

URBAN FIRE DISASTER MITIGATION POLICY (CASE STUDY OF FIRES IN THE CITY OF JAKARTA)

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ABSTRACT

The Jakarta City (DKJ) area which is prone to fire is in the high category, where the biggest factor causing electrical short circuits is 90 percent. The research objective is to describe the fire disaster mitigation efforts carried out by the DKJ Fire and Rescue Service (Gulkarmat). The research uses qualitative descriptive methods. Key informant, Head of the DKJ Gulkarmat Service. Currently, a snowball search is being carried out for informants, namely the Head of the Fire Prevention Division of Gulkarmat DKJ. Data collection techniques include interviews, observations, and documentation studies with interactive model data analysis techniques. The research results show that fire disaster mitigation efforts carried out by the DKJ Fire and Rescue Service (Gulkarmat) have been carried out well, but need to be improved. Education and outreach is needed to the DKJ community regarding fire mitigation, with a massive outreach design and required education, outreach, supervision and evaluation.

INTRODUCTION

The writing of the research takes the main problem of fire disaster mitigation in urban areas with case studies in the Jakarta City Region, especially in the field of fire prevention with the head of the field Budi Haryono, S.Sos. M.Ec.Dev. and the Fire and Rescue Service (Gulkarmat) with the head of the service, Sugeng Wiyono, S.Sos, M.Si, Jakarta City Regional Province, whose address is Jalan Kia Haji Zainul Arifin Number 71, Duri Pulo, Gambir, Central Jakarta 10140 on the 8th Floor. Why did this happen? Fires often occur in urban areas such as Jakarta in the high category? If we look at the causal factors, the Jakarta City area is prone to fires, with 90 percent of the causes being electrical short circuits. So the problem of fire disaster mitigation is interesting for the author to use as research to find out more about the root of the problem and how to solve the problem well in this research (Cahyadi et al., 2022).

A fire disaster is a disaster which is one of the disaster categories based on the factors that cause the occurrence, classified as natural disasters or non-natural disasters caused by human negligence (man-made disasters) (Saputra et al., 2019). The general understanding of fire disasters includes the understanding that fires are not just fires that burn materials, but also involve a number of factors such as fire sources, burning fuel, oxygen, and complex chemical reactions. Fire disasters can cause significant loss to human life and property, and can have long-term impacts on the environment (Parahita & Ester Lumba, 2022).

Therefore, prevention, preparation, emergency response and recovery efforts are very important in reducing the risk and impact of fire disasters (Febrian, 2023). A fire disaster is an event involving uncontrolled fire and can cause extensive damage to property, the environment

and human life. According to Glenn P. Forney, a fire expert who has made significant contributions to the understanding of fire dynamics, defines a fire disaster as an event that includes physical, chemical, and thermal processes that occur when fuel burns uncontrollably, rapidly or slowly spreading through fuel, producing heat, light, smoke, and gaseous and solid byproducts (Cahyadi et al., 2022).

According to Forney, a fire disaster does not only refer to the damage caused by the fire itself, but also the impact produced by the resulting heat, smoke and toxic gases which can endanger human lives and the surrounding environment. In his view, a deep understanding of the nature and behavior of fire is very important in preventing, mitigating and emergency response to fire disasters (Marfuah et al., 2020).

Meanwhile, the main problem that the author will explain is regarding fire disaster mitigation in urban areas, where fire disaster mitigation itself is an effort to reduce the risks and impacts caused by fires in urban areas. It involves a series of prevention, preparation, emergency response, and recovery measures to reduce human, property, and environmental losses. Meanwhile, several experts translate urban fire disaster mitigation as follows: (a) Federal Emergency Management Agency (FEMA): mentions mitigation as efforts to reduce or prevent destructive disaster events and minimize losses caused by fire through planning, preparation, and effective recovery measures"; (b) United Nations Office for Disaster Risk Reduction (UNDRR): explains urban fire disaster mitigation involves "improving the safety and structural and non-structural resilience of buildings, sustainable urban development, zoning and planning regulations proper land use (Alzahra et al., 2019).

Several strategic steps that can be taken in implementing fire disaster mitigation in urban areas such as the City of Jakarta, which include prevention, preparation, emergency response and recovery, are as follows: First: Prevention stage, in this stage there are at least three steps that can be taken to prevent occurrence or reducing the level of risk that can be carried out in preventing fire disaster mitigation, namely: (a) Community Education and Outreach: Educating the public about the dangers of fire, prevention methods and emergency evacuation measures can help increase awareness of risks and minimize behavior that can trigger fires ; (b) Implementation of Building Regulations and Standards: Implement strict regulations related to fire-safe building design, including the use of fire-resistant building materials, fire extinguishing installations, and easily accessible evacuation routes; (c) Routine Maintenance and Inspection: Perform routine maintenance on fire extinguishing systems, electrical installations, and other equipment to ensure that they function properly and reduce the risk of fire due to equipment failure (Irwansyah et al., 2019).

