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FLOOD DISASTER MITIGATION POLICY IN JAKARTA COMMUNITY PREPAREDNESS

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Abstract: *This study aims to analyze Jakarta's flood disaster mitigation policies which will lead to how community preparedness in Jakarta's flood disaster management. Flood disaster is a disaster that often occurs in Jakarta. In the future, the most frequent disasters in Jakarta can be reduced very well because pentahelix actors are involved in managing flood disaster mitigation policies. This study used a literature review of 70 journals. These journals were obtained from Scopus, then downloaded in RIS format. After that, the RIS file is processed in the VOS-viewer software. The results from VOS-viewer serve as a reference in analyzing the data presented regarding Jakarta's disaster mitigation policies. The results of this study indicate that addressing Jakarta's disaster mitigation policies requires the government to pay more attention to natural disasters that cannot be predicted but can be minimized.*

Keywords: *disaster mitigation; flood; Jakarta; preparedness*

1. Introduction

National mitigation policies are carried out to deal with disasters by building infrastructure and increasing government and community capacity to innovate (Haeril et al., 2021). Therefore, knowledge of prevention for the community needs to be created in order to increase preparedness (Ersani & Mukminan, 2021; Maizar et al., 2021), and the government needs to provide study materials for spatial planning in disaster-prone areas so that disaster losses can be minimized (Putera et al., 2020). In practice, coping policies are always mixed with political elements in formulating countermeasures policies (Sunaryo, 2019). Hence, decisions could be faster to be made. Besides that, the financial

planning that is determined needs to be improved in dealing with national disasters (Sukino et al., 2019). According to data in Figure 1 from the National Disaster Management Agency, in 2021, floods were the most frequent disasters because there were 1,794 of them (BNPB, 2022).

Based on the 2021 Indonesia disaster data above, as many as 5,402 disasters occurred; Jakarta's response policy was carried out by increasing awareness of flood disaster preparedness through elementary, junior high, and high school (Dahlia & Fadiarman, 2020; Suntari, 2018). This was done to provide awareness to students and teachers in Jakarta disaster preparedness (Rahmayanti et al., 2021) because in Jakarta, in Figure 2, there are many sources of disasters such as fires, floods, landslides, fallen trees, and others Qurrotaini et al., 2021.

Source: Jakarta National Board for Disaster Management

Figure 1. Indonesia Disaster 2021

However, when the intensity of rain is high, 13 rivers in Jakarta overflow so that the restricted area around the river (Robbani et al., 2020) due to flood disasters has been a regular occurrence since the colonial era until now (Pustpita et al., 2022) therefore, the Jakarta government it is necessary to realize integrated, participatory and collaborative watershed management (Sulistyaningsih et al., 2021) so that management and preparedness are perfectly formed to prevent severe impacts and damage from disasters in Jakarta and also the social and institutional context must be handled systematically to propose actions to reduce flood risk vulnerability, and increase resilience (Alves et al., 2022).

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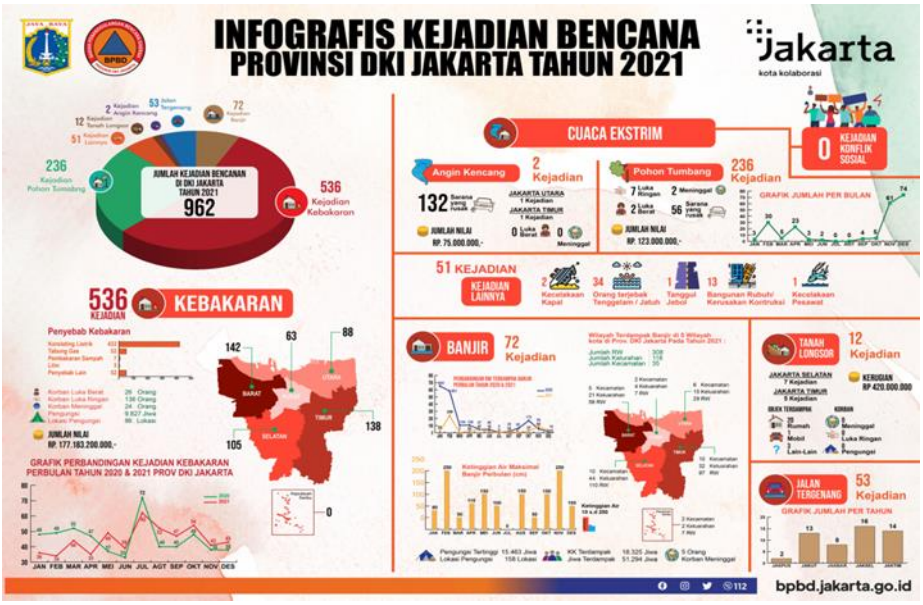


