

Enhancing Organizational Capacity of Regional Disaster Management Agencies (Bpbd) for Effective Disaster Response in Bandung Regency

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Abstract

Bandung Regency is an area prone to natural disasters. The Regional Disaster Management Agency (BPBD) of Bandung Regency needs to enhance its organizational capacity, as it serves as the primary government organization responsible for disaster management. This study employs a qualitative approach with data collection techniques consisting of observation, interviews, and documentation. The development of institutional capacity at BPBD Bandung Regency in disaster management is hindered by several factors, including a lack of transportation facilities and infrastructure, such as mobile toilets, disaster victim transport vehicles, and specialized equipment. Additionally, the agency faces challenges in human resources, as the personnel lack expertise in disaster management, while the budget to support operations remains limited. Furthermore, there is a need to strengthen cooperation with other institutions to achieve common goals. Other obstacles in enhancing BPBD's institutional capacity include overlapping regulations, which create ambiguity in implementing disaster response, and suboptimal organizational support from personnel. Based on the data analysis, it can be concluded that BPBD Bandung Regency requires significant improvement in its institutional capacity for disaster management. This can be achieved by fostering partnerships with the private sector, collaborating on human resource training, and enhancing direct supervision of operations.

Keywords: *Capacity Development, Organization, Disaster Management.*

Introduction

Natural disasters are inherently unpredictable and result from a combination of natural phenomena, including floods, earthquakes, volcanic eruptions, landslides, as well as human-induced activities. Disaster management can be defined as a systematic process that involves a series of actions before, during, and after a disaster event. These actions encompass disaster prevention, risk reduction, preparedness, emergency response, recovery (rehabilitation and reconstruction), and long-term development efforts aimed at minimizing the likelihood and impact of future disasters.

Indonesia is a country with a high vulnerability to natural disasters due to its geographical location, which exposes it to various risks such as floods, extreme weather conditions, earthquakes, and tsunamis. According to the 2019 World Risk Index, Indonesia ranks 37th out of 180 countries in terms of disaster vulnerability. In response, the Indonesian government established the National Disaster Management Agency (BNPB) under Presidential Regulation No. 8 of 2008, acting as a key governmental body for disaster management. This initiative is part of the broader implementation of Law No. 24 of 2007 on disaster management. BNPB's responsibilities include providing guidance and direction for disaster management activities, which cover prevention, emergency response, rehabilitation, and reconstruction, ensuring equity and fairness. Additionally, BNPB plays a critical role in policy formulation and decision-making in disaster management, coordinating effective and efficient disaster response, and ensuring that efforts are aligned with national priorities and resources.

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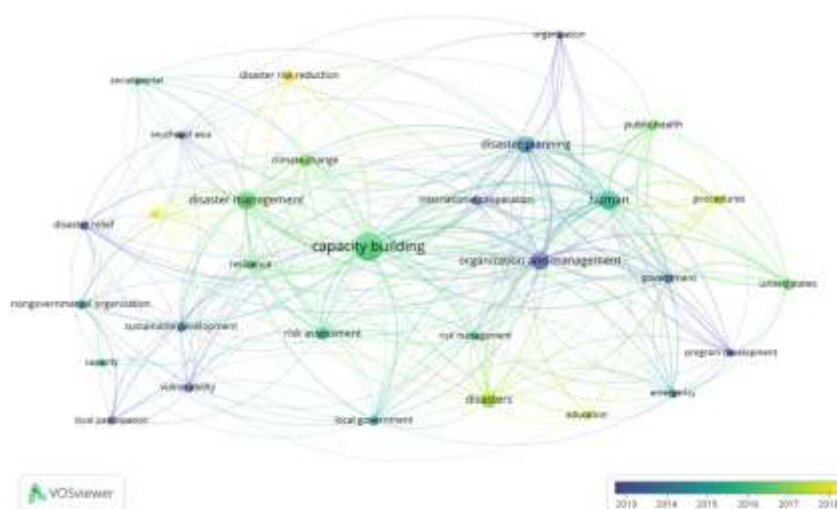
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Disaster management in Indonesia follows a decentralized approach, as mandated by Law No. 24 of 2007, which requires the establishment of Regional Disaster Management Agencies (BPBD) at the provincial and district/city levels. This decentralization is intended to enhance the responsiveness of local governments in disaster management efforts, ensuring that disasters are addressed promptly and effectively at the regional level. According to the aforementioned law, both the central and local governments share the responsibility for disaster management. Local governments are tasked with fulfilling the rights of affected communities and ensuring the provision of adequate services for disaster victims in line with established service standards. They must also protect citizens from disaster risks, integrate disaster risk reduction efforts into development programs, and allocate sufficient funds for disaster management activities within their regional budgets.