Second: Preparation Stage, in the preparation stage for fire disaster mitigation there are at least two stages that can be carried out, namely: (a) Evacuation Training and Simulation: Carrying out regular training for residents and firefighters regarding emergency evacuation actions and the use of firefighting equipment; (b) Preparation of Emergency Plans: Create detailed emergency plans including evacuation routes, location of assembly points, and coordination with local authorities to ensure a rapid and coordinated response in a fire situation (Sutanti et al., 2020).

Third, the Emergency Response stage, in the fire disaster mitigation stage is to carry out, as follows: (a) Rapid Response, namely responding to the fire quickly and efficiently, including by activating the fire alarm, calling firefighters, and providing evacuation assistance to victims; (b) Team Coordination: Coordinates efforts between firefighters, police, medical teams, and volunteers to ensure an organized and effective response (Sudiana et al., 2019).

By implementing the four stages above and taking comprehensive steps as above, it is hoped that we can reduce the risk of fire and its impact on people, property and the environment in urban areas. Efforts to mitigate fire disasters in urban areas, especially in the Jakarta City area, can include various things such as public education about the dangers of fire, implementation of fire-safe building regulations, development of monitoring and early warning systems, as well as preparation of effective firefighting facilities and infrastructure. Mitigating fire disasters in urban areas is important to increase community resilience and reduce the negative impacts that may be caused by fires in the urban environment. This is of course related to population density, because a high enough population and population density will affect the balance of the city (Muksin et al., 2023).

City growth will increase housing growth in urban Jakarta and the surrounding area, resulting in increasingly dense residential developments (Alapján-, 2016a). The increasing proportion of dense settlements has had an impact on increasing community activities which are sometimes not always accompanied by concern about the importance of a sense of security and safety from the threat of disasters, one of which is fire. To anticipate this, the Ministry of Home Affairs of the Republic of Indonesia through Law Number 23 of 2014 concerning Regional Government stipulates fire as one of the mandatory matters relating to basic services that must be carried out by Regional Governments in the fields of peace, public order and community protection, including Jakarta City Area (F. I. Muhammad & Aziz, 2020).

The Jakarta City area as an agglomeration city or trade center in Indonesia certainly has a large population, namely in 2024 the population is estimated to reach 11,436,004 people (Taufan Maulana & Andriansyah, 2024). The Jakarta City Region has a very high population density, namely 14,464 people per square kilometer (37,460/square mile). Meanwhile, the metro area has a density of 4,383 people/sq km (11,353/sq. mile). Meanwhile, in 2021 the population of the Jakarta City Region (Sudiana et al., 2019) will be around 10,605,437 people and in 2022 and 2023 it will be 10,640,007 people and 10,672,100 respectively. The largest population is in the East Jakarta City area with a population in 2023 of 3,079,618 people and the smallest is in the Seribu Islands Regency area in 2023 of 28,523. Complete data is presented in Table.1. Below this:

Table.1. Total Population of the City of Jakarta Based on Regency/City 2021 to 2023

Regency/City	Population by Regency/City in DKI Jakarta Province (Jiwa)		
	2021	2022	2023
Thousand Islands	27.996	28.262	28.523
South Jakarta	2.232.442	2.234.262	2.235.606
East Jakarta	3.051.866	3.066.074	3.079.618
Central Jakarta	1.057.465	1.053.482	1.049.314
West Jakarta	2.446.687	2.458.707	2.470.054
North Jakarta	1.788.981	1.799.220	1.808.985
DKI Jakarta	10.605.437	10.640.007	10.672.100

Source: Data from the Jakarta Central Statistics Agency (BPS), 2024

METHOD

The research used a qualitative approach methodology with a descriptive approach with the key person informant being the Head of the Jakarta City Regional Fire and Rescue Service (Gulkarmat). Meanwhile, the informant is the Head of the Prevention Division of the Jakarta City Regional Fire Management and Rescue Service (Gulkarmat). Data collection techniques were carried out by: in-depth interviews; observation and documentation (Lexi & Moleong, 2021).

The data analysis technique used is the interactive model analysis technique according to Miles, Huberman and Saldana, which consists of data collection, data condensation, data presentation and drawing conclusions (N. Muhammad, 2020).

The research is located in the Jakarta City Region with the research locus being the Jakarta City Regional Fire Management and Rescue Service (Gulkarmat). The focus of the research is, firstly, fire disaster mitigation efforts carried out by the Jakarta City Regional Fire Management and Rescue Service (Gulkarmat), especially in the area of prevention. Second, inhibiting and supporting factors in mitigating fire disasters in the Jakarta City Region (Zuhri, 2021). In determining informants the author used a purposive sampling technique. The key person informant (key provider of research information) is the Head of the Fire Prevention Division, Budi Haryono, S.Sos, and M.Ec.Dev. And Head of the Fire and Rescue Service (Gulkarmat) Sugeng Wiyono, S.Sos, M.Si, Jakarta City Regional Province and his staff. It is the key person who provides a lot of information on handling patterns for the prevention and implementation of fire disaster mitigation in the Jakarta City area (Sandu, 2019).