Source: Jakarta National Board for Disaster Management

Figure 2. Jakarta Disaster 2021

Previous studies on disaster mitigation policies and preparedness in dealing with flood disasters were more directed and focused on planning aspects of dealing with disasters from the perspectives of geology, climate change, and society (Dordi et al., 2022; Maskrey et al., 2022; Rivani & Mei, 2022). Research that focuses on aspects of disaster management policies in the formulation, implementation, evaluation, and literature review has not been carried out much. This research contributes to the literature study by analyzing and describing flood disaster management policies in Jakarta. Considering that Jakarta is an area that was built before the colonial era and developed to become a democratic and multicultural area.

2. Methods

Literature study analysis is an approach to highlight critical insights generated from the scientific literature provided annually by researchers from different countries around the world (Samudra & Suradika, 2022) (Dordi et al., 2022). This study draws on literature reviews conducted in the Scopus database, one of the world's widest journal databases, and can provide scientific and academic information (Dordi et al., 2022; Nugraheni &; Suyatna, 2020). Articles taken from Scopus in this literature study come from 70 journals downloaded from Scopus with TITLE-ABS-KEY format (disaster AND mitigation AND policy) AND PUBYER > 2015 AND PUBYER < 2022. Journals from Scopus are then stored in the form of RIS files. This study used VOS-viewer affiliate analysis to visualize and analyze trends in bibliometric maps (McAllister et al., 2022). VOS-viewer can also create publication maps, country maps, or journal maps based on shared citation networks or create keyword maps based on networks (Dordi et al., 2022; McAllister et al., 2022; Nugraheni &; Suyatna, 2020).

3. Literature Review

3.1. Causes of Flooding

The 2020 Jakarta flood is the most frequently exposed disaster because it is considered the most severe flood disaster in an urban disaster, even though the Jakarta flood was caused by heavy rainfall and a large amount of rainwater discharge (Pinontoan & Wahid, 2020). Apart from that, Jakarta should be an urban area with healthy and good spatial planning; however, because it has not received serious attention from the regional government regarding Jakarta's spatial planning, so lately Jakarta's spatial planning has made very little sense (Eldi, 2020). With the implementation of dynamic governance, it is hoped that Jakarta will have a sophisticated disaster monitoring system and implement collaboration with various parties (Taryana et al., 2022).

3.2. Jakarta Disaster Mitigation Policy

Local governments have implemented various policies in disaster management through the pentahelix involvement scheme, but this role has not been implemented optimally (Heryati, 2020; Saidah, 2020). The local government policies can be seen below.

Table 1. Disaster Policy Classification in Jakarta

Policy	Information
Law Number 24 of 2007	Disaster
Jakarta Governor Instruction Number 2 of 2020	Flood Disaster Management
Jakarta Regional Secretary Instruction Number 15 of 2020	Flood Disaster Management Reporting Through the Jakarta Now Application and the Flood Monitor Application
Jakarta Governor Decree Number 121 of 2022	Disaster Emergency Management Procedures in DKI Jakarta Province
Jakarta Governor Regulation Number 170 of 2016	Use of Disaster Signs and Disaster Management Systems in Buildings
Jakarta Governor Regulation Number 296 of 2016	Establishment, Organization, and Work Procedures of the Disaster Data and Information Center
Jakarta Governor Regulation Number 260 of 2016	Organization and Work Procedures of the Regional Disaster Management Agency (BPBD)

