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Community Preparedness in Facing Fire Disasters in Pondok Karya Village, Pondok Aren District, South Tangerang City

Fathin Aulia Rahman
Study Program Disaster Management, Universitas Budi Luhur
fathin.auliarahman@budiluhur.ac.id

Abstract

Pondok Aren sub-district is the area where fires occur most frequently in South Tangerang, with 16 incidents, 10 incidents due to electrical short circuits, and more than 80 rescue operations during 2022. Pondok Karya sub-district is an area with a high population density, making it prone to fires. This research aims to analyze the level of community preparedness for facing fire disasters in Pondok Karya Village. The method used in this research is quantitative-descriptive. The population in this research are people who live in Pondok Karya Village. The sampling technique used was purposive sampling with a sample size of 100 people. Data collection methods use questionnaires, observation, and documentation. The analysis technique uses descriptive percentages. The research results are based on five parameters: knowledge and behavior in dealing with disasters, emergency response plans, early warning systems, resource mobilization, and social capital. The research results show that the level of community preparedness for fire disasters is relatively low. The most influential factors are traditional-based early warning system indicators, socialization of early warning system mechanisms, and disaster organizations at the local level.

Keywords : Preparedness, Fire, Disaster, Community

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**Corresponding Author*

1. Introduction

Disaster is Suite threatening event life human and can impact on loss treasure object even life man. Disaster can happen in a way natural such as earthquakes, tsunamis, floods and landslides, or can also happen Because factor man like fire. According to Undang-Undang Republik Indonesia Nomor 24 Tahun 2007 define disaster as incident or Suite threatening and disturbing events life and livelihood public as well as result loss treasure objects, environment and can causing fatalities humans, and impact social significant economy. Disaster can result sadness and misery for survivors, those who can afford it endure must fight and survive face fraught situation uncertainty.

According to the South Tangerang City Fire and Rescue Service, Pondok Aren District is the sub-district with the highest number of fire disasters in South Tangerang City with 16 incidents and 80 rescue operations in 2022. The fires that occurred were

caused by 10 cases of electrical short circuits, 3 gas leaks , and 3 other causes. This causes the area in Pondok Aren District to experience high fire vulnerability. Pondok Karya sub-district is one of the sub-districts with a high population density, namely 9.828 km^2. Based on observations in the field, high density causes the distance between houses to be very close together and close together. It was also found that many electrical circuits were chaotic and the use of electrical cables that were not suitable for their intended power, making them susceptible to heat due to excessive power loads and electrical short circuits. Apart from that, many settlements were difficult to access by fire engines because the roads were narrow and there were many bends. which is broken. These conditions mean that when a fire occurs, the fire can spread very quickly and cause great damage and potentially endanger human safety. It is very important to prevent and handle fires, such as by installing fire extinguishers in strategic and easily accessible places, equipping buildings with adequate evacuation routes, and providing knowledge and training to the community regarding actions that must be taken when a fire occurs.

In disaster conditions, human life can be disrupted and efforts are needed to minimize the impacts. This requires preparedness and skills in handling emergency situations, as well as good coordination between the various parties involved in disaster management. Society, being the main element that experiences a disaster, must have resilience through independence in facing disasters. Regional resilience starts from the most basic things, namely the resilience of the community, so it is important for the community to have readiness and ability to face disasters (Rahman et al., 2022). The public needs to have knowledge about the types of disasters, early signs, and how to act appropriately in emergency situations. Apart from that, the government also has an important role in providing adequate facilities and infrastructure for disaster management, such as roads that can be passed by fire trucks, emergency shelters and fire extinguishing equipment.

The importance of research is to determine the level of community preparedness in facing disasters, so that the level of community preparedness in various regions can be mapped and efforts made to increase preparedness through disaster education, both socialization and simulation. Based on the background of the problem that has been described, this research aims to analyze the level of community preparedness in facing fire disasters in Pondok Karya Village, Pondok Aren District, South Tangerang City.