Data was obtained through interview, observation and documentation techniques, which were then analyzed using interactive model analysis through the stages of data condensation, data presentation and conclusion drawing (Hasan, 2020).

RESULTS AND DISCUSSION

Legal Basis for Regional Fire Disaster Mitigation in the City of Jakarta

To anticipate the danger of fire disasters (Daud, 2020), the Jakarta City Province has Regional Regulation Number 8 of 2008 concerning the prevention and management of fire hazards. This Regional Regulation regulates the Prevention and Management of Fire Dangers Systematically; General requirements; Classification and Types of Fires; Fire Prevention and Control Requirements; Inspection of Fire Extinguisher, and Use of Fire Extinguisher; Levy and Insurance/Compensation; Firefighter Obligations; Fire Fighting Priority; Firefighter Authority; Division of Fire Department Areas. In implementing this regional regulation in accordance with the provisions of Article 28 paragraph (3) and Article 29 paragraph (5) of Regional Regulation Number 8 of 2008, the Regional Province of the City of Jakarta made Governor Regulation (Pergub) Number 143 of 2016 concerning building safety management and fire safety management Environment (Wahyuningsih, 2019).

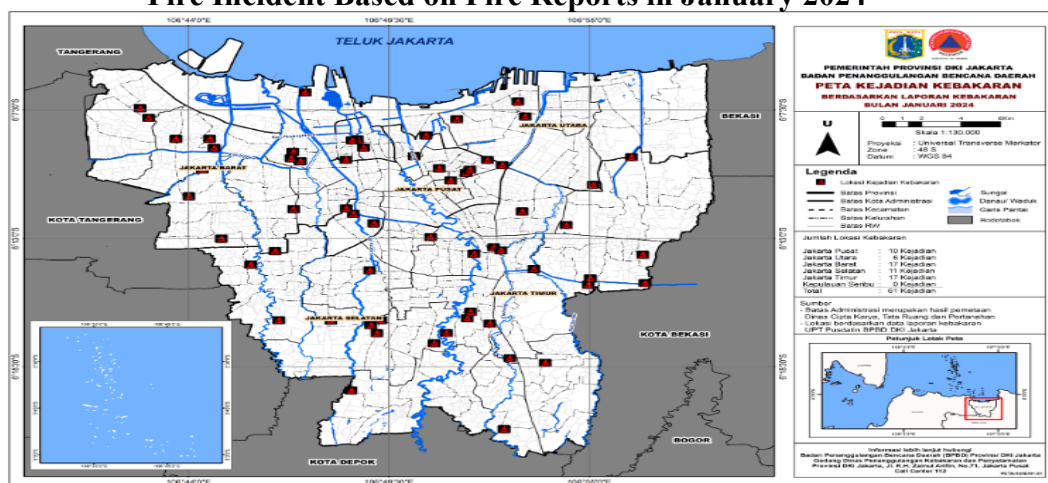
Furthermore, in Governor Regulation (Pergub) 143/2016, what is called fire disaster management in the Jakarta City Region is the Department of Fire Management and Rescue (Gulkarmat) of the Special Capital Region of Jakarta Province. In the Building Fire Safety Management (MKKG) in the Gubernatorial Regulation, it is stated that it is part of building management to ensure the safety of building occupants from fire by ensuring the readiness of fire protection installations so that they always perform well and are ready to use (Saputra et al., 2019).

Environmental Fire Safety Management (MKKL) is a management body that manages several buildings in one environment that have the potential for moderate II, medium III and

severe fire hazards with a minimum number of occupants of 50 (fifty) people (Taufan Maulana & Andriansyah, 2024).

The Jakarta region already has Regional Regulations (Perda) and Governor's Regulations (Pergub) in anticipating fire disaster mitigation, namely by implementing preventive methods, how to handle fire disaster mitigation that will and will occur in Jakarta (Cahyadi et al., 2022). However, fire incidents in Jakarta are still classified as high disaster-prone categories. Because during January 2024 there have been 61 fire incidents with the details of fire incidents as follows: (a) Central Jakarta 10 incidents; (b) North Jakarta 6 Incidents; (c) West Jakarta 17 incidents; (d) South Jakarta 11 incidents; (e) East Jakarta 17 incidents; (f) Seribu Islands 0 Events. And in March-April there were around 144 fire incidents. The following is a fire map and fire incidents in January 2024 are explained below:

Map.1.
Fire Incident Based on Fire Reports in January 2024



Source: Data from the Central Regional Statistics Agency for the City of Jakarta, 2024

And in March and April 2024 or during the month of Ramadhan 1445 Hijriyah, the Jakarta City Region experienced 144 fire incidents with the cause of the fire being an electrical short circuit which was still the highest at 90 percent. Furthermore, the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) recorded 2,286 fire incidents throughout 2023, an increase from the previous year which recorded 1,691 incidents. East Jakarta is the area with the highest frequency of fire incidents, namely 594 reports, followed by South Jakarta (573), West Jakarta (484), North Jakarta (379), and Central Jakarta (256). The highest suspected cause of fire was electrical short circuit (short circuit) with 1,216 incidents or 53.19 percent (Haris et al., 2023).