Jakarta Governor Regulation Number 24 of 2016	Amendments to Governor Regulation Number 142 of 2015 concerning Social Assistance for Disaster Victims
Regulation of the Head of BNPB Number 03 of 2016	Disaster Emergency Management Command System

Source: (BPBD, 2022)

The table above is a collection of policies on disasters in Jakarta. Various analyses of Jakarta's disaster mitigation policies have been carried out, but the governor's role in policy has become the most important, and much discussed, especially on social media (Samudra, Suradika, Evi, et al., 2023); Twitter places the figure of the governor as an important role in disaster management through programs (Maulana et al., 2021) (Kurniawan et al., 2022).

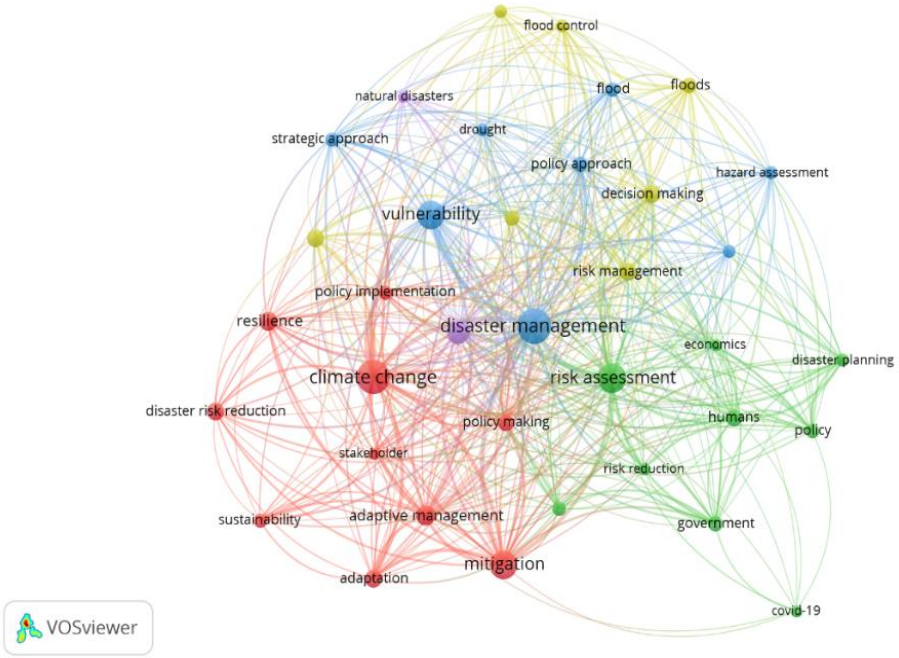
3.3. Conditions of Jakarta Community Preparedness in Flood Disasters

Disaster preparedness needs to be improved to support public awareness; as we know, the disaster 18 years ago, the Aceh tsunami, gave us lessons on disaster preparedness and awareness (Syamsidik et al., 2021) Therefore, it is very important and urgent to form public awareness through early disaster preparedness education (Hayudityas, 2020; Sembiring & Lorenza, 2019) and also the involvement of advanced technology for disaster mapping of each region Raharjo, 2017;(Goniewicz et al., 2020) From various sources, local government preparedness has recently stagnated (Widiasih et al., 2022)(Fadhilah Atelia et al., 2022).

4. Result

Research and publications on disaster mitigation policies with 70 documents showing fluctuating figures; from 2015 to 2016, there was a significant decline, but it increased again until 2022 Nandi & Marlyono, 2019; Nuraeni et al., 2020. The increase was caused by research productivity during the deadly Covid-19 virus disaster because the virus swept the entire world, and research was carried out to determine HIV/AIDS and Covid-19 virus disaster mitigation policies (Hidayah et al., 2023).

