JSIP: Jurnal Studi Ilmu Pemerintahan
Volume 4, No 2, 2023
ISSN: 2722-7405

Analysis of Cross-Sectoral Collaboration in Local Disaster Management: A Study on the Bima Regency Government

Mukhlis Ishaka*[1], Abdul Kadir[1], Haeril[1], Suraya[1], Irawansyah[2]

[1]*Department of Public Administration, Universitas Mbojo Bima, Indonesia*
[2]*Department of Government Studies, Universitas Teknologi Sumbawa, Indonesia*

Email: leomukhlis@gmail.com

Article Info

Keyword:
Collaboration, Local Government, Disaster Management, Bima Regency

Abstract: This study aims to determine cross-sectoral collaboration efforts in disaster management in Bima Regency through coordination, integration, partnership, and empowerment. The subjects of this study were selected through a purposive sampling technique. Data collection techniques consist of observation, interviews, and documentation. The results of the study indicate that the implementation of disaster management, apart from referring to the ability of the Regional Government of Bima Regency to implement policies and their performance effectively, also applies the principles of integration and various levels of organization. Especially in disaster prevention and mitigation efforts, the Regional Government of Bima Regency collaboratively seeks to strengthen rules and institutional capacity and disseminate regulations and guidelines for implementing the Bima Regency Spatial Plan by implementing building zoning in disaster risk areas. Then carry out Research and Development activities involving professional Research Teams and NGOs. Publish research results to be used as guidelines for reducing risk and increasing knowledge of the government and the community in efforts to reduce disaster risk.

Article History:
Received: 15 April 2023
Revision: 20 May 2023
Accepted: 22 July 2023

DOI: https://doi.org/10.35326/jsip.v4i2.3504

INTRODUCTION

The implementation of disaster management and anticipatory measures is an absolute requirement to be able to coexist with natural disasters (Lestari et al., 2012) The Government's political will is needed to be able to prioritize integrated disaster management programs which include pre-disaster (yuliana, 2019), during emergency response, and post-disaster, as well as socialization activities to the community (Sun et al., 2020) Then in addition to requiring effective policy breakthroughs and innovations, disaster management is also a very complex, multi-stakeholder, multi-dimensional (Comfort, 2005), and multi-disciplinary activity, so handling it requires institutional collaboration (Alagh, 2021)

Because the main requirement in disaster management efforts is integration between institutions (Khodarahmi, 2009), and sectors in integrative principles based on cooperation or partnership between all parties including local communities (Fan et al., 2021). Disaster management and preparedness measures are critical to ensuring long-

term cohabitation with natural catastrophes. To achieve this aim, substantial political backing and government choices are required. The government must emphasize a comprehensive disaster management program that includes pre-disaster, emergency response, and post-disaster phases. Furthermore, socialization and disaster management education for the community are critical to reducing the likelihood of catastrophe damages.

Disaster management is a challenging endeavor. It includes several stakeholders with varied responsibilities and backgrounds and numerous disciplines. As a result, institutional collaboration and cooperation are critical when dealing with the complexities of catastrophe management. Stakeholders must collaborate and synergize to establish effective and efficient methods for dealing with the numerous difficulties.

The integrative concept and integration across institutions and sectors must form the core of disaster management operations. This entails working together and collaborating with all parties, including local communities. The local community's participation is critical to disaster management operations' effectiveness. Involving local populations in disaster management program design, execution, and assessment will enhance their awareness of hazards, knowledge of necessary actions, and ability to cope with catastrophes.

In catastrophe management, policy breakthroughs, and innovations must also be considered. With technology advancements and ever-changing catastrophe patterns, innovation is critical to enhancing the efficacy and efficiency of countermeasures. Furthermore, effective and inclusive policies should be implemented to give the necessary assistance and structure in coping with catastrophes.