Table.2. Number of Fire Events According to Burned Objects And Administrative City in DKI Jakarta Province

Regency/City	Number of Fire Incidents According to Burned Objects and Administrative City in DKI Jakarta Province																	
	Housing area			Building (General)			Building (Industrial)			Motor vehicle			Other			Amount		
	2018	2020	2021	2018	2020	2021	2018	2020	2021	2018	2020	2021	2018	2020	2021	2018	2020	2021
Kep. One thousand	0	4	3	0	-	2	0	-	0	0	1	1	0	4	10	0	9	16
South Jakarta	224	287	132	65	54	54	0	1	1	1	23	33	0	208	226	290	573	446
East Jakarta	0	204	116	65	72	71	0	7	3	1	54	32	0	158	109	66	495	331
Central Jakarta	97	238	78	44	61	35	0	1	0	1	10	7	1	67	90	143	377	210
West Jakarta	196	787	103	56	111	74	0	4	8	1	26	11	0	147	126	253	1075	322
North Jakarta	35	378	84	32	131	38	0	4	4	1	23	18	0	91	66	68	627	210
DKI Jakarta	552	1898	516	262	429	274	0	17	16	5	137	102	1	675	627	820	3156	1535

Source, Central Statistics Agency (BPS) for the City of Jakarta, 2024

In the table above, it is explained that fire incidents in residential areas in the Jakarta City Region from 2018 to 2020 are stated, in 2018 there were 552 residential fire incidents; in 2020 there were 1808 residential fire incidents and in 2021 there were 516 residential fire incidents. This means that there was an increase of 1,346 residential fire incidents from 2018 to 2020 and a decrease in 2021 of 1,318 residential fire incidents (Shalih & Nugroho, 2021).

It is explained that fire incidents in Bangngan (general) in 2018 were 516 and respectively 262 and 429. This means that building fire incidents (general) in 2018 decreased by 254 building fire incidents (general) and experienced an increase in 2020 of 1,346 building fire incidents (general) amounting to 167 building fire incidents (general) (Kuncoro & Indrawati, 2019). Building (industrial) fire incidents in 2021, 2018 and 2020 were 274 respectively; 0; and 17 building (industrial) fire incidents. This means that in 2021 there were the highest number of (industrial) fire incidents at 274 and decreased in 2020 by 17 building (industrial) fire incidents and in 2018 there were no building (industrial) fires or 0 incidents (Shalih & Nugroho, 2021).

The number of motor vehicle fire incidents in 2021 was 16; in 2018 there were 5 events; and in 2020 the highest was 137 motor vehicle fire incidents. Other events besides the events already mentioned are 102 events in 2021; in 2018 there was 1 incident and in 2020 there were 675 other fire incidents. The total number of fire incidents in 2021 is 627 fire incidents; and in 2018 there were 820 fire incidents; in 2018 there were 3,156 fire incidents; and in 2020 there were 1,535 fire incidents. Meanwhile, the highest was in West Jakarta City at 1,075 fire incidents (Nursyabani, Roni Ekha Putera, 2020).

Disaster Risk Recognition and Monitoring

Recognizing and monitoring disaster risks is a key step in mitigating fire disasters. This involves the process of identifying, evaluating and monitoring potential fires as well as factors that may increase the risk of fire (Alapjân-, 2016b). Several aspects that need to be considered in recognizing and monitoring the risk of fire disasters are as follows:

Identification of Vulnerable Areas: Fire Prone Zone Analysis, namely identifying urban areas that are vulnerable to fire based on fire history, population density, building type, and other environmental factors. **Resource and Infrastructure Mapping:** Map the location and availability of firefighting resources, road access, water systems, and other critical infrastructure that can impact the response to a fire (Apriani et al., 2022).

Risk Factor Evaluation: Fuel Assessment, namely analyzing the dominant types of fuel in the area, be it natural fuels such as vegetation or man-made fuels such as building materials, and evaluating the resulting fire hazard potential. **Weather and Climate Conditions:** Monitor local weather and climate conditions that may affect fire risk, such as high temperatures, drought, strong winds, and low rainfall. **Human Behavior:** Evaluate human behavior that may increase fire risk, such as open burning activities, use of open fires in restricted areas, and lack of awareness of fire dangers (Prasetya & Isbandono, 2017).

Monitoring and Early Warning Systems: namely monitoring weather and environmental conditions, including utilizing weather and environmental monitoring systems to detect conditions that have the potential to cause fires, such as high temperatures or strong winds; **Early Warning System,** namely building an effective early warning system to notify the public and authorities about possible fire threats, thereby enabling a fast and appropriate response (Anwar & Sugiharto, 2018).