In 2010, Bandung Regency, in response to growing disaster risks, established its own BPBD through Regional Regulation No. 11 of 2010 and Regent Regulation No. 53 of 2010, which outlined the agency's roles and responsibilities. The formation of BPBD Bandung marked a significant step towards improving local disaster preparedness and response. West Java Province, particularly Bandung Regency, is highly susceptible to hydrometeorological disasters such as floods and landslides, exacerbated by high rainfall and the region's mountainous terrain. Bandung Regency, in particular, is prone to landslides, with 12 sub-districts identified as having a high risk, including Kutawaringin, Pangalengan, Ibun, Canguang, Banjaran, and Baleendah. The topography of these areas, characterized by hills and mountains, contributes significantly to their vulnerability.

Despite its critical role, BPBD Bandung faces several challenges in executing its mandate, particularly in enhancing its institutional capacity. One of the key challenges is the limited financial resources allocated for disaster prevention and mitigation programs, which require significant funding. Coordination between relevant agencies also remains a challenge, as sectoral interests sometimes impede effective collaboration. Additionally, BPBD Bandung struggles with insufficient human resources, both in terms of quantity and expertise. Developing a professional and skilled workforce is essential to ensure the success of disaster management efforts. Furthermore, BPBD Bandung faces a pressing need for improved infrastructure, including office facilities and specialized disaster response equipment, which are crucial for effective disaster management operations.

Figure 1. Bibliometric Analysis in Disaster Management Research



Sources: Proceed by Author, 2024

The bibliometric analysis presented in the figure indicates that *capacity building* is a central theme in disaster management research. This topic is strongly linked to other key terms such as *disaster planning* (Murphy et al., 2014; Naim, 2008; Ozcevik et al., 2009), *resilience* (Doerfel et al., 2022; Fisher et al., 2022; Jacobi et al., 2016; Rumpa et al., 2023; Sathyendranath et al., 2020), and *risk assessment* (Van Westen & Woldai, 2012), underscoring the primary focus on strengthening capacities to address disaster risks. The visualization also clusters keywords into several thematic groups. For example, the green cluster includes *capacity building* (Ashu & Van Niekerk, 2020; DiBella & Burch, 2023; Goldwyn et al., 2023; Rose & Jayawickrama, 2016; Yordanov et al., 2020), *sustainable development* (Bello & Lambulira, 2024), and *local participation* (Allen, 2006; Kraft & Smith, 2019; Maynard et al., 2018), highlighting the importance of community-based capacity development. The blue cluster emphasizes *disaster planning*, *organization and management*, and *international cooperation*, pointing to the role of cross-organizational and international collaboration. Additionally, the yellow cluster focuses on issues such as *climate change* and *disaster risk reduction*, indicating a growing concern with risk reduction and climate change adaptation.

The color gradient on the map, from blue (2013) to yellow (2018-present), reflects the evolution of research trends, from earlier topics such as *disaster relief* and *organization* to more recent issues like *disaster risk reduction* and *climate change*. Terms such as *Southeast Asia*, *local government*, and *nongovernmental organizations* highlight the local application context, while *international cooperation* emphasizes the importance of global collaboration. Overall, the findings suggest that research related to *capacity building* is broad and continuously evolving, reflecting the need for more integrated and adaptive approaches to disaster challenges at various levels.

The relevance of the research titled *Development of BPBD Organizational Capacity in Disaster Management in Bandung Regency* becomes evident when considering previous studies that emphasize the importance of capacity building in disaster response. As the primary agency responsible for disaster management, BPBD requires capacity enhancement that extends beyond human resources to include risk management, strengthening cross-sector coordination, and fostering collaboration with various stakeholders. This study is crucial to ensure that BPBD can adapt to the challenges posed by climate change, improve disaster preparedness, and effectively promote disaster risk reduction, particularly in Bandung Regency, which is highly susceptible to disasters.

Literature Review

The literature review highlights the importance of capacity development in public organizations, with a focus on the BPBD's role in disaster management. Effective capacity development is multi-dimensional and includes aspects such as human resources, organizational culture, decision-making systems, and infrastructure. According to Milen (2001), capacity development occurs in three key stages: needs assessment, strategy formulation, and monitoring and evaluation. These stages provide a framework for identifying the capacity gaps and formulating targeted interventions. Presidential Regulation No. 59 of 2012 further emphasizes the importance of institutional capacity development through improvements in organizational structure, work culture, budgeting, infrastructure, and the implementation of standard operating procedures.

