibrahim Abdullah, and, & Correspondence, P. (2023). JCC as an Integrated Digital Communication for Disaster Information in West Java. *Journal of Communication*, *18*(1), 52–73. https://doi.org/10.20885/komunikasi.vol18.iss1.art4

Fatmasari, A. (2020). Secretariat General of the Ministry of Finance. In the *Ministry of Finance of the General Secretariat*. https://setjen.kemenkeu.go.id/in/post/bagaimana-seharusnya-auditor-merespons-dampak-pandemi-covid-19-terhadap-audit

Febriana, I. S. (2012). Public Understanding of the Level of Vulnerability to Landslide Disasters in Tieng Village, Kejajar District, Wonosobo Regency. *Thesis*, *66*, 190.

Hasna, A. L., & Darumurti, A. (2023). Collaborative Governance in Flood Mitigation in Pekalongan City. *JISIP UNJA (Journal of Social Sciences and Political Sciences, University of Jambi)*, *7*(1), 25–37. https://doi.org/10.22437/jisipunja.v7i1.24210

Ibrahim, K., Emaliyawati, E., Yani, D. I., & Nursiswati, N. (2020). Disaster Management Training and Simulation for the Community. *Media Karya Kesehatan*, *3*(1), 27–38. https://doi.org/10.24198/mkk.v3i1.23991

Inarisk. (2018). *Purworejo Regency Disaster Risk Assessment Document 2014 - 2018*. National Disaster Management Agency. Central https://inarisk.bnpb.go.id/pdf/Jawa/KRB Purworejo_final draft.pdf Document

Iqra, & Tahir, R. (2022). Module-based and simulation-based disaster response training on disaster preparedness knowledge. *Manarang Health Journal*, *8*(2), 82. https://doi.org/10.33490/jkm.v8i2.655

Lingganingrum, L., & Sakir. (2024). The Urgency of the Bantul Regional Disaster Management Agency in Increasing Disaster Awareness among Women's Community *Journal of Aristo (Social, Political, Humanities)*, *12*(1), 254–274.

Luh, N., & Dewi, Y. (2019). Dynamics of Collaborative Governance in Public Policy Studies. *Scientific Journal of Social Dynamics*, *3*(2), 1–11. https://journal.undiknas.ac.id

Maharani, E. (2023). *Purworejo landslide losses reached Rp 15.73 billion*. Republic. https://news.republika.co.id/berita/o9806r335/bnpb-kerugian-longsor-purworejo-mencapai-rp-1573-miliar

Muhammad, N. S. S. M. A. . et al. (2022). *Collaborative Governance: A Theoretical and Practical Review* (Muhammad Riyandi Firdaus and Farid Zaki Yopiannor (eds.); Print pe). Bildung.

Nandy. (2021). *Disaster Mitigation Materials: Definition, Types, Strategies, Stages and Examples* (Gramedia Blog).

Nelvi Rahmadani. (2022). Collaborative Governance in Flood Management in Dumai City. *Muqoddimah Scientific Journal: Journal of Social, Political and Humanistic Sciences*, *6*(1), 1–124. https://doi.org/10.31604/jim.v6i1.2022.161-174

Nugroho, O. C., Tricana, D. W., & Pinaryo. (2022). landscape Photography in Mapping Potential Natural Disasters in Ponorogo Regency. *Jurnal Aristo (Social, Politic, Humaniora)*, *10*(1), 118. https://doi.org/10.24269/ars.v10i1.4471

Pratama, Y. A. B., & Sakir. (2023). The Ability of Disaster-Resilient Village In Mitigating Landslides In Sirongge Village, Pandanarum Distrct, Banjarnegara Regency In The Ability Of Disaster-Resilient Villages In Mitigating Landslides In Sirongge Village, Pandanarum District, Banja Regency. *Journal of Aristo (Social, Political, Humanities)*, *11*(1), 20–45.

Rusmawan, Teddy, S. J. (2023). Collaborative Governance Process in Natural Disaster Management in Karangbawang Village, Rembang District, Purbalingga Regency. *Muqoddimah Scientific Journal : Journal of Social, Political, and Humanities Sciences*, *7*(1), 211. https://doi.org/10.31604/jim.v7i1.2023.211-220

Ruswan. (2021). *Guidelines for the Implementation of Community-Based Disaster Risk Reduction (PRBBK) through a religious approach*. Anyflip. https://doi.org/https://anyflip.com/ybfyv/inco/basic

Sidik, M. R. N. (2024). *Community Empowerment in Flood Disaster Management in Purworejo Regency, Central Java Province*. 1–10.

Sururi, A., Zainuri, A., Sarwah, P. H., & Romdoniyah, S. (2023). Institutional Capacity in Disaster Management in Banten Province. *Journal of Administrative Reform*, *11*(1), 1–16.

W. Adi, A., Shalih, O., Shabrina, F. Z., Rizqi, A., Putra, A. S., Karimah, R., Eveline, F., Alfian, A., Syauqi, Septian, R. T., Widiastono, Y., Bagaskoro, Y., Dewi, A. N., Rahmawati, I., Seniarwan, Suryaningrum, H. A., Purnamasiwi, D. I., & Puspasari, T. J. (2023). *IRBI (Indonesian Disaster Risk Index). Id. at 1*, 1–338.

Widiyanto. (2023). *Definition of Disaster Recovery, How It Works, and Its Benefits - DTI.* Digital Transformation Indonesia.

Yogi Cahyo, G. S. (2018). *Disaster Management Process – Babylon Disaster*. Public relations. https://bpbd.babelprov.go.id/proses-penanggulangan-bencana/

Zulkarnain, Sudarmi, Miswar, D., & Pargito. (2023). Landslide disaster early warning system using simple tools and technology in Tanggamus Regency. *Journal of Community Service*, *7*(3), 151–155.