Data Analysis and Prediction: namely Historical Data Analysis, mentions analyzing historical data about fire events, including patterns, frequency and causes, to identify trends and patterns that may develop in the future. **Predictive Models:** Use predictive models and simulations

to estimate fire risk in a given region based on factors such as weather, topography, and vegetation (Rachmatullah et al., 2019).

By carefully recognizing and monitoring the risk of fire disasters, authorities can identify vulnerable areas and take appropriate prevention and mitigation measures to reduce the risks and impacts caused by fires in urban areas (Kuncoro et al., 2015).

Fire Disaster Mitigation Management

Regarding disaster management, Law Number 24 of 2007 concerning Disaster Management, Article 1 Paragraph 5, states that implementing disaster management is a series of efforts that include establishing development policies that are at risk of disasters, disaster prevention activities, emergency response and rehabilitation (F. I. Muhammad & Aziz, 2020). This implies that disaster management is a series or cycle. Furthermore, Law Number 24 of 2007 concerning Disaster Management Article 1 Paragraph 9 also states that mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and increasing capacity to face the threat of disaster (Yusri, 2020).

Therefore, the main task and function of the Fire and Rescue Service is to carry out planning and reporting on work programs and activities in the field of fire and community protection. The results of this research show that the efforts to recognize and monitor disaster risks carried out by the DKI Jakarta Fire and Rescue Service (Gulkarmat) are: *First*, by providing training for firefighters at the Jakarta City Fire and Rescue Service. Training is carried out in several stages, namely: (a) Introduction to the basics of fire handling for newly recruited firefighters, through internal training by trained fire inspectors. Training is carried out for a week with an introduction to the tools used to extinguish fires, causes of fires, materials used to extinguish fires, physical training and direct practice before officers actually carry out handling in the field; (b) Professional training at the Jakarta Pusdiklat Institute with levels of Firefighter 1, Firefighter II, Firefighter III, Fire Inspector Training, Extension Training and Rescuer Training. Currently there are 61 firefighters who have received Fire 1 training, and less than 87 firefighters who have not received this training. However, efforts have been made by the Head of the Fire and Rescue Service to budget again in 2023 so that they can send firefighters who have not had training to take part in training at the Jakarta Education and Training Center (Alapján-, 2016a).

Second, conducting outreach to the public regarding fire prevention and control in the Jakarta City area. Socialization is carried out through various programs aimed at all levels of society and organizations, both educational and business/industry. The training and outreach in question is a form of counseling carried out by professional instructors in the prevention sector of the Regional Fire and Rescue Service (Gulkarmat) of the City of Jakarta. Because those who are allowed to provide counseling are officers who have an extension certificate. Forms of outreach actions that have been carried out so far include the following: (a) Introduction of the firefighting profession to PAUD, TK and SD which is carried out almost every day at the Jakarta City Fire and Rescue Service (Gulkarmat) office using the Field Trip method; (b) Routine Health Sector every year as previously implemented at all Community Health Centers in the Jakarta City Region. Socialization was also provided regarding the initial actions when a fire occurs in the workplace, the use of APAR as an initial form of action for extinguishing a fire, an understanding of the extinguishing facilities that must be had, especially as a health facility where many people visit every day; (c) The Education Sector, namely schools, some of which are SMKN 1, SMA 1, MAN, SMP and State High Schools in the Jakarta City Area.

Firefighters even launched an innovative School Environmental Fire Resistance System; (d) Industrial, Banking and other Business Sectors by providing Basic Training to Company employees in the Jakarta area, Training for Tax Office Employees, Banking Offices in the City of Jakarta (Alapján-, 2016a).

With a population of 11,436,004 people in Jakarta (2024) and a very high population density of 14,464 people per square kilometer (37,460/square mile), of course the Jakarta City Regional Fire Management and Rescue Service (Gulkarmat) needs adequate methods or strategies to can continue to periodically recognize and monitor disaster risks in the city of Jakarta (Taufan Maulana & Andriansyah, 2024). Therefore, by utilizing advances in information technology that are currently developing, the Fire and Rescue Service is disseminating information in the context of socializing the introduction and monitoring of the risk of fire disasters to the public via social media Instagram and Facebook. Apart from that, they also use other media, namely video Tron media which is located in strategic locations that are easily found by people around their area (Mutia Aprila Erman, 2021).

Third, inspection and examination of fire protection equipment for buildings in the city of Jakarta. This is done to reduce the possibility of large-scale fires occurring. Considering that large buildings with inadequate fire protection equipment, if they catch fire, will be at risk of experiencing a large-scale fire. So it can because material losses for the surrounding communities affected. During an inspection, an inspector will carry out detailed and detailed checks and then provide information to the building owner or manager whether the building has adequate fire equipment or not.