Horton (2003) and Hall (2003) discuss organizational capacity in terms of two main components: resources and management. The resource component includes human resources, infrastructure, and financial resources, while the management component involves strategic leadership, program management, and external cooperation. For BPBD in Bandung Regency, developing these capacities is essential for improving disaster preparedness, fostering collaboration with external partners, and strengthening the overall disaster management system. By understanding the factors influencing organizational capacity development, this study aims to provide recommendations for BPBD Bandung Regency to enhance its disaster management capabilities and adapt to the evolving challenges posed by disasters and climate change.

Research Problem

This study focuses on the capacity development of the Regional Disaster Management Agency (BPBD) in disaster management in Bandung Regency. Based on bibliometric analysis and literature review, the

development of organizational capacity is a crucial issue in the context of disaster management. BPBD, as the primary institution responsible for disaster management, requires adequate capacity in various aspects, such as human resources, infrastructure, and budget management. This research aims to identify the challenges faced by BPBD in strengthening its capacity and to explore how optimal capacity development strategies can be implemented to enhance disaster management effectiveness in the region.

Objectives and Research Questions

The objectives of this study are to identify the key factors influencing the capacity development of BPBD in Bandung Regency, to analyze how these factors affect the effectiveness of disaster management, and to propose a model for improving BPBD's capacity. Specifically, the research aims to assess the challenges faced by BPBD in terms of its human resources, infrastructure, and budget management, and to examine how these factors contribute to or hinder the agency's ability to manage disaster risks.

The primary research questions guiding this study are: What challenges does BPBD face in developing its capacity for disaster management? How do human resources, infrastructure, and budgeting influence BPBD's ability to enhance its disaster management capacity? What strategies can BPBD implement to address these challenges and improve its preparedness for future disasters?

Outline of the Paper

The paper is structured as follows: Chapter 1 provides an introduction to the study, outlining the background, purpose, and scope of the research, along with a brief overview of the methodology used. Chapter 2 presents the literature review, examining key concepts related to organizational capacity development, including frameworks by Milen (2001) and relevant regulations such as Presidential Regulation No. 59 of 2012. This chapter also explores the theoretical foundations of capacity development, including human resources, infrastructure, and organizational culture. Chapter 3 describes the research methodology, including the approach, data collection methods, and data analysis techniques. In Chapter 4, the analysis and findings are presented, highlighting the challenges BPBD faces in its capacity development, as well as the factors influencing these challenges. Chapter 5 offers a discussion of the findings, comparing them with existing studies and drawing conclusions about their implications for BPBD's policy and practice. Finally, Chapter 6 presents the conclusions and recommendations based on the research, followed by suggestions for further studies in this area.

Methods

Research Design

This study adopts a **qualitative research approach**, which aims to provide a detailed account of the phenomenon under investigation by examining words and giving a complex depiction of data, opinions, and perspectives of the respondents. As stated by Creswell (2014), qualitative research seeks to explore and understand the meaning attributed by individuals or groups to certain phenomena. In this study, the research design chosen is a case study, specifically focusing on the organizational capacity development of the Regional Disaster Management Agency (BPBD) in Bandung Regency. The case study design allows for an in-depth exploration of the capacity development within BPBD, providing insights into the factors influencing its effectiveness in managing disaster preparedness and response.

Data Collection

Data collection in this study involves both primary and secondary data sources. Primary data will be gathered through interviews and focus group discussions (FGDs) with key informants, including BPBD staff, local government officials, and other relevant stakeholders involved in disaster management. These interviews aim to capture the views, experiences, and challenges faced by individuals directly involved in BPBD's capacity development efforts. In addition to primary data, secondary data will also be used. This includes publicly available documents such as government publications, official reports, articles from

scientific journals, and news articles related to BPBD's activities and capacity development. Secondary data will provide contextual information and serve as a foundation for understanding the broader environment in which BPBD operates. The combination of primary and secondary data will enable a comprehensive analysis of the factors influencing BPBD's organizational capacity.

Data Analysis

The data analysis follows a qualitative approach as described by Miles and Huberman (1984). It starts with data condensation, where the collected data is selected, focused, and simplified to highlight the most relevant information. Next, the data is displayed in an organized manner, making it easier to identify patterns and insights. Finally, conclusions are drawn and verified by cross-checking the data for consistency and reliability. This process ensures that the findings are credible and directly address the research questions, providing a thorough analysis of the organizational capacity development within BPBD in Bandung Regency.