Because with the involvement of all elements as a participatory democratic manifestation in disaster management efforts so that later it will be able to identify, codify, and share knowledge which can then be used by policy makers, in this case the Regional Government to be used as a reference in disaster management in Bima Regency (Haeril et al., 2021) For this reason, in order not to have a negative impact on greater economic, social, psychological, and ecological losses, the paradigm of disaster management must be preventive and carried out with institutional commitment (Handayani, 2011)

Engaging all sections of society in disaster management activities is critical to developing a participative democratic approach. The potential for identifying, codifying, and sharing knowledge increases when diverse stakeholders, such as local communities, non-governmental organizations, and the commercial sector, get involved. This acquired information may eventually be utilized as a reference by policymakers, particularly the Local Government, in developing a more effective and focused disaster management plan in Bima District.

In this instance, the local government is essential in establishing policies and organizing disaster relief activities. Decision-making will become more informed and evidence-based with quality data and information from multiple sources. This will aid in directing suitable management strategies to mitigate the negative effect of catastrophes on economic, social, psychological, and environmental losses.

In dealing with catastrophe risks, the preventative disaster management paradigm is critical. These preventive initiatives encompass several proactive approaches to lessen threats and vulnerabilities before a catastrophe happens. Potential losses may be mitigated or even prevented by emphasizing preventative actions. The institutional commitment of many government agencies, organizations, and communities to taking preventive measures will guarantee that disaster management activities run smoothly and effectively.

A comprehensive and integrated strategy is the cornerstone of disaster management efforts in the face of the complexity and variety of natural catastrophes. Close coordination among all stakeholders, proactive policies, and active community support and engagement will all contribute to a safer and more resilient environment. The Local Government of Bima Regency can tackle the difficulties of catastrophes more prepared and focused by employing existing knowledge and experience, establishing safety for its residents, and encouraging sustainable development that favors the safety and welfare of the whole community.

The local government's strong and collaborative institutional commitment is critical to effectively implementing disaster management. Through this commitment, current resources may be efficiently deployed to fulfill disaster management goals via organized organizational procedures (Alam et al., 2015). As a result, collaboration across multiple agencies and stakeholders may be better coordinated and directed, boosting the efficiency and efficacy of the activities performed.

Good cooperation capabilities will shape the managerial competencies, knowledge, and skills of Human Resources (HR) participating in disaster management activities. Qualified and competent human resources will be able to contribute more effectively in dealing with catastrophe difficulties due to their diverse skills (Hari Kristianto, 2020). Furthermore, an adequate institutional framework will promote coordination and integration among the parties involved.

Given the complexities of catastrophe management, a coordinated plan including several sectors is critical. Disaster management is not just the duty of one sector but requires collaboration across several, including the government, communities, non-governmental organizations, and the commercial sector. In this process, the concepts of coordination, integration, cooperation, and empowerment must be followed (Alam et al., 2015).

Research on cross-sectoral collaborative efforts in disaster management in Bima District is critical in explaining how these principles might be appropriately applied. This research can provide valuable guidance and recommendations for the local government and various relevant stakeholders to improve capacity and effectiveness in dealing with disasteregional disastersving deeper into coordination, integration, partnership, and empowerment in the management. Successfully coordinated efforts will reduce catastrophe risk and safeguard communities and the environment from more severe consequences.

RESEARCH METHOD

The descriptive qualitative approach is used in this study to examine phenomena and events that occur in the context of disaster management in Bima District. The study site was carefully chosen in collaboration with the Bima Regency Regional Disaster Management Agency (BPBD), the Regional Development Planning Agency (Bappeda), and the Bima Regency Environment Agency. This strategic choice of the site enabled the study to closely examine and comprehend the case studies and issues that arose in disaster management in the area.

Nonprobability sampling approaches, notably purposive selection techniques, were utilized to pick study participants. The researchers used this strategy to choose the sample based on specific criteria, enabling relevant and competent participants in the study environment to participate. This method guarantees that the data acquired is relevant to the study goals and delivers valuable information.

Several data collection methods were employed, including observation, interviews, and documentation. Observation lets researchers view and document disaster-related events or activities in the field. Interviews allowed us to learn about the viewpoints and opinions of those directly engaged in the mitigation efforts. Documentation was employed to gather pre-existing data, such as disaster management reports, regulations, or records.