2. Method

Study This is type study descriptive quantitative. Data collection methods use questionnaires and documentation with technique survey. Population in study This is people living in Ward Pondok Karya District Pondok Aren. Determination sample using technique purposive sampling, namely areas considered to have a high vulnerability to fire, including areas; RW 02, RW 03, RW 07, RW 09, and RW 06 are the most densely populated areas in Pondok Karya Village with a population density of 9.434 people/km^2 (BPS, 2021), as well as own hard road accessible by vehicle extinguisher fire and rescuer. The research sample used was 100 people with 20 people in each RW. Data analysis techniques using description percentage for measure level preparedness public in face earthquake and fire disasters. Study descriptive No need looks for or explain linkages or test hypothesis (Hardani et al., 2020). The variables used in this research are preparedness factors and indicators according to Ruslanjari, et al (2023), which are shown in Table 1 below.

Table 1. Preparedness Variables, Factors and Assessment Indicators

Preparedness Factors	Indicator
Knowledge and Behavior in Facing Disasters	Knowledge
	Behavior
Emergency Response Plan	Evacuation Plan
	Emergency Response Strategy
	Rescue, Health & Safety
	Preparedness Training
Early Warning System	Traditional Based
	Technology Based
	Socialization of Early Warning Mechanisms
Resource Mobilization	Human Resources
	Social network
Social Capital	Local Disaster Organization

Source: Ruslanjari et al., (2023)

3. Results and Discussion

Based on the results of studies conducted in Pondok Karya Village, Pondok Aren District, South Tangerang City, community preparedness was analyzed through five parameters, namely; knowledge and behavior in facing disasters, emergency response plans, early warning systems, resource mobilization, and social capital.

A. Pondok Karya Village Profile

Pondok Karya Village is administratively included in Pondok Aren District, South Tangerang City. This sub-district has a dense population with a narrow area. The number of heads of families (KK) based on gender in 2022 will be 8.470, consisting of 6.692 male families and 1.778 female families. The physical condition of the Pondok Karya Village area, as shown in Figure 1, is dominated by two-story houses, a little green open space, small shrub trees and roads 4-6 meters wide with bends and right-angled road intersections forming 90^{o}.

Figure 1. Condition of Intersections and Electrical Cables in Pondok Karya Village

B. Community Preparedness in Facing Fire Disasters

Community preparedness in facing fire disasters in this study uses parameters according to Ruslanjari et al., (2023)knowledge & behavior parameters, emergency response plans, early warning systems, resource mobilization, and social capital.

1) Knowledge and Behavior in Facing Fire

The indicators used for knowledge parameters are the sources of information used in understanding the causes and methods of fire evacuation, whether from scientific articles,

books, official government information, mass media or social media. Meanwhile, indicators of behavioral parameters include understanding the meaning of safe routes and following instructions on evacuation routes and going to safe gathering points when a fire disaster occurs. These two parameters focus on the level of understanding of the community regarding fire disasters and how to evacuate them, so that when one day they are in a dangerous position, they do not become trapped because they do not understand the evacuation instructions and become fatalities in a fire disaster. Based on research that has been conducted, the level of community preparedness based on the parameters of community knowledge and behavior in facing fire disasters can be seen in Figure 2.

