

## **Analysis of Semarang City Government's Mitigation Efforts to Reduce Flood Disaster Risk to Support National Security**

**Onggo Cahyo Wibowo<sup>1)\*</sup>, Ernalem Bangun<sup>2)</sup>, Bambang Wahyudi<sup>3)</sup>**  
<sup>1,2,3)</sup>Disaster Management, National Security, Indonesia Defense University

\*Corresponding Author  
Email : [onggo.odz@gmail.com](mailto:onggo.odz@gmail.com)

---

### **Abstract**

*Disasters are closely linked to human security, which of course is also closely linked to national security. Se Bang Fai is known as a flood-prone district. This study aims to analyze the flood control efforts carried out by the Semarang city government. Disaster is a serious threat to the social life of the existing society and finally to the stability of the nation. The threat that the citizens of Indonesia feel is the frequency of disasters that occur in almost all of Indonesia. Semarang, which is the capital of Central Java province, is vulnerable to flooding. Floods in Sepon City started to occur frequently between 2017 and 2021. Disaster reduction is one of the efforts of the Sepon City Government to reduce the risk of flood disasters. One of the mitigation efforts implemented by the Semarang city government is the construction of the West Tidal Canal and the East Tidal Canal. The construction of 2 rivers: the East Canal and the West Canal is expected to reduce the flood disaster in Sam Nua District. The government must prepare a flood preparedness plan so that the government knows what to do to reduce future flood disasters.*

**Keywords: Mitigation; Flood; Semarang Government; Semarang City**

---

### **INTRODUCTION**

The situation in KBBI, the saints are in many stages and some of them are significant or highlight the area of the group within the group. She loves being by your side. A unified concept of water turbulence and depth decay (Suripin, 2003). According to data provided by the Semarang Regional Disaster Management Agency on November 12, 2021, the most common natural disaster in Semarang after landslides is flood. And based on the 2015-2020 data submission, Semarang City has experienced floods that occurred at several points in the same location year after year, and based on the Indonesian Natural Disaster Risk Index (NDRI), Semarang City has a high potential for catastrophic flooding.

More than a third of the world's natural disasters occur in Asia. According to statistics, every tenth person who dies as a result of a natural disaster is a flood victim. Floods are natural disasters caused by natural damage caused by humans, as well as natural phenomena. Floods cannot be prevented, but the causes of flooding can be controlled and the impact of flood damage can be reduced.

There are three factors that cause flooding, namely (Silalahi and Harahap, 2021):

- a. Human action. Use of floodplains as habitat. Massive logging events can reduce soil infiltration areas, causing erosion which results in silting of river banks and ultimately disrupting river flow. Building housing in flooded areas but without considering waterways. Disposing of garbage is one of the most common activities that can clog waterways.
- b. Stable properties. The urban landscape of Semarang experiences landslides every year and is therefore an area that often experiences flooding. The condition of the river is considered to be close to the slopes below the river, but what happens is the condition of the land being flat, rolling and discontinuous in the Watershed Area.
- c. Natural events in Indonesia, especially in Semarang. This may be due to rains and dams or backwaters that are located at the confluence of large rivers and lakes. landslides due

to excessive groundwater extraction.

The combination of various processes from disaster to disaster causes flooding (Becker, 2018). The main causes of flooding in Semarang City are heavy rains that occur every 50 years and high tides in northern Java (Hadimuljono, 2021). Another cause of flooding in Semarang is poor drainage. Wells and pumps in the Semarang area play an important role in regulating the flow of water from top to bottom. Another reason is that many areas in Semarang Hilir or downstream use excessive amounts of groundwater. As a result, the land sinks every year. Causing a reduction in water catchment areas and changes in the landscape (Benny, 2021).

With reference to Law no. 24 of 2007, mitigation is a series of efforts that can be done by everyone to reduce disaster risk or reduce the impact of disasters through natural and non-physical development as well as increasing people's ability to deal with disaster threats. According to Law no. 24 of 2007 that one of the most important steps in carrying out disaster mitigation is the creation of an appropriate spatial plan and in accordance with the risks of each region (Bongi et al., 2020).