The following step is data analysis, which occurs after all the data has been gathered from the field. The data analysis approach employed in this study is an interactive model. This method is based on the Miles and Huberman paradigm, which consists of three major stages: data reduction, data presentation, and conclusion drawing or verification. Data reduction is used to organize and clean up data so that it may be more focused on critical topics. Following that, the data was presented precisely and methodically to aid comprehension and interpretation. Finally, conclusions or verification are based on extensive and appropriate data analysis to answer research questions and validate results.

RESULT AND DISCUSSION

The Bima Regency area has geological, geographical, demographic, and socio-cultural conditions that are prone to disasters, both caused by natural factors, non-natural factors and man-made products (Amirudin et al., 2021) Thus that disasters in Bima Regency are also dominated by earthquakes, tidal waves, tidal floods and abrasion, forest fires, droughts, extreme weather, volcanoes, poisoning due to seawater intrusion, epidemics, and disease outbreaks (Hapsari & Djumiarti, 2016). All of them can cause environmental damage, property losses, economic and psychological impacts, and casualties, so systematic, integrated, and coordinated handling is needed (Habibullah, 2013)

To respond to the complex workload, effective institutional arrangements are needed by having a clear organizational structure, roles, tasks, responsibilities and being able to network with all levels of Government (Dewi, 2018)

In the Regional Regulation of Bima Regency Number 1 of 2014 concerning Disaster Management in article 5, where there are 5 things that are the responsibility of the Regional Government in the implementation of disaster management which include:

1. Integrating disaster management in regional development planning by including elements of disaster management and disaster risk reduction plans in Regional Long-Term Development Plans, Regional Medium-Term Development Plans, and Regional Government Work Plans;
2. Protection of communities from disaster threats and impacts;
3. Allocation of regional disaster management funds in the regional budget that is adequate at every stage of pre-disaster, emergency response, and post-disaster.
4. Guarantee the fulfillment of the basic rights of disaster victims in accordance with minimum service standards including food, health services, clean water and sanitation needs, clothing, shelter and temporary shelter, and psychosocial services; and
5. Recovery of socio-economic, cultural and environmental life, security and public order, infrastructure, and public facilities damaged by disasters.

So that in disaster management efforts in Bima Regency, the Regional Government and the Regional Apparatus Work Unit have worked productively and collaboratively, especially in strengthening the legal framework for disaster management, efforts to increase capacity and accountability of disaster management governance, mainstreaming Disaster Management in development, implementing disaster management mechanisms, increasing multi-stakeholder partnerships, and improved disaster preparedness and emergency management (Meiwanda, 2016)

Disaster Management Implementation Activities in Bima Regency are all contained in the Disaster Management Plan (RPB) document, which is a master document for disaster management that covers all phases of disaster management in Bima Regency. RPB documents can be categorized as "master plans" or master plans for disaster management for a period of 5 years. As a regional plan, RPB must summarize the perspective of implementing disaster management from all local government agencies involved (Erman, 2017)

In addition, the success of this disaster management implementation will greatly refer to the ability of Bima Regency Government institutions and Regional Apparatus Units as elements of local government administration to make policies and implement them effectively (Kurniawan et al., 2014) Because if the Regional Government is not committed to responding to disaster threats, this can cause a crisis of confidence in the people affected by the disaster, assuming that the Bima Regency Government is not serious about carrying out its duties and functions in providing protection to its citizens (Kusumasari, 2014).

So that the efforts made by the Regional Government of Bima Regency through the Regional Disaster Management Agency (BPBD) are by conducting socialization efforts and publication of disaster risk assessment data such as threat assessments, vulnerability studies, and capacity assessments. Disaster risk assessment was conducted as a strategy to reduce disaster risk in Bima Regency (Marendra et al., 2014)

Disaster risk assessment is also carried out to produce a risk map for each disaster in an area in Bima Regency. Disaster risk map, a map that shows the level of disaster risk in a disaster zone and object against various characteristics of disaster threats.