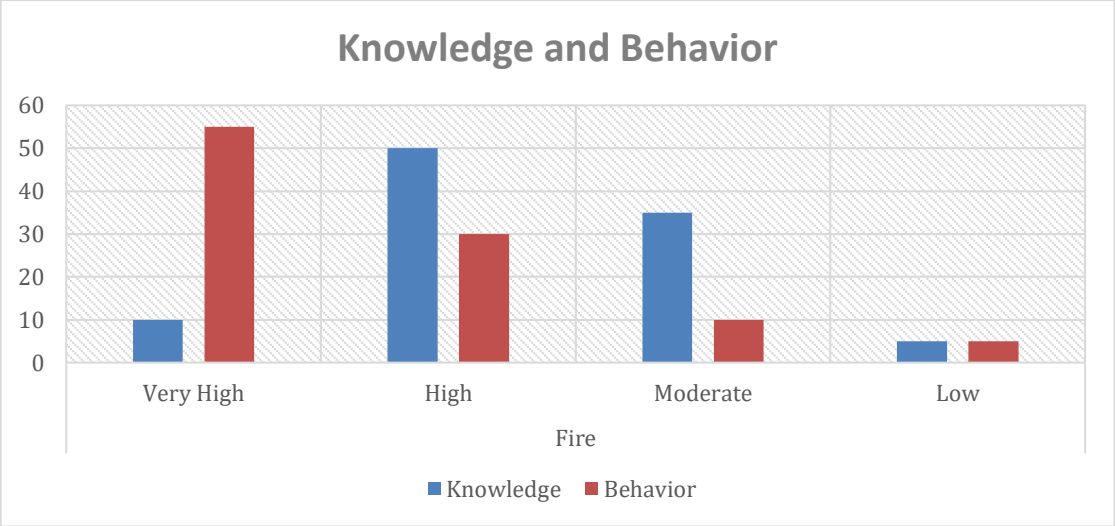

Figure 2. Parameters of Knowledge and Behavior in Facing Fire

The research results in Figure 2 show that the level of knowledge and behavior of the community in facing fire disasters is in the high to very high category. 50% of respondents had a high level of knowledge, there were 10% of respondents in the very high category, namely they were able to identify the causes and how to evacuate light fire disasters. In terms of behavioral indicators, 55% of respondents were in the very high category and 30% of respondents were in the high category, with an understanding of safe routes and following instructions on evacuation routes and going to safe gathering points when a fire disaster occurs. There were only 5% of respondents who fell into the low category on knowledge and behavior indicators.

Knowledge and behavior should be possessed by each individual which includes general knowledge about disasters, causes and symptoms, and what to do if a disaster occurs. Research results that show the level of knowledge and behavior of people in the medium to low category need attention from various aspects. Seeing that the Pondok Karya Village area is a densely populated area and access is limited to fire fighting vehicles and evacuation routes. The role of village governments and related institutions is very much needed in educating, providing training and routine simulations, with the aim of increasing community preparedness and reducing disaster risks.

2) Fire Emergency Response Plan

In the emergency response plan parameters, the indicators used include: evacuation plan indicators, shown by the family's readiness in preparing a disaster preparedness bag containing original or copies of important documents, instant food, suitable clothes, cash

and so on; emergency response strategy indicators are shown by carrying out routine and periodic checks on the condition of the house's electricity as well as the stove and regulator, which are two aspects that trigger fires in the household; indicators of rescue, health and safety which are shown through the preparation of simple fire extinguishing tools or facilities in each household such as, wet towels or tablecloths, jute sacks, Apar (light fire extinguisher), fire blanket , and so on; as well as preparedness training demonstrated by the participation of residents in socialization activities and disaster preparedness simulations carried out by the government, private sector/volunteers and universities. Based on research that has been conducted, the level of community preparedness based on emergency response plan parameters in dealing with fire disasters can be seen in Figure 3.

Figure 3. Emergency Response Plan Parameters for Facing Fire

Based on the research results in Figure 3, it shows that the parameters of the community's emergency response plan facing fire disasters in the three indicators are in the medium category. In general, the community is not yet prepared to face fire disasters. As many as 60% of respondents did not have an evacuation plan in the form of preparing a disaster preparedness bag containing original or copies of important documents, instant food, suitable clothing and cash . In the emergency response strategy indicator , 35% of respondents are in the high category, they regularly check the condition of the house's electricity as well as the stove and regulator, which are the biggest triggers for fires in the household environment. Then in the rescue, health and safety indicators, 55% of respondents were in the medium category, many respondents did not have tools or facilities specifically for light fire extinguishing in their respective homes, such as wet towels or tablecloths, burlap sacks, fire extinguishers light, or fire blankets.Meanwhile, as many as 40% of respondents were in the very high category. It is known that many respondents were proactive in participating in socialization activities and preparedness simulations, whether carried out around the home, in the community they attended or in the office at work.

Community emergency response plans in the face of fire disasters which are generally included in the moderate category are certainly an issue that needs attention in efforts to build regional resilience. If a fire disaster occurs, community groups will be the first to prevent the spread of fire in the environment where they live. The results of research that have been carried out are in line with the fact (Trifianingsih et al., 2022) that Indonesian society in general is still weak in preparedness and emergency management efforts to face disasters independently and proactively. According to (BNPB, 2019) the large increase in the number of settlements in Indonesia, it is not accompanied by facilities and infrastructure that support the safety of each building. This makes the threat of building fires even greater.