Research and Discussion

Research Result

The research on the disaster management capacity of the Bandung Regency Disaster Management Agency (BPBD) examines key factors affecting its operational effectiveness in addressing disaster risks. Given Bandung Regency's significant disaster vulnerability, this study delves into the financial, human resource, and structural capacities of BPBD. The findings reflect the critical challenges faced by BPBD, including budget constraints, limited personnel, and insufficient digital infrastructure, which hinder the agency's ability to respond to and mitigate disaster impacts effectively. The study also identifies areas of improvement, such as diversifying funding sources, enhancing training programs, and strengthening inter-agency coordination, which are essential for building a more resilient disaster management framework. The table below summarizes these findings, offering insights into the existing gaps and potential strategies for improvement.

Table 1. Research Findings

<i>Aspect</i>	<i>Findings</i>
<i>Financial Capacity</i>	BPBD Bandung Regency relies on the APBD for financing but faces budget constraints for digitalization and needs to diversify funding sources, such as through collaborations with the private sector and international donors.
<i>Human Resource Capacity</i>	Training programs such as 'Post-Disaster Safe House Training' and internal capacity-building initiatives like GIS-based disaster management have been implemented. However, limited personnel hinder optimal disaster response. Increased funding for training programs is essential.
<i>Structural Capacity</i>	BPBD has the capacity to collaborate with various stakeholders (government, TNI, Polri, and community organizations), but inter-agency coordination is hampered by complex procedures. Infrastructure and SOPs are sufficient, but digitalization needs further development. Planning is often constrained by budget limitations.

Source: Proceed by author, 2024

Discussion

Financial Capacity

The BPBD of Bandung Regency manages its budget primarily through the Regional Revenue and Expenditure Budget (APBD), with most of the funds allocated to disaster mitigation activities such as logistics, community education, and equipment maintenance. According to the 2023 Indonesia Disaster Risk Index (IRBI) report, Bandung Regency has reduced its disaster risk from high to moderate, indicating

the effectiveness of the budget utilization in enhancing local preparedness. However, significant challenges remain. In the 2023 APBD, Bandung Regency's total regional expenditure amounted to IDR 6.8 trillion, yet a large portion of this budget was directed towards non-disaster-related needs. BPBD continues to face budget constraints in expanding digitalization of disaster management services, such as implementing online platforms for disaster risk mapping. To address this, it is imperative for the government to explore collaborations with the private sector through mechanisms like Corporate Social Responsibility (CSR) to increase funding sources.

The financial capacity of the BPBD is crucial in supporting risk reduction and disaster management efforts. With Bandung Regency ranking 8th in the highest disaster risk index in West Java, the BPBD carries a significant responsibility in ensuring sustainable funding for operational activities and mitigation efforts. In 2022, BPBD's budget allocation included funds for mitigation activities such as training programs, the establishment of disaster-resilient villages, and the operation of the Quick Reaction Team (TRC). For example, the budget allocated for drought mitigation due to the El Nino phenomenon covered the provision of clean water and firefighting equipment. However, budget realization showed that available funds were insufficient to strengthen infrastructure or digitalize the disaster management system.

The discrepancy between the enormous needs for handling over 300 disaster incidents annually and the budget allocation has become evident. In 2022, for instance, 49,819 individuals were affected by various disasters. With the growing need for enhanced mitigation capacity, the dependency on the APBD for funding creates risks regarding the continuity of long-term programs, particularly if budget allocations are reduced. To overcome these challenges, it is crucial to diversify funding sources, including through private sector partnerships or grants from international donor agencies. Although regulations such as Government Regulation No. 12/2019 on Regional Financial Management are in place, improving the effectiveness of budget management remains essential. One of the indicators of improvement lies in the underutilization of modern technology in disaster management systems.

Human Resource Capacity

The human resource (HR) capacity within BPBD of Bandung Regency is a critical element in supporting effective disaster management in an area with a high risk of disasters. According to the 2016 Indonesia Disaster Risk Index (IRBI), Bandung Regency ranks 12th in terms of disaster vulnerability in West Java and 155th nationally, with a score of 174, categorizing it as a high-risk area. With risks including tectonic earthquakes, floods, landslides, and potential volcanic activity, BPBD faces a significant challenge in ensuring that its personnel are adequately prepared for various emergency situations.

To enhance HR capacity, BPBD has initiated several training programs, such as the "Post-Disaster Safe House Training." This program provides technical knowledge to the community, particularly construction workers, on how to rebuild homes that are safe and disaster-resistant. In total, 35 participants were trained, including construction workers from disaster-prone areas like Rancabali, Ciwidey, and Kertasari, as well as community disaster response groups such as MTB Forum and the Community-Based Disaster Alert (Sibat) program. Over a three-day training period, participants were taught techniques for constructing instant and safe housing, aimed at accelerating post-disaster rehabilitation without relying solely on government aid.

