*International Journal Of Humanities Education And Social Sciences* ***(IJHESS)*** *E-ISSN:* **2808-1765**
Volume 3, Number 6, June 2024, *Page. 3303– 3308*
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# Increasing Community Preparedness In Facing Floods Disaster In Jakarta City

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***Abstract***

*Flood disasters are the third cause of economic loss of all natural disasters throughout the world. Jakarta, as a waterfront city, is often hit by floods every year, especially during the rainy season. This research is focused on identifying and analyzing community responses and their relationship with their knowledge, preparedness and level of action towards disasters. This research is an exploratory case study research based on primary and secondary data. Research findings show that people in coastal areas have a high level of knowledge about floods (64%). This knowledge is high relative to the sum of their past experiences; However, they are less prepared (43%) because most of the residents are fishermen with low incomes so they don't have to make much effort to adapt to flood-affected houses. On the other hand, people in the interior, they lack knowledge (18%), but they have a good level of preparedness (24%) because of their relatively high-income level. Furthermore, both communities in coastal and inland areas had a high level of action due to high levels of knowledge and experience for coastal residents and good preparedness for inland residents.*

***Keywords: Community Preparedness, Flood, Jakarta.***

## INTRODUCTION

The Indonesian region is classified as a country prone to disasters, both natural disasters and disasters caused by human activities. Indonesia is an archipelagic country, geographically located at the intersection of three main plates, the Eurasian plate in the north, the East Pacific plate and the Indo-Australian plate in the south, making Indonesia vulnerable to natural disasters such as earthquakes, volcanic eruptions and tsunamis. In addition, approximately 13 percent of the world's active volcanoes are located along the Indonesian Archipelago, which threatens the Indonesian people in danger of varying intensity.

On the other hand, Indonesia has a large population of more than 230 million people with an uneven distribution, consisting of various humanities, religions/beliefs, cultures, politics, which can cause the emergence of horizontal and vertical conflicts which will ultimately lead to displacement. Apart from natural disasters, Indonesia has the potential for man-made disasters to emerge as a risk from several activities that can damage the environment, including deforestation, forest fires and industrial disasters. Thus, Indonesia is a country that has vulnerability to types of natural disasters. This natural disaster resulted in many losses which has a direct or indirect impact such as casualties, damage to facilities and infrastructure, loss of valuables, environmental damage, as well as psychological disaster victims. According to Law no. 24/2007 concerning Disaster Management, disaster is an event or series of events threatens and disrupts life and people's livelihood, which is caused by natural factors and/or non-natural factors as well human factors, thus resulting the occurrence of human casualties, damage environment, property losses, and impacts psychological. DKI Jakarta is the capital from Indonesia were not spared the disaster. Triggered by climate change and very rapid development,

DKI Jakarta has the potential for floods and other hydrometeorological disaster levels are quite high.

Based on the Disaster Risk Index Indonesia (2020), DKI Jakarta Province has a risk index of 64.02 (medium). In other words, DKI Jakarta has earthquake, floods, landslides, drought, extreme weather, waves extreme/abrasion hazards (BNPB, 2021). Flood is the discharge of river water relatively larger than normal due to rain falling upstream or somewhere a certain place continuously, so cannot be accommodated by existing river channels, then the water overflows and floods surrounding area (Ningrum & Ginting, 2020). Floods can be caused by 2 factors, namely: 1). Natural factors such as rainfall, erosion and sedimentation, topography and geophysics of rivers, river capacity and drainage are not inadequate, land subsidence, building damage flood control, and so on; 2). Humans' factors such as changes in land use, rubbish dumps, slum areas along the river, system planning inappropriate flood control, and so on (Razikin et al., 2017).

DKI Jakarta is one of the regions which has a high risk of flood disasters according to Indonesia Disaster Risk Index (BNPB, 2021). Flooding occurred impact on the damage of property, damage of facilities and disrupting community activities in DKI Jakarta. The flooding was caused, among other things, by location residential areas close to rivers, high rainfall, high groundwater use, waste scattered due to dumping indiscriminate trash, and minimal area water infiltration. Other than that, DKI Jakarta also has the threat to coastal floods. Coastal floods are floods caused by high tide flooding land. This is a problem that occurs in areas lower than sea level. In the case of coastal floods in Jakarta, this has been happening for a long time and is getting worse due to land subsidence and rising sea levels due to global warming. Coastal flooding is a major problem in cities such as Semarang, Jakarta and cities on the north coast of Java, and will become a big problem in the future along with global warming and uncontrolled groundwater extraction which results in land surface experiencing land subsidence.

Bearing this in mind, DKI Jakarta need to prepare such a plan prevention and mitigation of flood disasters. Although disaster relief efforts have been carried out by the government through ministries, agencies, institutions, non-governmental organizations and the community; However, disaster events are increasing in intensity and impact. Therefore, efforts to reduce disaster risk must be carried out. One effort is to provide practical knowledge about disaster characteristics and mitigation efforts for all stakeholders and communities, who are the main actors when a disaster occurs. The level of knowledge, attitudes, skills and work motivation must be raised in the surrounding community and local government to solve current problems. Various efforts should be made to achieve this goal. education which includes formal education such as schools, non-formal education, which is mostly carried out by agencies related to nature conservation, such as NGOs or government agencies directly related to business which in various groups can be used as a forum for increasing community preparedness in dealing with floods and the impact it causes.