Figure 4. Light Fire Preparedness Training for RW 06 Residents

The people of Pondok Karya Village have further participated in many socialization activities and disaster preparedness simulations. Training activities that have been carried out come from the Fire Department , South Tangerang BPBD, disaster volunteers and universities in the area around South Tangerang. Having the community and disaster institutions active in carrying out various mitigation and preparedness activities will increase the community's understanding and quick response in dealing with emergency conditions that occur in the area where they live. The community can identify which areas they feel are safe as evacuation routes, gathering points and locations where evacuation shelters are set up. Pentahelix collaboration needs to continue in disaster management, government participation should involve industry, universities, media and society to jointly build community resilience through comprehensive disaster risk reduction efforts.

3) Early Warning System

In the Early Warning Systems (EWS) parameters, the indicators used include; Traditional-based EWS, technology-based EWS, and socialization of early warning mechanisms. The communication media for traditional-based early warning systems that are commonly used are Kentongan and Bedug. Kentongan has been used in traditional rural community structures, while Bedug is widely used in mosques and prayer rooms . Technology-based early warning system communication media uses information sources via mobile phones in the form of; encrypted communication networks such as WhatsApps, Telegram, Line; Android-based applications such as BMKG Info, BNPB Inarisk; online news sites; and information on social media such as Twitter, Instagram, TikTok and so on.

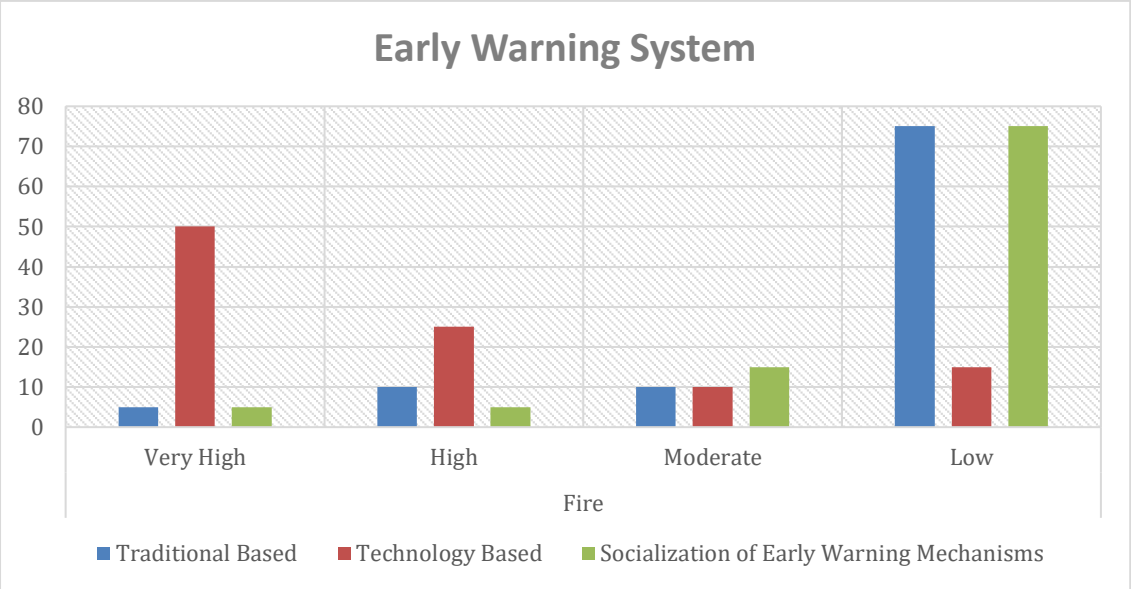

Figure 5. Early Warning System Parameters

Based on the bar diagram in Figure 5, it can be seen that communication media in traditional-based early warning systems such as kentongan or drum are not widely used by people in the Pondok Karya area. As many as 75% of respondents do not have a traditional-based early warning system. Generally, gongs and drums are found at kamling posts , RW/RT heads houses, village halls, schools and mosques/prayer rooms. This is because Pondok Karya Subdistrict is a modern urban area with a community structure, the majority of whom work in the private sector and have high school/high school education up to bachelor's level (BPS, 2022). Meanwhile, communication media in technology-based early warning systems have been massively used and utilized by the public. As many as 50% of respondents fell into the very high category, using information on WhatsApp groups, social media and the EWS application to connect and get emergency information quickly. The community has also saved and knows emergency service numbers such as fire brigade, ambulance, BPBD and police in the area around where they live. Even though public awareness is quite high in responding to preparedness regarding access to information on EWS, it is known that as many as 75% of respondents have never received socialization regarding the early warning system mechanisms carried out by either the Fire Department, BPBD, Police or ambulances. The remaining 25% received socialization only through social media and partial socialization carried out at their workplace regarding K3.