The results of this research illustrate that the Fire and Rescue Service's mitigation efforts have made efforts to recognize and monitor disaster risks to the community in the City of Jakarta. This is a program to increase public understanding and preventive and strategic efforts in order to reduce the impact if a fire disaster occurs in the Jakarta City area. Based on various information obtained by researchers, it can be seen that the efforts to recognize and monitor disaster risks carried out by the Fire and Rescue Service are by providing firefighting apparatus training and socializing fire prevention and control as well as inspecting and checking fire protection equipment. Apart from this, the Fire and Rescue Service carries out efforts to prevent and control fires through outreach with various programs aimed at all levels of society and organizations, both educational and business/industrial. Even socialization is also carried out through various electronic media and social media (Lef, 1968).

Participatory Planning in Disaster Management

In the aspect of participatory planning, what is carried out by the DKI Jakarta Fire and Rescue Service (Gulkarmat) is to involve other regional apparatus organizations and private companies in the Jakarta City Region, both directly and indirectly, in the context of disaster management, as a form of disaster management effort. . As stated in Law Number 24 of 2007 Article 1 paragraph 9, mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and increasing the ability to face disaster threats (Lef, 1968) .

Participatory planning has now become a popular approach among the community. In the last few decades, many campaigns, research and various government projects have claimed to use a participatory planning approach in their creation process. Participatory planning is an approach to provide opportunities for the community to be directly involved in the decision-making process regarding public affairs so that the decisions taken are based on information that is close to perfect (Quasi-Perfect Information) with a high level of public acceptance (Riady Ibnu Khaldun et al., 2019).

To improve the handling of fire disaster mitigation in the Jakarta Capital Region, the Head of the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) Satriadi Gunawan has formed task forces (Satgas) in 267 sub-districts in the Jakarta City Region (Cahyadi et al., 2022). The task force's role is to socialize and provide training to the community regarding fire equipment and facilities. One of them is about the use of light fire extinguishers (Apar).

Apart from forming Task Forces in 267 sub-districts, the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) is also collaborating with the University of Indonesia campus and the Bandung Institute of Technology to conduct a study to create a master plan for a fire protection system which is expected to reduce the frequency of fires. Apart from creating a Fire Protection System Master Plan to map all RWs in DKI Jakarta that are categorized as fire prone (Alzahra et al., 2019). And also collaboration with companies in the Jakarta City area to create Occupational Safety and Health (K3) which is a very important aspect in the work environment. Why companies and business actors must implement let's explore further why companies and business actors must implement Occupational Safety and Health (K3), there are several reasons, namely:

Protecting Workers and Other People, which aims to protect the safety and health of every worker in the workplace. This includes preventing work accidents and occupational diseases. By implementing K3, companies ensure that employees and other people around them work in safe and healthy conditions (Parahita & Ester Lumba, 2022). Optimizing Resource Use, namely K3 also focuses on using resources efficiently and safely. By ensuring a safe working environment, companies can reduce the risk of loss and ensure that production resources can be used properly.

Legal Compliance, namely the Work Safety Law requires companies to implement K3. By complying with these regulations, companies can avoid legal sanctions and ensure sustainable operations. Better Productivity, namely employees who feel safe and healthy tend to be more productive. K3 helps reduce absenteeism due to illness or injury, thereby strengthening overall company productivity (Febrian, 2023). Company Reputation, namely a company that cares about the safety and health of its employees will have a better reputation in the eyes of the public, prospective employees and business partners. This can affect a company's image and appeal to professionals looking for work.

Development of Fire Disaster Awareness Culture

In an effort to protect its citizens against disasters, the Indonesian Government has regulated this in Law no. 24 of 2007 concerning Disaster Management. The law clearly states that everyone has the right to receive education, training, counseling and skills in implementing disaster management, both in situations where a disaster does not occur and in situations where there is a potential for disaster. Through education, it is hoped that disaster risk reduction efforts can achieve broader targets and can be introduced earlier to all students, by integrating disaster risk reduction education into the school curriculum and into extracurricular activities (Taufan Maulana & Andriansyah, 2024).

In line with this, developing a culture of disaster awareness in the City of Jakarta is one of the main tasks and functions of the Jakarta City Fire and Rescue Department by providing fire disaster mitigation education from an early age for PAUD, Kindergarten, Elementary School and Middle School level children. And high schools have held a program called Rescue Student. Where Rescue Student is disaster preparedness education in schools, it is defined as practical thinking and efforts to reduce or eliminate all forms of disaster risk by prioritizing and/or prioritizing the learning process or other educational activities so that students can actively

develop a culture of preparedness. In facing the threat of danger from a disaster. Disaster education for all groups, including children, is a must, because children are the most vulnerable group during a disaster, especially those who are at school when the incident occurs. During a disaster, school buildings are destroyed, reducing the life span of school students and teachers which is very valuable and the right to education is disrupted as a result of the disaster. Regarding disaster awareness culture, there is an interesting finding from research conducted by Muyasaroh and Sudarmilah, that children can be introduced to educational games related to fire. The title of their research is "Android Based Fire Disaster Mitigation Educational Game". Of course, this would be interesting if it could be adopted and introduced in the city of Jakarta. In this way, children will learn how to mitigate fire disasters with great fun (Haris et al., 2023).