The availability of disaster risk assessments and maps must be able to be an adequate basis for regions to formulate disaster management policies. For the community, the results of this assessment can be used as a strong basis in disaster risk reduction efforts. In the assessment of Disaster Risk involving BPBD, Bappeda, Dinsosnaker, Kesbangpol, Dishubkominfo, BMKG, BPMPKB, PU, Dinkes, and disaster-vulnerable villages.

The following is a picture of disaster risk assessment methods;

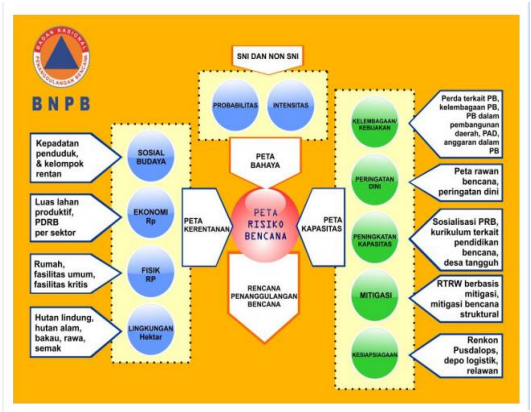

Figure 1. Disaster Risk Assessment Method

So based on the data from the analysis of disaster risk and hazard maps in Bima Regency, it can be explained that the types of hazards in Bima Regency have varying levels. This level can be seen from the area and the grouping of index values of the potential hazard. Such as droughts, forest and land fires, tsunamis, landslides which have a large area affected with high class. As for the types of hazards of Floods, Extreme Weather, Epidemics and disease outbreaks, Earthquakes, extreme waves of abrasion Eruptions and Volcanoes have a variable area of danger for several districts.

Determination of the level of risk and danger is adjusted to the type of potential hazard that occurs in an area. With hazard level data obtained from the results of low, medium, or high hazard assessments that have the greatest hazard area. The hazard index scale is divided into three categories, namely low (index value 0 -0.33), medium (index value 0.34 - 0.66) and high (index value 0.67 -1). The following is a table of potential hazard levels in Bima Regency;

Table 1. The level of danger that has the potential to occur in Bima Regency

No.	Jenis Bahaya	Indeks Bahaya	Tingkat Bahaya
1	Banjir	0,663	Sedang
2	Cuaca Ekstrim	0,6326	Sedang
3	Epidemi dan Wabah Penyakit	0,333	Rendah
4	Gempabumi	0,6025	Sedang
5	Gelombang Ekstrim dan Abrasi	0,5522	Sedang
6	Kekeringan	0,8919	Tinggi
7	Kebakaran Hutan dan Lahan	0,7938	Tinggi
8	Letusan Gunungapi	0,333	Rendah
9	Tanah Longsor	0,8175	Tinggi
10	Tsunami	0,889	Tinggi

Collaboration (Multi Level Organization)

The essence of collaboration indicates the existence of two or more parties who interact or establish dynamic relationships to achieve a common goal. In collaboration there are interrelated components such as Principled engagement, shared motivation, muatual trust, mutual understanding and Capacity for join action (Ketaren, 2016)

So that the success of disaster management does not only refer to the ability of Bima Regency Local Government institutions to make and implement policies, but also efforts to form collaboration between sectors so that management activities become more effective (Ahdi, 2015)

In Law Number 24 of 2007 concerning Disaster Management, there are principles in disaster management, among others, carried out through the principles of coordination, integration, partnership, and empowerment. In addition, it has also required the establishment of Regional Disaster Management Agencies (BPBD) in areas that have a high level of disaster risk. The Regional Disaster Management Agency is the official organization of the Regional Government of Bima Regency to carry out disaster management activities which include disaster prevention and mitigation, preparedness, emergency management, rehabilitation and reconstruction fairly and equally then coordinate the implementation of disaster management activities in a planned, directed, integrated, and comprehensive manner.