4) Resource Mobilization

Resource Mobilization Parameters indicators used include; human resources and social networks. Human resource indicators describe the condition of a community that has received various disaster preparedness literature and understands awareness of potential disasters, and has access to evacuation facilities for the community. The facilities in question are the availability of refugee shelters, access to aid, accessibility of residence to safe areas, rescue services (Damkar, Basarnas, Volunteers) as well as health facilities. Social network indicators include the presence of relatives, family, co-workers and social institutions who are able to provide assistance during emergencies. Forms of assistance provided include; temporary shelter, basic logistical assistance, medicines, and

loans for the post-disaster rehabilitation and reconstruction process.

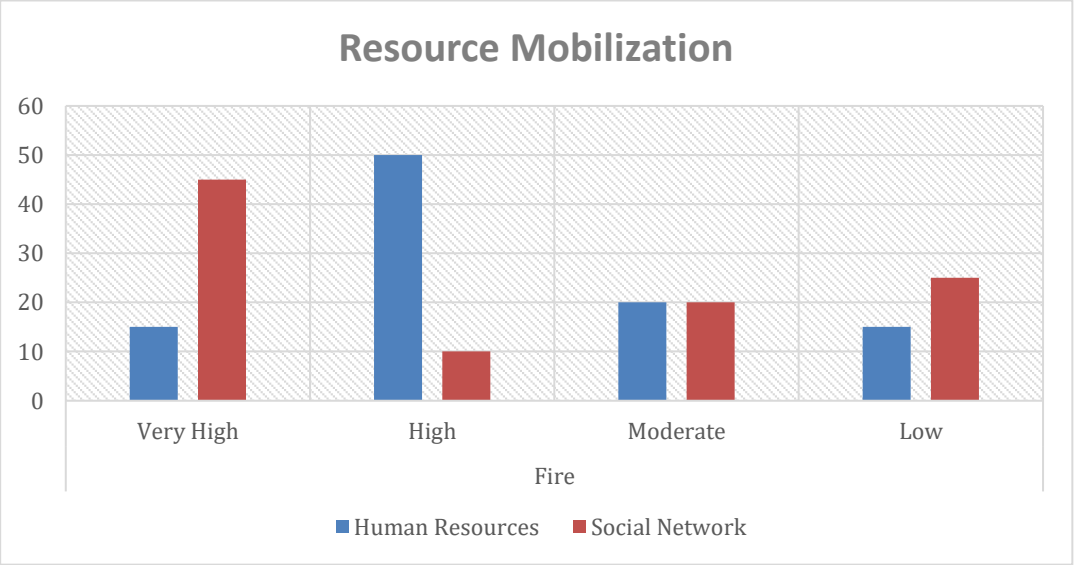

Figure 6. Resource Mobilization Parameters

Based on Figure 6, it is known that as many as 50% of respondents fall into the high category of human resource indicators. The community has been well educated about the conditions of their area, which is a densely populated area, and the large number of fire incidents in their area has made the community more alert in facing fire disasters. According to the Satu Data Tangsel website, the number of fire incidents in the Pondok Aren District area was 16 incidents with 10 incidents due to electrical short circuits and a total of 80 rescue operations by Damkar and Basarnas. The people of Pondok Karya have participated in a lot of fire training and simulations, both in their living environment and in their workplace environment.