Additionally, BPBD has focused on improving the internal capacity of its personnel. Training initiatives include disaster management, GIS-based mapping of vulnerable areas, and emergency response simulations. One breakthrough initiative is the implementation of a Geographic Information System (GIS) to aid in integrated disaster mitigation planning. Despite these efforts, challenges remain, such as the limited number of personnel, which makes it difficult to optimize disaster response. Therefore, enhancing individual competencies remains a top priority, ensuring that each member of BPBD can perform optimally during disaster events.

Collaboration with local communities also plays a pivotal role in BPBD's strategy. Partnerships with organizations such as Sekolah Rescue and MTB Forum have helped bolster community involvement in disaster mitigation. BPBD encourages active community participation through training programs that not

only focus on emergency response techniques but also on building mental resilience to cope with crisis situations independently. However, this approach still has room for improvement. Increasing the budget allocation for training programs would allow for broader participation, while fostering stronger coordination with various stakeholders, including private sector entities and academic institutions, could accelerate knowledge transfer and capacity-building efforts. Through sustained strategic actions, BPBD of Bandung Regency can enhance the preparedness of its human resources, better equipping them to handle disaster challenges effectively.

Structural Capacity

- **Capacity for Networking and Partnerships.** The BPBD of Bandung Regency's capacity for networking and collaboration encompasses its partnerships with various stakeholders to strengthen coordination in disaster management. BPBD collaborates with the Ministry of Social Affairs, BMKG (Meteorological, Climatological, and Geophysical Agency), the Indonesian National Military (TNI), the National Police (Polri), and local community groups such as MTB Forum and Sekolah Rescue. This synergy is realized through formal agreements to ensure more integrated emergency services. Nevertheless, challenges persist, particularly in terms of inter-agency coordination, which is sometimes hindered by complex procedures and a lack of standardized communication. Strengthening cross-sector coordination remains a priority to enhance the efficiency of disaster management operations.
- **Infrastructure and Process Capacity.** The infrastructure of BPBD Bandung Regency is generally adequate, with facilities such as a command center equipped with communication devices and GIS technology. The BPBD office building also functions as a coordination center during disaster events. However, challenges persist, including a shortage of heavy equipment for evacuation and operational vehicles to reach remote areas. Furthermore, while Standard Operating Procedures (SOPs) for emergency responses are well-designed, the digitalization of services still requires further development. BPBD has initiated several technology-based initiatives, such as the “Disaster-Resilient Village” app, which helps communities access online training and receive early warning notifications.
- **Planning and Development Capacity.** BPBD's planning capacity is guided by the Regional Disaster Management Plan (RPBD), which outlines priority mitigation measures, such as the construction of embankments along the Citarum River and strengthening soil structures in landslide-prone areas. However, implementing these plans is often constrained by limited funding. To address these limitations, BPBD has begun integrating technology-based data, such as early warning systems and reporting applications, into its planning processes. Developing long-term strategies and improving monitoring and evaluation mechanisms will be key to optimizing BPBD's future development and ensuring more effective disaster risk management.

Conclusion

Based on the discussion of the structural capacity of the BPBD (Regional Disaster Management Agency) of Bandung Regency, it can be concluded that although BPBD has shown significant progress in disaster management, there are several challenges that need to be addressed to improve the effectiveness of the organization's performance. The capacity for inter-agency relationships and networking is functioning well, but more effective coordination and standardized communication among institutions must be enhanced to ensure a quick and coordinated disaster response. Regarding infrastructure and processes, while BPBD has adequate facilities, the limited availability of heavy equipment and operational vehicles remains a major barrier in disaster response. Additionally, the digitalization of service processes still requires further development to improve efficiency and accessibility. In terms of planning and development, BPBD has developed solid disaster mitigation and adaptation plans, but these are constrained by budget limitations, necessitating stronger long-term planning with a more measurable approach, supported by more advanced data and technology.

Implication

The findings of this research highlight the need for BPBD Bandung to strengthen inter-agency coordination and communication standards to enhance disaster response times. Further investment in heavy equipment and operational vehicles, as well as a focus on the digitalization of disaster management services, are essential for improving operational efficiency and accessibility. Additionally, the budget constraints point to the necessity for more robust long-term planning, incorporating data-driven and technologically advanced approaches to ensure sustainable disaster mitigation and adaptation. Enhancing the capacity of the BPBD will require continuous development of infrastructure, human resources, and financial strategies.

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