Through Regional Regulation Number 7 of 2010 concerning Amendments to Regional Regulations of Bima Regency Number 3 of 2008 concerning the Formation, Arrangement, Position, Main Duties and Functions of the Regional Apparatus Organization of Bima Regency. The establishment of BPBD Bima Regency is expected to ensure integration in the formulation of policies and the implementation of regional disaster management operations in a directed and integrated manner. In addition, it is also expected to become an institution that is able to coordinate all disaster management efforts in Bima Regency.

As a leading sector in disaster management efforts in Bima Regency, BPBD strives to implement the programs in the Bima Regency Regional RPB Document with cross-sectoral cooperation in agencies related to disaster management in Bima Regency. The achievement of disaster management efforts will be optimal if cooperation is established between BPBD Bima Regency with SKPD and related agencies.

In an effort to prevent and mitigate disasters, the Bima Regency Government seeks to strengthen rules and institutional capacity, especially efforts to disseminate rules and technical guidelines for the implementation of Regional Spatial Planning through Bima Regency Regional Regulation Number 01 of 2019 concerning Detailed Spatial Planning (RDTR). There are several forms of action carried out by BPBD together with BAPPEDA, Dishubkominfo, BMKG, BPMPKB, and General Licensing, namely;

1. By enforcing zoning of buildings in disaster-risk areas, especially in areas with slopes that can trigger landslides.
2. Then by seeking to update and implement IMB provision based on disaster risk reduction.
3. Increased Supervision and Control of land use use and building IMB in disaster management efforts,

4. Enforcement of local regulations related to settlements,

In addition, BPBD also conducts Research and Development activities with the UGM Disaster Research Team where the budget allocation is from BNPB, as well as with NGOs and LP2DM related to research and preparation of Disaster Potential Maps and RPB Documents. Then conduct socialization and dissemination about Disaster Potential and disaster response simulations on campuses and schools involving international NGOs such as Islamic Centers. The results of the collaborative research are expected to be an effort to prevent more harm to reduce the level of risk that will arise by managing the location of the source of danger. In addition, the publication of research results can be used as a guide for vulnerability reduction by carrying out structural and nonstructural mitigation. And of course, it can increase regional capacity, especially government and community knowledge in disaster risk reduction efforts by knowing the types of threats and impacts of disaster events.

Meanwhile, efforts to increase effectiveness at the stage of disaster emergency management are focused on increasing disaster preparedness and optimizing emergency response operations and accelerating early recovery with the involvement of BPBD supported by BAPPEDA, Dinsosnaker, KESBANGPOL, Dishubkominfo, BMKG, BPMPKB, PU, DINKES, and villages in Bima Regency.

Then the implementation of disaster management is also carried out through the strengthening of the Disaster Risk Reduction Forum (DRR Forum). Through the DRR forum of Bima Regency consisting of cross-sectoral actors, it is expected to be able to accelerate progress in the implementation of disaster management in the regions. Cross-sectoral actors who are policy makers and stakeholders can make a considerable contribution in implementing disaster management planning in Bima Regency.

In order to overcome the constraints of the lack of disaster management budgeting in Bima Regency, BPBD together with SKPD related to difficulties when carrying out emergency response efforts, as well as reconstruction and rehabilitation efforts, although also supported by Regional Budget funds which incidentally have no Budget, Also provide at least one percent expected by law, as well as the State Budget, Also provided ready-made funds with accountability through special mechanisms. However, it is still inadequate and representative, higher social awareness is needed on the legislative and executive sides in developing budget politics in the Bima Regency Regional Budget so that in the future the percentage will increase for disaster management costs which in fact the level of disaster resilience is very vulnerable and worrying (Widodo & Waskita, 2014).

For this reason, it is necessary for the political will of Regional Heads to be able to prioritize integrated disaster management programs and improve their socialization institutionally and to the community. Local governments must initiate the implementation of disaster management starting from the establishment of regional disaster management policies that must be in line with regional development policies of Bima Regency (Santoso, 2013).

In addition, the need to increase the budget ceiling in disaster management, at least able to meet the figure of 1 percent of the regional budget as stated in the law.