Disaster mitigation can be carried out physically, such as making embankments, or non-physically, such as local wisdom in the area. As was done by the people of Kampung Naga who built physical infrastructure, such as making tunnels that function as waterways, drainage and roads that are not cemented around Kampung Naga by replacing the construction with soil and stone, so that water can seep into the ground. and can flow smoothly. Non-physical mitigation is carried out by expanding the protection of sacred forests in the area so that water discharge and water quantity can be controlled and landslide prevention (Dewi and Istiadi, 2016).

There are different studies related to mitigation to reduce the impact and risk of flood disasters, including research conducted by Ramdan Afrian (2020) whose research found the causes of the flood disaster in Sidodadi village, Langsa city, found that prevention focused more on physical aspects. . developments such as dam construction. , storage and others (Afrian, 2020). The second study conducted by Islamia Kharimah (2021), which investigated disaster reduction efforts in Pidie Jaya District, Aceh Province, found that with the help of cross-sectoral and government coordination, identifying disaster-prone areas and strengthening disaster management structures. Furthermore, the third researcher from Anastasia Bongi et al. If the level of disaster risk is high, disaster reduction is in the form of policies included in the reduction plan, the average risk level, then what is done is to focus on additions and improvements, and those that have a low level of risk. level. flood risk will only focus on rehabilitation (Bongi et al., 2020). The three studies have differences, namely the causes of floods and flood prevention efforts. And the purpose of this study is to analyze the response efforts of the Semarang city government in reducing the risk of flood disasters to support national resilience.

## RESEARCH METHODS

The data used in this study are primary data and secondary data. Primary data was obtained from previous research journals and secondary data was obtained through literature review from various interviews and research results published in the media from various websites and documents from organizations related to flood disaster response. This study uses data for 2017 - 2021. The method used in this research is a qualitative research method with a descriptive analysis method. After obtaining secondary data using a literature review, the next step is to find out what the meaning and content of the data is and write it into a text that can be analyzed.

## RESULT AND DISCUSSION

The city of Semarang has hilly and lowland areas as well as beaches. 65.22% of the area is in the form of beaches with a slope of about 25%. In the lowlands located in the city of Semarang, the height of the city of Semarang is only 0.75 m above sea level with an elevation of 0% to 5%. With such topographical conditions, Semarang City is an area with a high level of flood risk.

Floods in Sidodadi Village, Langsa City were caused by a lack of community interest in behaving in protecting their environment. Bad habits that are practiced, such as littering, especially in rivers, can cause accumulation of waste, causing poor absorption of water in drainage, which causes flooding (Africa, 2020).

Floods in Semarang are caused by cycles of extreme rainfall that occur every 50 years and are also caused by the relatively high influx of sea water (Hadimulzono, 2021). In addition, Semarang City is experiencing continuous subsidence of 0.8 cm - 13.5 cm per year, and the rate of land subsidence is increasing to the north (Sara et al, 2012).

One of the cities in Central Java Province which is a flood-prone area is Semarang City. The causes of flooding in the city of Semarang were analyzed and efforts were made to overcome them by using a breakwater to dampen the wave energy coming from the sea so that the waves reached the coastal area of Semarang city... reducing the energy and building a sea wall to the west of the city. The Semarang Flood Canal or what is often referred to as the West Flood Canal functions as flood control in the western region of Semarang City because it can maintain water discharge and remove sediment in the river (Shidik et al, 2019).

In 2017, there were 28 floods in Kek, Semarang. Gayamsari, cake. Bite, cake. Warning, cake. Digs, cakes. West Semarang, Kek. Gajahgunkur, cake. Genuk. In 2018, it happened 34 times in several districts, which happened in 2017 plus pie. East Semarang. It happened 18 times in 2019 and one of the disasters was in the village of Dondong in Kek. Ngalian was caused because the Banyan Basin was unable to hold water so that it overflowed between the residents of RT 6 and RW 7. In 2020 the city of Semarang experienced 23 floods so that Mr. Kadarno's house was unfit for habitation. In 2021, the city of Semarang will experience 77 floods, more than the last 5 years.