Based on the background above, the author wishes to compile research on the level of community preparedness in dealing with floods and tidal waves in the city of Jakarta, Indonesia. Based on the background, the aim of this research is to identify communities and their relationship with their knowledge, preparedness and level of action towards disasters.

## RESEARCH METHODS

This research uses mixed methods. Mixed methods research is an approach to investigating behavioral, social, and health-related issues by rigorously collecting and analyzing quantitative and qualitative data in response to research questions, and integrating or "mixing"

the two forms of data in a particular research design to produce new and more complete insight or understanding than what is possible from quantitative or qualitative data alone (Creswell, 2018). Research data obtained with questionnaire and in depth-interview technique.

## RESULT AND DISCUSSION

### Overview of Jakarta Floods

DKI Jakarta is located on the coast northwest of Java Island. DKI Jakarta has an area of 661.52 km². DKI Jakarta consists of from five administrative cities and one district Administration consists of Central Jakarta, East Jakarta, North Jakarta, West Jakarta, South Jakarta, and Seribu Islands. Geographically, DKI Jakarta is located on the northwestern coast, north of Java Island, and is located on the estuary Ciliwung River in Jakarta Bay. According to data recorded by the Agency National Disaster Management (*Badan Nasional Penanggulangan Bencana/*BNPB), there are around 93 points of inundation or flooding in Jakarta with variations in height of around 10-80cm spread across several locations, namely in West Jakarta as many as 28 areas, North Jakarta as many as 17 areas, Central Jakarta as many as 35 areas, East Jakarta as many as 8 areas, and South Jakarta with 5 areas. Causes of DKI Jakarta Floods (Pantau Banjir Jakarta, 2021), such as:

1. Local Rain Floods. This flood occurred due to intensity heavy rain for a long duration long time in the DKI Jakarta area, thereby filling the waterways and sunken areas and causing water to overflow, it can't be accommodated anywhere anymore and causing flooding. Although in Jakarta has drainage intended to accommodate rainwater discharge with a maximum of 120mm/day. However, in some conditions, if heavy rains occur, it will exceed the capacity. For example, on the 1st January 2020, DKI rainfall Jakarta reached 377 mm/day which caused flooding in parts DKI Jakarta area.
2. Shipment Floods. DKI Jakarta is a region the lowlands in between upstream and coastal areas, where has 13 rivers. If it happens rain with high intensity in upstream river areas such as West Java and Banten, will provide the impact of flooding on DKI Jakarta, where Jakarta is the flow of water from upstream before reaching the sea have insufficient capacity accommodate large amounts of water, so that it overflows and overflows in several river banks in DKI Jakarta.
3. Coastal Floods. DKI Jakarta is vulnerable to coastal flood or tide of sea water, this flood usually occurs in seaside areas or the coast of DKI Jakarta. Besides, because of the rising tide happens, this is reinforced by land surface conditions in the North Jakarta is in decline, this influences its occurrence increase in tidal floods in DKI Jakarta.

There are many factors is the cause of flooding in the DKI Jakarta area (Eldi, 2021). Overall, the initial trigger is the occurrence of change significant and large in the spatial planning sector in several cities, these cities are like the DKI area Jakarta itself, then the Bogor area, region Depok, Tangerang area and Bekasi area (Jabodetabek). This change has occurred is the cause of the decline in the number of regions should function as a rain water catchment area due to a decrease in the number of regions. This causes rainwater to fall onto the land flows into the street and does not seep in in the ground.

### Community Preparedness in Facing Flood Disaster in Jakarta

Disaster preparedness is knowledge an attitude toward disaster. Knowledge is the ability to know disasters by type, source, magnitude and location, then knowledge of disasters and physical vulnerabilities of locations, conditions, facilities. Whereas attitude is the attitude

towards risk disaster that occurred. Based on research in Ridha & Husna (2017), in terms of flood disaster mitigation on the community, it really requires knowledge who is the main supporter society in action. With a comprehensive knowledge, flood disaster management will also be effective. So far, the DKI Jakarta government is making improvement by increasing public awareness through media, like Jakarta Smart City which provides several things to be done by the community in dealing with flood disaster. Through this media, people are starting to understand that flooding can occur because of trash, therefore society can carry out activities such as 3R (reduce, reuse and recycle), which can be done to reduce waste starting from the household before going to landfill. There is a recycling program waste and waste bank programs such as in Rawajati subdistrict (Revani et al., 2016).