Capacity Building and Community Participation

Capacity building is a process of doing something, or a series of movements. In an effort to increase capacity, there will be multi-level changes in individuals, groups, organizations and systems in order to strengthen the adaptability of individuals and organizations in disaster management efforts (Stenchion et al., 2018)

While participation reflects empowerment efforts, providing a fair space (equatable sharing of power), the principle of consultation, information exchange, partnership, and community control over the disaster management process (Al Eid & Arnout, 2020)

The strategy in capacity building and community participation in Bima Regency is focused on community empowerment programs and strengthening the partnership function in disaster risk reduction through optimizing community empowerment for disaster management. This step is carried out to create independence and active community involvement.

In addition, there is an increase in multi-stakeholder partnerships in disaster management. Through strengthening the partnership function, it can mobilize various resources that can be utilized for disaster risk reduction outside the APBN and APBD budgets. Not only that, but the direction of a liquid partnership is also more likely to solve urgent problems outside the bureaucratic process. Partnerships between the government, the business world, and the community are developed in an effort to protect the economy. This partnership can raise contributions to participatory support from the private sector or the business world and the community in the implementation of disaster management.

Community participation can also be strengthened through the development of Disaster Resilient Villages that have been integrated with Village funds through government budgets that can be accessed by villages in realizing community resilience. Where regulated in PERMENDES number 19 of 2017 and PERMENDAGRI number 20 of 2018. Disaster resilient village activities have become a trend and all are competing to organize disaster resilient villages both BPBD, NGOs, and Universities and the Business World, so the task of the Bima Regency Regional Disaster Management Agency is to synchronize community resilience programs into Disaster Resilient Villages and also encourage the commitment of local governments to make rules, regional regulations and Governor's Decrees related to multi-stakeholder strengthening using APBD to enter the RPJMD framework and the sustainability of existing resilience through synergy with universities and business institutions. The implication of the SPM of the Ministry of Home Affairs that disasters become mandatory regional affairs in their implementation can be encouraged for development programs and the formation of disaster-resilient villages.

For this reason, in realizing community participation in disaster management as well as forming disaster-resilient village communities, the Regional Government of Bima Regency carries out several activities including:

1. The implementation of periodic preparedness training needs to be optimized.
2. Disaster socialization and ways of disaster risk reduction to all levels of society, in order to create a culture of safety from disasters in Bima Regency,
3. Synergistic community empowerment based on locality, risk, and sharing

processes between actors by prioritizing resource independence,
4. Increasing the community's ability to repair land/environmental damage independently,
5. Improving the community's ability to assess damage and estimate the needs of the emergency response period,
6. Strengthening the implementation of applied disaster research related to disaster risk reduction,
7. Preparation of Permanent Procedures for Participatory Community Disaster Emergency Management,
8. Mapping vulnerability and social potential in areas exposed to priority disasters,
9. Development of alternative livelihoods of communities in disaster-prone areas. By strengthening non-natural sources of livelihood as alternative livelihood options for people in disaster-prone areas,

The steps above are carried out to improve the paradigm of disaster management in Bima Regency, which so far only relies on problems during disasters and some of their causes. However, anticipation activities and efforts to estimate the potential consequences of certain hazards have not been maximized, due to inflexible and unagile institutions, early warning system structures and socialization that are often ineffective for all levels of society causing disaster management activities to be ineffective.

CONCLUSION

This research investigates the effectiveness of cross-sectoral collaboration in disaster management at the local level, focusing on the Bima Regency Government. The study emphasizes the importance of integration and partnership principles in disaster prevention and mitigation efforts. The findings reveal that the success of disaster management in Bima Regency is closely linked to the government's ability to formulate and implement effective policies driven by collaboration between various sectors and stakeholders.

The Bima Regency Government demonstrates a proactive approach to disaster prevention by strengthening rules and institutional capacity. Enforcement of building zoning regulations in disaster-risk areas shows the government's commitment to reducing the vulnerability of communities to potential disasters. Additionally, research and development activities involving professional research teams and NGOs contribute significantly to evidence-based decision-making. The collaborative effort enables the government to access expert insights, facilitating formulation of informed strategies tailored to address the region's specific disaster challenges.