In terms of social network indicators, it is known that 45% of respondents fall into the very high category. Even though the structure of the community in Pondok Karya is immigrants, they are immigrants from various regions in Indonesia, most of whom come from Central Java, East Java and Lampung. They settled to work in the Greater Tangerang and South Jakarta areas from 1990-early 2000. So now we have family and relatives and even neighbors or a community that is quite strong based on similar geographical conditions and job characteristics. This has an impact on strong social networks, especially among old immigrants and native Pondok Karya residents. When a fire disaster occurs, they will unite and work together to help the affected communities by providing temporary shelter, emergency logistical assistance, medicines and basic necessities, as well as cash loans for the post-fire rehabilitation and reconstruction process. Social networks are a characteristic characteristic of Indonesian people in responding to their relatives when disaster strikes. Mutual cooperation has become the root of local wisdom which has been applied from generation to generation to the structure of both rural and urban communities.

5) Social Capital

According to Muhamad, et al (2017) social capital indicates the existence of a strong community with strong solidarity and a maintained identity. Several indicators show the existence of positive social capital, such as strong trust, high cohesiveness , deep altruism,

a spirit of mutual cooperation , and close networks and cooperation among community members. The indicators used to identify social capital in the Pondok Karya community in facing fires are disaster organizations at the local level. Community participation and participation in disaster organizations is evidence of community efforts to build social resilience and environmental resilience in facing disasters (Rahman et al , 2022).

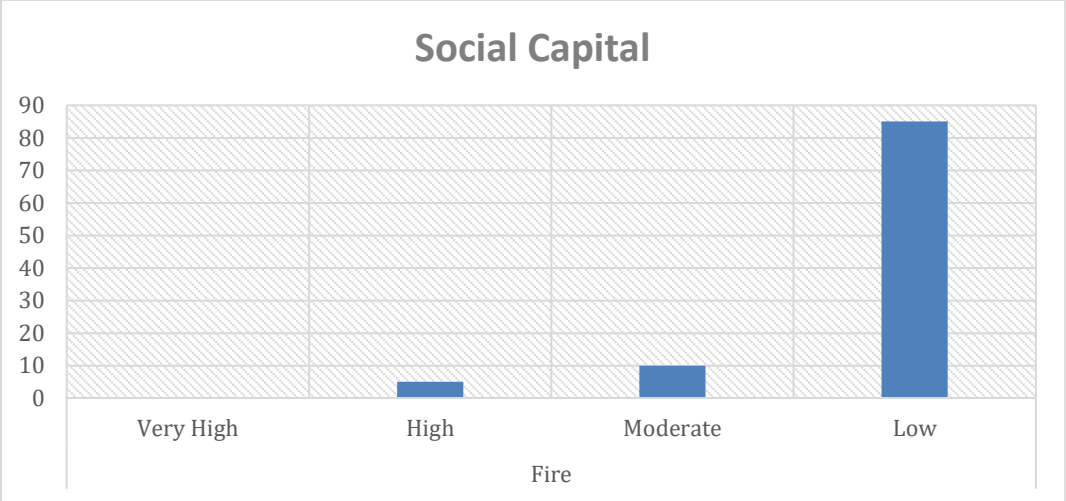

Figure 7. Parameters of Social Capital

Based on Figure 7, it shows that 85% of respondents do not participate in and are not affiliated with any disaster organizations. Then 10% of respondents had previously joined disaster organizations and were currently inactive. Only 5% of respondents joined disaster organizations but only as members. This is because in the Pondok Karya sub-district environment there are no disaster organizations or volunteer groups. They only have community and youth organizations such as religious study groups, Karang Taruna, and sports communities. The formation of an organic social network is due to the mutual exchange of knowledge, information, reminding each other and helping each other in implementing and overcoming problems that occur in society. The absence of a local disaster organization in Pondok Karya is due to the existence of responsive and good emergency services provided by the government in the form of Damkar , Basarnas, BPBD and so on which are integrated into emergency calls 112 and 115. The existence of a disaster organization in the community will provide many benefits for himself in safeguarding life and livelihood in the future. Disaster organizations can also become social networks for the community who can later help when times are difficult.

6) Map of the Distribution of Fire Prone Areas in Pondok Karya Subdistrict

The preparation of a map of the distribution of fire-prone areas in Pondok Karya Village refers to the parameters according to big.go.id (2021), namely; distance from settlements, population density, distance from roads, size of roads and distance from rivers . According to BPS (2021), the area of Pondok Karya Village is 2,78 Km^2. Based on the results of spatial data processing, it is known that the area prone to fire according to the category of level of vulnerability is presented in Table 2.