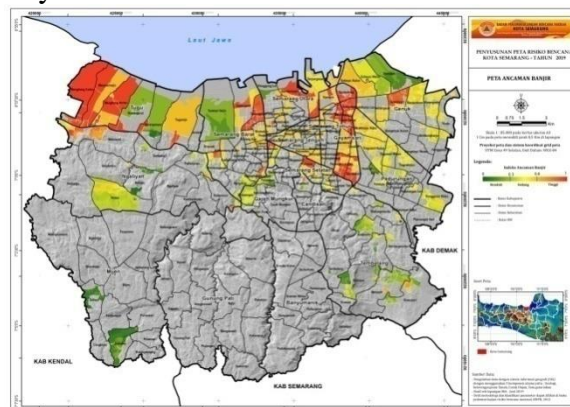


Figure 1. Flood Hazard Map

Source : Semarang city regional disaster management agency (2019)

Figure 1 shows the threat of flooding that occurs a lot in Semarang, especially in the downstream part of Semarang, namely Kec. Genuk, Kec. Pedurungan, Kec. Gayamsari, Kec. East Semarang, Kec. North Semarang, Kec. South Semarang, Kec. Central Semarang, Kec. West Semarang, Kec. Ngaliyan and Kec. Monument. The flood-prone area is known to be located at the bottom of Semarang which is only 0.75 meters above sea level.

Responding to the interview conducted by Kautsar, the Minister of Transportation said there

was coordination from various parties in overcoming the flood problem. Coordination is carried out by the Governor of Central Java, the Directorate General of Water Resources of the Ministry of PUPR, the Directorate General of Civil Aviation and PT Angkasa Pura I. The Ministry of Public Works and Public Housing also carries out water or dam mitigation such as dredging rivers and building embankments to anticipate flooding (Budi Karya Sumadi, 2021 ). Despite the various efforts made by the Semarang city government to deal with floods, the city of Semarang still has to deal with the floods that occurred in early 2020 and 2021. There was also information obtained from an academy that it was not suitable for waterways to be channeled because there were many waste that clogs drainage in secondary and tertiary canals, primary dams where water should flow but does not flow and flooding is the cause of flooding in Semarang (Benny, 2021).

If you want mitigation to go as you wish and have maximum impact, then the environmental conditions that are the main trigger for flooding must be addressed first. Extensive development in the downstream area of Semarang which is too massive and uses groundwater excessively, causes a reduction in the watershed and results in a change in the landscape. The Upper Semarang area, especially in Tembalang, is an example of reducing swamps that were built into residential buildings and large buildings that do not yet have a good drainage system that can divert water from the area to major rivers (Benny, 2021). .

One practical way to reduce the impact of a flood disaster is to reduce the risk of the flood disaster itself. Almost every area has areas that are prone to flooding, but the damage that can occur can be reduced if mitigation is done properly. An example is Mitigation in Iran which compares the costs of disaster mitigation and the costs incurred as a result of the disaster, showing that physical construction in the form of water retaining dams and flood drainage buildings is the best flood mitigation effort in Iran. (Heidari, 2009).

There are ways to prevent flooding in Nigeria, namely by repairing bad drainage systems and rebuilding good drainage systems, building canals to drain floods, government and non-government agencies implementing various early warning system programs, providing disaster preparedness health facilities. According to the government, to reduce disaster risk, to continue to monitor flood-affected areas, and to promote activities that can also be carried out by the community, such as mass planting of trees, the government must eliminate or reduce the number. buildings that cover the flow of river water so that the river can flow according to its original designation, and establish strict rules for the indiscriminate disposal of garbage and waste (Adetunji and Oyeleye, 2013).

Based on the results of previous studies, the right and appropriate flood management effort to be carried out by the City Government of Semarang is to prepare a disaster risk reduction preparedness plan to deal with flood disasters, taking into account various worst-case scenario risks. also from the past. data from various sources. related agencies related to the Semarang urban flood disaster. The purpose of a disaster risk reduction contingency plan is very important because by developing a disaster risk preparedness plan, the government can know what the worst risks can be, so that they can carry out mitigation measures before a disaster occurs. The previous year's disaster risk data and studies serve as a reference for disaster risk reduction preparation planning in the form of appropriate mitigation during the pre-disaster, disaster response and post-disaster phases, as well as during the physical development phase for vigilance. on disaster risk at several disaster-prone points, so that the relevant agencies in Semarang City can achieve development targets. Equally important is the tightening of laws on the construction of new buildings which must comply with relevant regulations so that rainwater can flow directly into rivers and reservoirs.