The dissemination of research results is crucial in bridging the gap between knowledge and action. By publishing research findings, the Bima Regency Government empowers itself and the community with valuable guidelines for vulnerability reduction. The research outcomes enhance the knowledge capacity of the government and the community, further strengthening their collective efforts in disaster risk reduction.

This study confirms the significance of cross-sectoral collaboration in disaster management at the local level. The integration and partnership principles adopted by the Bima Regency Government have proven instrumental in fostering an effective and

coordinated approach to disaster prevention and mitigation. The success of disaster management in Bima Regency reflects the importance of collaboration between different stakeholders and sectors, highlighting the potential for this approach to be replicated and applied in other disaster-prone regions.

This research on cross-sectoral collaboration in local disaster management in the context of the Bima Regency Government contributes valuable insights to the field. The findings emphasize the significance of integration and partnership principles in formulating and implementing adequate disaster management policies. The study's results serve as a valuable reference for local governments, policymakers, and disaster management practitioners seeking to enhance their resilience and response capabilities. Ultimately, this research provides a solid foundation for future studies on disaster management and the role of collaboration in fostering safer and more resilient communities.

REFERENCE

Ahdi, D. (2015). Perencanaan Penanggulangan Bencana Melalui Pendekatan Manajemen Risiko. *Reformasi*, *5*(1), 13–30.

Al Eid, N. A., & Arnout, B. A. (2020). Crisis and disaster management in the light of the Islamic approach: COVID-19 pandemic crisis as a model (a qualitative study using the grounded theory). *Journal of Public Affairs*, *20*(4), 1–14. https://doi.org/10.1002/pa.2217

Alagh, Y. K. (2021). Climate change and disaster management. *Economic and Political Weekly*, *56*(4), 58–59. https://doi.org/10.1596/28137

Alam, P. C., Nurcahyanto, H., & Susi Sulandari. (2015). *Upaya Rehabilitasi dan Rekonstruksi Wilayah Pasca Bencana Erupsi Gunung Merapi di Kecamatan Kemalang Kabupaten Klaten Provinsi Jawa Tengah Universitas Diponegoro*. 4.

Amirudin, A., Maarif, S., Marnani, C. S., & Wilopo. (2021). Pengkajian Cepat Kesehatan Lingkungan Pada Manajemen Bencana. *Jurnal Kesehatan Indonesia (The Indonesian Journal of Health)*, *XI*(3), 111–115.

Comfort, L. K. (2005). Risk, security, and disaster management. *Annual Review of Political Science*, *8*, 335–356. https://doi.org/10.1146/annurev.polisci.8.081404.075608

Dewi, D. P. dan U. (2018). Kemitraan Pemerintah, Lsm, Dan Masyarakat Dalam Mitigasi Bencana Erupsi Gunung Merapi Di Desa Argomulyo, Kecamatan Cangkringan, Kabupaten Sleman. *Journal Student UNY*, *7*(4), 1–23.

Erman, E. (2017). Aktor, Akses Dan Politik Lingkungan Di Pertambangan Timah Bangka. *Jurnal Masyarakat Indonesia: Jurnal Ilmu-Ilmu Sosial Indonesia*, *36*(2), 71–101.

Fan, C., Zhang, C., Yahja, A., & Mostafavi, A. (2021). Disaster City Digital Twin: A vision for integrating artificial and human intelligence for disaster management. In *International Journal of Information Management* (Vol. 56, Issue 530). https://doi.org/10.1016/j.ijinfomgt.2019.102049

Habibullah, H. (2013). Kebijakan Penanggulangan Bencana Berbasis Komunitas: Kampung Siaga Bencana Dan Desa/Kelurahan Tangguh Bencana. *Sosio Informa*, *18*(2), 133–150. https://doi.org/10.33007/inf.v18i2.69

Haeril, H., Mas'ud, M., Iradat, T., & Hendra, H. (2021). Penerapan Kebijakan Mitigasi Bencana (Fisik dan Nonfisik) dalam Mengurangi Risiko Bencana di Kabupaten Bima. *Journal of Governance and Local Politics (JGLP)*, *3*(1), 23–47.

https://doi.org/10.47650/jglp.v3i1.179

Handayani, R. (2011). Analisis Partisipasi Masyarakat Dan Peran Pemerintah Daerah. *Proceeding Simposium Nasional Otonomi Daerah*.