In addition, the Jakarta City Fire and Rescue Service carries out educational programs for community groups (PKK cadres) and government agencies (Puskesmas) including companies. This program is intended to perform a preventive function. Disaster Prevention and Risk Reduction Education or more commonly referred to as Disaster Risk Reduction Education (PRB) is a long-term activity and is part of sustainable development. Through education, it is hoped that disaster risk reduction efforts can achieve broader targets and can be introduced earlier to all students/Pokmas, which in the end can contribute to individual and community preparedness for disasters (Shalih & Nugroho, 2021). DRR needs to be included in the education sector, where everyone has the right to receive education, training and skills in implementing disaster management, both in situations where a disaster does not occur and in situations where there is a potential for disaster as ordered by law (Wahyuningsih, 2019).

Through formal and non-formal disaster management education and training, efforts to build a culture of safety and preparedness for disasters can continue to be developed. By having preparedness to face disasters, it is hoped that everyone will be able to reduce threats and vulnerabilities in facing disasters, one of which is through developing a culture of disaster awareness. The results of this research conclude that education and training in order to build a culture of disaster awareness in the City of Jakarta by the Fire and Rescue Service has been carried out well (Anwar & Sugiharto, 2018).

Identification and Recognition of Danger Sources or Threats of Fire Disasters

In terms of identification and recognition that needs to be prepared, paid attention to and carried out jointly by the DKI Jakarta Fire Management and Rescue Service (Gulkarmat), stakeholders in fire disaster mitigation, including government institutions that handle fire disasters, whose activities start from identifying vulnerable areas. disasters, calculating estimates of the impacts caused by disasters, disaster management planning, and carrying out preventive activities for fire disasters in the Jakarta City Region (Shalih & Nugroho, 2021).

This needs to be done in order to identify institutions that emerged from community initiatives that deal with disasters, so that good work coordination can be achieved. Identification and recognition of sources of danger or threat of disaster is an effort carried out by the Jakarta City Regional Fire and Rescue Service in relation to determining fire management areas and mapping fire-prone areas as stated in the Fire Protection System Master Plan carried out in collaboration with the relevant OPD. Because the Jakarta City Provincial Government has long had Regional Regulation Number 8 of 2008 concerning prevention and management of fire hazards and Governor's Regulation (Pergub) Number 143 of 2016 concerning building safety management and environmental fire safety management, so how to identify and recognize sources

of danger or The threat of fire disasters can be carried out properly by the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) (Alapján-, 2016a).

Further to efforts to identify and recognize sources of danger in the Jakarta City Region, the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) has also expanded its Fire Management Areas (WMK) and has even formed 267 Task Forces in every sub-district in the City Jakarta (Sudiana et al., 2019).

Apart from that, the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) is also an information center regarding fire disasters in the Jakarta City environment. Based on this information, it can be seen that the identification of sources of danger/prone fire disasters is carried out by the DKI Jakarta Fire Management and Rescue Service (Gulkarmat) by collaborating with the relevant Regional Apparatus Organizations (OPD), namely the Research and Development Agency (Bapelitbang), 267 Sub districts in the City Jakarta, the Regional Disaster Management Agency (BPBD) of the Jakarta City Province and the Head of the RT in carrying out direct monitoring of fire disaster-prone points (Lef, 1968). Other efforts being made are improving the draft Fire Protection System Master Plan (RISPK), improving the Fire Hazard Map and Fire Information System by 2024.

This will be a hope for the condition of the Jakarta City area, where the current level of vulnerability to fire disasters in residential areas, (public) buildings, (industrial) motor vehicle buildings, and others is still quite high and this is an important matter and of special concern for the City Government. Jakarta. Efforts to prevent and overcome the consequences of the fire disaster have been carried out through. Identification and recognition of sources of danger or threat of disaster, and strengthened through regional regulations through Regional Regulation Number 8 of 2008 concerning prevention and management of fire hazards and Governor's Regulation (Pergub) Number 143 of 2016 concerning building safety management and environmental fire safety management (Taufan Maulana & Andriansyah, 2024).