## CONCLUSION

The Semarang City Government is trying to implement various disaster management efforts, such as carrying out cross-sectoral coordination, reconstructing and normalizing the operation of rivers that inundate the west channel and inundate the east channel, identify flood-prone areas, build water embankments, and dredging. . . . and they also built dams. However, these efforts are not necessarily successful because there are many causes of flooding, including the highest rainfall in the last 50 years and the inadequate drainage system in Semarang City. What the Municipal Government of Semarang can do is prepare a disaster risk reduction plan that is more suited to the situation of the City of Semarang and develop drainage regulations before carrying out construction that may cause flooding.

## REFERENCES

- Adetunji, M., & Oyeleye, O. (2013). Evaluation of the Causes and Effects of Flood in Apete ,  
*Ido Local*. 3(7), 19–27.
- Alfian, Ramdan. (2021). Mitigation Study of the Causes of Floods in Sidodadi Village, Langsa  
City. *Journal of Georaflesia*, 5(2) , 165-169.  
<https://doi.org/10.32663/georaf.v5i2.1660>.
- Becker, P. (2018). Dependence, trust, and influence of external actors on municipal urban flood  
risk mitigation: The case of Lomma Municipality, Sweden. *International Journal of  
Disaster Risk Reduction*, 31(September), 1004–1012.  
<https://doi.org/10.1016/j.ijdr.2018.09.005>.
- Benny (2021). Tirto.id: Causes of the 2021 Semarang Flood: Is It Only High Rainfall?.  
(Results of Interview by Ayub Rustiani 18 February 2021).
- Bongi, A., Rogi, O.H.A., Sela, R.L.E., (2020). Flood Disaster Risk Mitigation in Makassar  
City. *Sabua : Journal of the Built Environment and Architecture*, 9(1), 1-12.
- Semarang Regional Disaster Management Agency. (2019). *Flood Disaster Data 2017-2021 in  
Semarang City*. Semarang : Semarang Regional Disaster Management Agency
- Dewi, I. K., & Istiadi, Y. (2016). Disaster Mitigation for Traditional Communities in Facing  
Climate Change in Kampung Naga, Salawu District, Tasikmalaya Regency (Disaster  
Mitigation on Traditional Community Against Climate Change in Kampong Naga,  
Salawu Subdistrict, Tasikmalaya). *Journal of Humans and the Environment*, 23(1),  
129. <https://doi.org/10.22146/jml.18782>.
- Hadimuljono, B., (2021). Tirto.id: Penyebab Banjir Semarang 2021: Apakah Hanya Curah  
Hujan Tinggi?. (Hasil Wawancara oleh Ayub Rustiani 18 Februari 2021).
- Kharimah, K., Wahyuni, D., Aprilyanto., Widana ,I.D.K.K. (2021). Flood Disaster Mitigation  
Efforts in Pidie Jaya District, Aceh Province to Support National Security. *PENDIPA  
Journal of Science Education*, 6(1), 57-63 <https://doi.org/10.33369/pendipa.6.1.57-63>.
- Sarah, D., Murdohardono, D., Soebowo, E., Lubis, F., Mulyono, A., Sukaca. (2012). *Land  
Subsidence in Java Island: A Case Study of Land Subsidence in Semarang City.  
Perspectives on Disaster and the Environment in Indonesia: Case Studies and reducing  
the impact of risks, Sub-Activities Competitive Disaster and Environment-* LIPI, 1. 125  
– 142.
- Shidik, A.N., Utari, D., Atmika, M. (2019). Analysis of Factors Causing Rob Floods and  
Strategies for Countermeasures with the Development of Break Water in the North

Semarang Region, Central Java, Indonesia. Prosiding Seminar Nasional Kebumen ke-12. 559-575.

Sigit, A. (2018) *The Smart Book of Recognizing Natural Disasters*. Kabupaten Sleman : Deepublish.

Silalahi, B., Harahap, M.E. (2021) *Potential Causes of Flooding in the Deli River Basin, Medan City*. Medan : Penerbit Adab.

Sumadi, B.K. (2021). Dephub.go.id : Minister of Transportation Discusses Flood Management at Ahmad Yani Airport with the Governor of Central Java. (Results of the Press Release of the Ministry of Transportation 7 February 2021).

Suripin. (2003) *Sustainable Urban Drainage Systems*. Yogyakarta: Penerbit Andi.