Hapsari, A. M., & Djumiarti, T. (2016). Pengembangan Kapasitas Kelembagaan Badan Penanggulangan Bencana Daerah Kabupaten Jepara. *Journal of Public Policy and Management Review*, *5*(2), 1–11.

Hari Kristianto, A. (2020). SUSTAINABLE DEVELOPMENT GOALS (SDGs) DALAM KONSEP GREEN ECONOMY UNTUK PERTUMBUHAN EKONOMI BERKUALITAS BERBASIS EKOLOGI. *Business, Economics and Entrepreneurship*, *2*(1), 27–38. https://doi.org/10.46229/b.e.e..v2i1.134

Ketaren, S. O. (2016). Kepemimpinan Krisis Bupati/Kepala Daerah Kabupaten Karo pada Manajemen Kedaruratan Kesehatan Bencana Erupsi Gunung Sinabung. *Disertasi*, 1–511.

Khodarahmi, E. (2009). Disaster Prevention and Management Emerald Article : Media relations Media relations. *Group*, *18*(5), 535–540.

Kurniawan, M. A., Suarbawa, K. N., Septiadhi, A., Fisika, J., Udayana, U., Jimbaran, K. B., Bali, B., Mataram, K., & Bima, K. (2014). *Analisis risiko bencana gempabumi di wilayah nusa tenggara barat*.

Kusumasari, B. (2014). *Managemen Bencana Berdasarkan Kapasitas Lokal* (p. 166).

Lestari, P., Sembiring, I. D. P. B., Prabowo, A., Wibawa, A., & Hendariningrum, R. (2012). 11.3 Manajemen Komunikasi Bencana Saat Tanggap Darurat. *Jurnal Ilmu Komunikasi*, *10*(2), 139–158.

Marendra, G., Santosa, E., & H, N. R. (2014). Kapasitas Kelembagaan dan Kearifan Lokal Dalam Antisipasi Penanggulangan Bencana Merapi tahun 2010 di Kabupaten Klaten (Studi Kasus di Desa Balerante Kecamatan Kemalang). *Journal of Politic and Government Studies*, *3*(3), 276–285.

Meiwanda, G. (2016). Kapabilitas Pemerintah Daerah Provinsi Riau: Hambatan dan Tantangan Pengendalian Kebakaran Hutan dan Lahan. *Jurnal Ilmu Sosial Dan Ilmu Politik*, *19*(3), 251. https://doi.org/10.22146/jsp.15686

Santoso, E. B. (2013). Manajemen Risiko Bencana Banjir Kali Lamong Pada Kawasan Peri-Urban Surabaya-Gresik Melalui Pendekatan Kelembagaan. *Jurnal Penataan Ruang*, *8*(2), 48–59.

Stenchion, P., Emergency, O., & Officer, M. (2018). Development and Disaster Management. *Development and Disaster Management*, 40–44. https://doi.org/10.1007/978-981-10-8485-0

Sun, W., Bocchini, P., & Davison, B. D. (2020). Applications of artificial intelligence for disaster management. *Natural Hazards*, *103*(3), 2631–2689. https://doi.org/10.1007/s11069-020-04124-3

Widodo, A. S., & Waskita, J. (2014). Manajemen Resiko Bencana Melalui Kerjasama Antar Daerah (Studi Tentang Manajemen Resiko Bencana Gunung Slamet). *Perpajakan, Manajemen, Dan Akutansi*, *6*(1), 57–65.

yuliana, irma. (2019). Adopsi Social Network Analysis (Sna) Dalam Upaya Membangun Ketangguhan Bencana Di Masyarakat. *JIKO (Jurnal Informatika Dan Komputer)*, *2*(2), 49–54. https://doi.org/10.33387/jiko.v2i2.1312