Research related to disaster mitigation policies is carried out by visualizing the network, overlay, and density on VOS-viewer. The mapping results in VOS-viewer are characterized by a bibliometric network consisting of nodes and edges by showing the strength of the representation relationship from a distance (Dordi et al., 2022) to other nodes with significant correlations between nodes. The visualization of the results from VOS-viewer is shown in Figure 3 below.



Source: from the researcher, 2022

Figure 3. Mitigation Policy

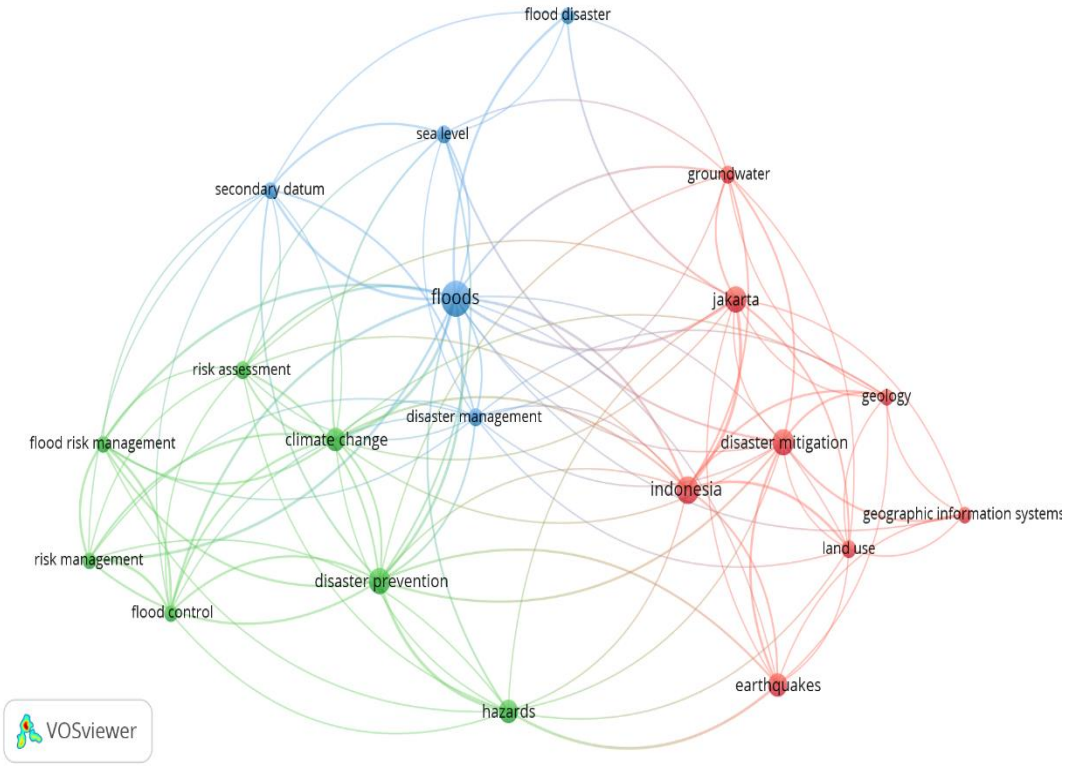
The author used the keyword "disaster mitigation policy" to search the literature in Scopus and analyzed it through VOS-viewer, resulting in 5 clusters. Each cluster displays different colors, such as yellow, blue, purple, red, and green (see Figure 3 and Table 2).

Table 2. Cluster Division and Its Items

Cluster 1 (10 items)	adaptation; adaptive management; climate change; disaster risk reduction; mitigation; policy implementation; policy-making; resilience; stakeholder; sustainability
Cluster 2 (9 items)	covid-19; disaster planning; economics; environmental policy; government; humans; policy; risk assessment; risk reduction
Cluster 3 (8 items)	disaster management; drought; flood; hazard assessment; hazard management; policy approach; strategic approach; vulnerability
Cluster 4 (7 items)	decision making; disaster mitigation; disaster prevention; flood control; floods; risk management; sustainable development
Cluster 5 (2 items)	natural disaster; natural disasters

Source: from the researcher, 2022

Figure 3 shows that very high disaster mitigation policies correlated with disaster events worldwide can have implications for disaster management and how governments mitigate by making policies that affect disaster management. As for talking about Jakarta's disaster mitigation policy, judging from the classification of disasters, floods, and fires that occur most often. The disaster is a relic of the colonial era because the contour of the Jakarta area is lower than Bogor.