Table 2. Extent of Fire Prone Area

Fire Susceptibility Class	Area (Km^2)
Low	0,470436
Currently	1,263698
High	1,045769
Total Area of Fire Vulnerability	2,779903

Source: Research Analysis (2024)

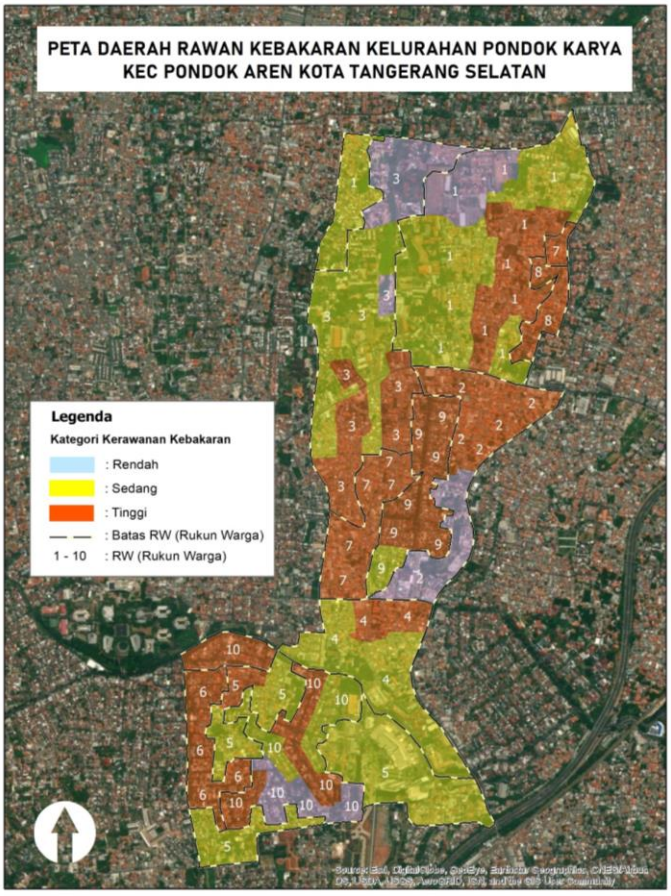

Figure 8. Map of Fire Prone Areas in Pondok Karya Subdistrict

Table 2 shows that the most extensive vulnerability class is the medium vulnerability class with an area of 1,26 Km^2. There is a wide difference/gap between processing attribute data in ArcGIS and BPS data with a very small value, namely 0,0001 Km^2 or 100 M^2. This wide difference is caused by several factors, namely; differences in preferences for map coordinates, data resolution, quality of source data, as well as lack of detailed digitization of administrative boundaries. Figure 8 shows a map of fire-prone areas in Pondok Karya Village. Visualization of spatial data in the form of fire hazard maps became a reference in determining the samples used in this research. Areas in red are high fire-prone areas consisting of 10 RW. The yellow area is a medium fire-prone area with a total of 6 RW. Meanwhile, areas in blue are low fire-prone areas consisting of 4 RW.

4. Conclusion

Based on results study can concluded that preparedness public Pondok Karya Subdistrict in facing earthquake and fire disasters is measured using five parameters, namely; knowledge and behavior in facing disasters, emergency response plans, early warning systems, resource mobilization, and social capital. The level of community preparedness in facing fire disasters is included in the low category. The most influential factors are traditional-based early warning system indicators with a low category value of 75%, socialization of early warning system mechanisms with a low category value of 75%, and local level disaster organizations with a low category value of 85%.

This research is expected to provide illustrative information regarding the level of preparedness of the community of Pondok Karya Village, Pondok Aren District, South Tangerang City towards fire disasters. As input for the government to further increase the community's preparedness in facing potential disasters in the environment where they live, both from the knowledge and behavior aspect, the emergency response planning aspect at the sub-district/family level, the early warning system aspect, the resource mobilization aspect, and the social capital aspect. Efforts to increase community preparedness in facing various disasters are a joint task in the disaster pentahelix collaboration consisting of government, community groups, the business world, mass media and academics.

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