Supervision of Fire Disaster Mitigation Activities

Supervision of fire disaster mitigation activities is an important stage in the disaster management process which aims to ensure that the mitigation strategies that have been planned and implemented go according to plan and meet the established safety standards (F. I. Muhammad & Aziz, 2020). The following are several aspects that need to be considered in monitoring fire disaster mitigation activities:

Compliance with Standards and Regulations, namely supervision must ensure that all fire disaster mitigation activities comply with the safety standards set by the relevant authorities, including building regulations, fire regulations and work safety guidelines (Haris et al., 2023). Routine Maintenance and Inspection, namely carrying out routine maintenance and inspection of firefighting equipment, fire protection systems, and infrastructure related to fire mitigation, to ensure that they function properly and are ready to be used in emergency situations (Apriani et al., 2022), are as follows: (a) Training and Simulation, namely monitoring the implementation of fire evacuation training and simulation programs to ensure that the public and firefighters are well trained in responding to fires and using firefighting equipment effectively; (b) Performance Evaluation, namely evaluating the performance of the fire disaster mitigation system periodically to identify weaknesses and areas that need improvement. This may involve analysis of the fire incident, interviews with involved personnel, and gathering feedback from the Community; (c) Risk Monitoring, namely monitoring risk factors that have the potential to cause fires, such as

weather conditions, fuel use, or potentially dangerous human activities, to enable a rapid response to threatening situations; (d) Collaboration and Coordination, namely working together with various stakeholders, including local governments, firefighting agencies, civil society organizations, and the private sector, to ensure effective coordination in the implementation of fire disaster mitigation activities; (e) Communication and Education, namely communicating information about fire disaster mitigation measures to the public, including preventative measures, emergency response measures, and evacuation procedures, as well as providing education regarding fire risks and how to reduce them (Lef, 1968).

By carefully monitoring fire disaster mitigation activities, authorities can ensure that mitigation efforts are effective in reducing the risk and impact of fire disasters, as well as strengthening community resilience to the threat of fire (Lef, 1968). In the concept of disaster management, supervision is an important activity in a complete and comprehensive series of disaster prevention/mitigation activities. Supervision is one of the keys to success in the mitigation efforts carried out by the current government. The level of success in achieving each planned goal is greatly influenced by the extent of supervision carried out so far (Wahyuningsih, 2019). The results of this research indicate that the monitoring efforts in disaster mitigation carried out by the Jakarta City Fire and Rescue Service are by carrying out regular monitoring and evaluation, namely once every 3 months, of prevention activities as well as monitoring the availability of facilities and infrastructure both at the Command Headquarters and at 5 Guard Posts owned by the Jakarta City Fire and Rescue Service. Lack of supervision from leadership elements due to limited personnel who have adequate competence. The results of this research are in line with the results of research conducted that disaster mitigation efforts are hampered by the limited resources of competent apparatus (Lef, 1968).

Apart from the above, fire disaster mitigation and monitoring in vulnerable areas such as the city of Jakarta is very important. First, a discussion about monitoring fire disaster mitigation activities in Jakarta. Supervising fire disaster mitigation activities in Jakarta may involve several steps (Haeril, Mas'ud, Taufik Irfadat, 2021), including:

Preparation of Regulations and Policies: Local governments must have clear regulations and policies regarding fire disaster mitigation. This includes regulations regarding spatial planning, building permits, and strict safety standards.

Routine Inspections: Inspections should involve regular inspections of public buildings and facilities to ensure compliance with fire safety standards. This can be done by local authorities or fire agencies.

Training and Public Awareness: Conducting training and raising public awareness about fire prevention and emergency response measures is essential. This can be done through social campaigns, evacuation training, and the use of information technology to disseminate information.

Partnership with the Private Sector: Cooperation between the government and the private sector in strengthening fire disaster mitigation can be very effective. This includes security audits in commercial and industrial buildings and the development of emergency plans (Alapján-, 2016a). Now, how can we anticipate prevention and deal with fires when they occur? Here are some steps you can take:

Early Detection Systems: Installing early detection systems such as fire alarms and smoke sensors can help detect fires as soon as they start, allowing for a quick response (Schedule et al., 2022). **Fire Extinguishing System Maintenance:** Ensure that fire extinguishing systems such as hydrants, sprinklers and portable fire extinguishers are always in good condition and ready to use. **Evacuation and Rescue Plans:** Developing clear, coordinated evacuation plans and training residents and personnel to carry them out effectively can save many lives when a fire occurs. **Training and Simulations:** Conducting regular training and fire simulations in a variety of

environments (such as homes, office buildings, and industrial complexes) will help improve emergency response skills. Use of Technology: Technology such as fire monitoring systems and fire risk mapping can help in identifying vulnerable areas and directing mitigation efforts there.

CONCLUSION

Fire disaster mitigation efforts carried out by the Fire and Rescue Service in the City of Jakarta have been carried out well but are not yet optimal. Mitigation efforts include: recognizing and monitoring disaster risks; participatory planning by collaborating/collaborating with all stakeholders; development of a disaster awareness culture; identification and recognition of sources of danger or threat of fire disaster by collaborating with the relevant OPD; supervision in disaster mitigation. Inhibiting factors for fire disaster mitigation efforts in the City of Jakarta are: limited field instructors, limited fire inspectors, lack of supervision and evaluation from superiors, absence of a Fire Protection Master Plan, absence of fire mitigation SOPs and inadequate outreach. Meanwhile, the supporting factors are: good human resource capacity, adequate supporting equipment and collaboration with the Company. With this mitigation, it is hoped that the level of fire vulnerability in the city of Jakarta will decrease.

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