Source: from the researcher, 2022

Figure 4. Jakarta Disaster Mitigation Policy

The author uses the keyword "disaster mitigation policy in Jakarta" to search literature in Scopus and analyze it through VOS-viewer, resulting in 3 clusters. Each cluster displays different colors, such as red, blue, and green (see Figure 4 and Table 3).

Table 3. Cluster Division and Its Items

Cluster 1 (8 items)	disaster mitigation; earthquakes; geographic information; geology; groundwater; Indonesia; Jakarta; land use
Cluster 2 (7 items)	climate change; disaster prevention; flood control; flood risk management; hazards; risk assessment; risk management

Cluster 3 (5 items)	disaster management; flood disaster; floods; sea level; secondary datum

Source: from the researcher, 2022

Figure 5 shows that Jakarta's disaster mitigation policy is very high and correlates to disaster management using *geographic information* systems (GIS) and *secondary data* (Samudra, et al., 2023a). Jakarta's disaster mitigation policy is related to classifying disasters that often occur floods, fires, earthquakes, *land use*, groundwater, *sea level*, and climate change. This is related to the communities affected by the disaster and the government on how to deal with the disaster. Because disaster mitigation policies are most often related to disaster events in Jakarta, such as earthquakes, groundwater, floods, and seawater rise, this implies that the existence of disaster mitigation policies needs to be made appropriate procedures. So far, disaster mitigation policies are carried out preventively after a disaster.

If the implementation of Jakarta's flood disaster mitigation policy needs to be handled properly, it is necessary to make public education schemes related to disaster management, such as disaster preparedness guidelines, carried out once a year, as explained in Table 4 below.

Table 4. Disaster Mitigation Planning

Pre-Disaster	**1.**	Education through preparedness training guidelines involving all levels of society (schools, universities, offices, households, and vulnerable groups (such as the disabled and elderly).
	2.	Use of advanced technology to identify emerging disasters
During a Disaster	1.	Determination of safe places for refugees
	2.	Availability of food, clothing, and health needs
Post Disaster	1.	Disaster area recovery
	2.	Rehabilitation of affected communities
	3.	Reconstruct by finding a safe place

The planning is supported by (Khan et al., 2008) in developing the "*disaster management cycle*."

Source: (BPBD, 2022)

Figure 5. *Disaster Management Cycle*

In Figure 5, phase mitigation and preparedness occur when disaster management improvements are made to anticipate disaster events. Development considerations are key in contributing to effectively mitigating and preparing communities for disasters. Disaster management actors, especially humanitarian organizations, are involved in the emergency response and long-term recovery phases when disasters occur. The four phases of disaster management illustrated here only sometimes, or even in general, occur in isolation or this exact sequence. Often the phases of this cycle overlap, and the length of each phase depends largely on the severity of the disaster.

Attention should be paid to more vulnerable areas of Jakarta with appropriate actions to take, including maintenance of existing reservoirs and construction of new small-scale water storage in city parks to divert flooding to various reservoirs. Therefore, the main spectrum of flood disaster mitigation policies remains controlled by local governments with the various schemes above.

5. Conclusion

Jakarta's flood disaster mitigation policy in community preparedness needs to be emphasized more actively in implementing flood disaster management procedures by collaborating between parties and expanding the use of advanced technology to increase public awareness of disasters. Therefore, governance in dealing with disasters that occur will better implement the policy of DKI Jakarta Governor Decree Number 121 of 2022 concerning Disaster Emergency Management Procedures in DKI Jakarta Province by considering ecological, urban spatial planning, and humanitarian aspects.

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