Based on the questionnaire, 66% of respondents have a high level of knowledge about flood disasters followed by media 18% and low 16%. For people who live in coastal areas, they have a high level of knowledge because they have lived in flood-prone areas for more than 10 years, so they have more experience about floods. Apart from that, they also observe the floods, for example, tidal floods will occur during the full moon every month. On the other hand, people living in the South Jakarta area do not have sufficient knowledge about floods since floods have started occurring in their area in the last five years. This means that they do not have much experience of flooding. Another factor is that local people cannot predict when floods occur. In the preparedness aspect, 43% of respondents had a low level of flood preparedness followed by a medium level (31%) and a high level (24%). This preparedness effort is largely related to the respondent's economic level because to prepare, for example to increase the floor level, they have to provide a certain amount of money from their income, whereas most respondents are at a low-income level.

Based on questionnaire analysis, 71% of respondents have a high level of action against flooding. This means that people can act quickly and well with floods. Good actions for floods show that they have good preparedness so they can minimize the impact of floods. That's because people in this area have good information resources as well as information transfer. There were several action activities during the flood, such as a gathering of representatives from youth groups, women's groups and community leaders to discuss the flood. Apart from that, people who live along the river also carry out Community Service, namely voluntary activities by the community to clean their area or carry out several community activities. In this image, people work together to raise a road during flooding. For emergency response aspect, which includes the planned plans to respond to an emergency, plan evacuation, existence first aid, rescue, safety and security, compliance basic needs, equipment and equipment, essential facilities, and simulation or training.

The emergency response plan is carried out by the Regional Government of DKI Jakarta through BNPB in coordination with BPBD DKI Jakarta is being handled flood emergency in the Jakarta area. BNPB provide assistance with cloth masks as many as 2,000 pieces to BPBD to support health protocols in pandemic period. Apart from that, the team also reviews evacuation points and conducts a quick review of support which may be required from time to time for local government. There have been evacuations of residents at several points such as facilities for places of worship, schools as well as spacious places (Jati & Raditya, 2021). The DKI Jakarta government is quite responsive in flood problems, one of them is the existence of a Gubernatorial Regulation DKI Jakarta No. 15 of 2017 concerning Mitigation Contingency Plan for Flood Disaster. The purpose of this regulation is to serve as a guide for handling flood, handling those affected communities, and flood victims responsive, improving various facilities and infrastructure, normalizing activities disturbed society after disaster.

Additionally in 2020, Governor Anies Baswedan published DKI Jakarta Governor Instruction No. 52 2020 is about Acceleration Improved Flood Control System in the Era of

Climate Change. There are 7 tasks main: 1) build a detection system and early warning of flood events as well flood disaster management anticipatory, productive, intelligent, and integrated; 2) ensure infrastructure existing flood control always operating at optimal capacity; 3) speed up development flood control infrastructure which has not yet been realized; 4) fulfillment of obligations and participation all components of society to control flood; 5) perfect the system appropriate flood control guidance on climate change conditions; 6) build awareness, empowerment, and the culture of the people towards flood and climate change; and 7) ensure fiscal support availability and undertaking breakthrough in budget absorption for flood control or floods response in Jakarta (Adyatama & Egi, 2020).

Regarding the early warning system in Jakarta, the government has developed an application-based early warning system. This system provides information, resource availability humans, and practice or simulation. DKI Jakarta already has a warning system flood disaster, one of which is Jakarta-Flood Early Warning System (J- FEWS). J-FEWS has been operated by Water Resources R&D Center (2012) by involving stakeholders such as BBWS Ciliwung-Cisadane, BNPB, DKI Jakarta Public Works Department, and BPBD as well. Based on the test results, J-FEWS can provide information flood events and areas of inundation a few days before the incident. Therefore, it can be said that it functions well, but still there needs to be an increase in accuracy value of the magnitude of the resulting flood in the future. In addition, this warning system also done this way convey this early warning via social media or news, such as providing information about flood status (alert 1, alert 2 or alert 3, etc).

In handling efforts, the flood started with the DKI Jakarta Government which provided early warning regarding the potential for extreme weather sourced from BMKG. In handling the disaster emergency, the local government has distributing logistical assistance and rescue and evacuation of residents affected. For example, BPBD DKI Jakarta established a field post in Borobudur University with 40 personnel. And also tents for refuges are established and 3 units of rubber boats are on standby. The PUPR Department helps with operation of toilet cars (Teak & Raditya, 2021).

## CONCLUSION

The community is the main actor in disaster risk reduction (PRB). In order to increase public knowledge about floods, several factors need to be changed. One of them is the education sector. Through community-based education, the lack of knowledge in society can be reduced. Schools can be facilitators between communities and organizations. To increase community knowledge, preparedness and community action for floods requires participation and coordination between parties in the community, namely community groups, local stakeholders, local governments and NGOs. Developing relationships between partners in DRR is a very important step that must be achieved. Community involvement to implement some good practices is one of the important actions to overcome disasters. In this case, cooperation between parties is expected to increase community participation to be active in obtaining information about natural disasters and identifying the areas where they live, so that the worst-case scenario can be expected and is expected to be implemented.

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