

HISTORICAL ANALYSIS AND MANAGEMENT ON FLOODS DURING PANDEMIC COVID-19 IN DKI JAKARTA INDONESIA

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ABSTRACT

A flood is an event that occurs due to an accumulation of water that falls and cannot be accommodated by the ground. The study aims to find out the history of floods in DKI Jakarta and the handling of floods amid the current Covid-19 pandemic. Natural events, such as floods, are not new in an urban area. The study discusses why floods that occur in urban areas, especially the DKI Jakarta area, are an annual cycle. But there is a difference in 2020 and 2021 because of the flood, this time amid the Covid-19 pandemic, so extra handling is needed because if there is a crowd in the refugee camp it can spread the virus more widely. Thus, the government is doing everything it can to handle floods so that the community remains in a healthy body condition. The method used in the study is descriptive with a literature study approach, namely collecting data from reliable sources. Floods can be caused by two factors, namely natural causes and unnatural causes (from human activities).

Keywords: *Flood, DKI Jakarta, Pandemic, Handling, and Covid-19*



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INTRODUCTION

The Meteorology, Climatology, and Geophysics Agency (BMKG) predicts that the entire DKI Jakarta area will still have the potential for heavy rain from February 18 to 19, 2021. Rainfall in DKI Jakarta ranges from 100-150 mm. Based on data compiled by BMKG, PasarMinggu recorded the highest rainfall of 226 mm/day, followed by Sunter Hulu at 197 mm/day, Lebak Bulus at 154 mm/day, and Halim at 176 mm/day. On the same occasion, the meteorological representative of BMKG Guswanto explained that many factors caused extreme weather conditions in the Jabodetabek area. These factors include the roar of winds from Asia, which is sufficient to cause an increase in rain clouds in western Indonesia from February 18 to 19, 2021. In addition, atmospheric disturbances are seen in the equatorial zone (Rosby Equator), which causes wind speeds to slow down and merge with the wind from the north turns right through Jabodetabek.

Not only that, air instability and high humidity in most areas of West Java also encourage the potential for rain clouds to grow in Greater Jakarta. The BMKG also gave an example of a low-pressure center area in northern Australia, which forms a convergence

pattern in most Java Island, which also helps increase the potential for rain cloud growth in West Java, including Jabodetabek. Cause flooding in DKI Jakarta, namely nearby rainwater. In addition, the carrying capacity of the environment is also significant. Apart from that, starting from Aceh, North Sumatra, West Sumatra, South Sumatra, Banten, DKI Jakarta, all regions in Indonesia are likely to be hit by thunderstorms and strong winds next week all islands in Kalimantan and Sulawesi Islands.

After DKI Jakarta announced the first Covid-19 case in March 2020, the number of people infected with Covid-19 increased significantly, and DKI Jakarta was classified as a Covid-19 red zone. The Government Regulation of the Republic of Indonesia (No. 21 of 2008 concerning the Implementation of Disaster Management) stipulates that the government is obliged to take emergency measures during a disaster, one of which is providing evacuation posts. Victim stations are usually set up in emergencies to accommodate many nearby victims. In the process accessible and the victim's death, do not keep human distance. The threat can also be caused by various diseases that appear when it rains, such as dengue fever, typhoid, diarrhea, and skin diseases, which can lower the immune system and make people more vulnerable to Covid-19 infection.

This year's flood is undoubtedly different from previous years because it co-occurred as the Covid-19 pandemic, and it is not sure when it will end. Floods will have an economic impact on office buildings, such as damage to houses, electronic equipment, office buildings, motorized vehicles, etc. Even the harmful effects of flooding is the emergence of casualties. Floods during the Covid-19 pandemic require people to remain vigilant at all times. We need to find that during the Covid-19 pandemic, it will be challenging to implement a health agreement for all flood victims in Jakarta. Large numbers of people gather in refugee camps, which could lead to new groups of Covid-19 spreading.

RESEARCH METHODS

This study used a descriptive research design using a literature study approach. The use of this descriptive research design in this study aims to determine the various causes of flooding that occurred in DKI Jakarta. Data collection is a systematic and standard procedure for obtaining data. In this regard, based on the type of research and the type of data sources used and that have been determined, the data collection technique in this study is to use secondary data, both from the results of other people's research as well as from the government's official website and from the news.

RESULTS AND DISCUSSION

The result of this study is to use 20 journal sources consisting of 2019, 2020, 2021. Journal 2019 used 15%, Journal 2020 70%, Journal 2021 15%. This is done because this study focuses on floods and covid-19, so many use 2020 journals considering that the first covid-19 in Indonesia occurred in 2020. The 2019 journal is more focused on journals discussing the history of DKI Jakarta, which explains that Jakarta has always experienced floods. The 2021 Journal leads to the government's handling of Covid-19 that has been carried out.

DKI Jakarta Flood History

Jakarta is indeed synonymous with a city that is often hit by floods. Whenever it rains heavily, several areas in Jakarta are almost always flooded. One of the main causes is the people who often accidentally throw garbage into the river, thus blocking the flow of water when it rains. According to the description of Edi Sedyawati et al. In "The History of the City of Jakarta" (1950-1980) (1986), another major cause of continuous flooding in Jakarta is environmental conditions in Jakarta. Environmental conditions in Jakarta are drainage from 10 major rivers. Zaenuddin HM wrote in "Flood Jakarta" (2013) that floods in Jakarta had existed since Tarumangala, precisely when King Punawalman led the kingdom in the 5th century.

Jakarta Floods in the Age of the Tarumanegara Kingdom, the Tugu Inscription found north of Jakarta in 1878 is clear evidence of Jakarta's flooding since the time of the Tarumanegara Kingdom. The inscription contains a little information about whether King Purnawalman excavated the Chandrabhaga River around Bekasi and Gomati River or whether Tangerang carried out the pit, which is now called the Mati River. Excavation is one of the efforts to overcome flooding. The river that was excavated is expected to drain water, so that the floods in Jakarta at that time can immediately subside. In addition, this excavation also aims to irrigate the residents' rice fields.

The Jakarta Flood of 1621 Jakarta was called Batavia during the Dutch colonial period. Most of Batavia was still in swamps and wild forests so that several rivers were often flowed, especially the Qilong River, which overflowed during heavy rains. The Jakarta flood in 1621 was the first flood during the VOC administration in the archipelago, precisely under the leadership of Governor Jan Pieterszoon Coen. Many houses were built of wood at that time, so when the flood hit Batavia, it was easy to be washed away. The road structure is still unpaved, making it difficult for bicycles or shows to pass. The Dutch had been building the canal for two years before the flood. However, his efforts failed

because the Dutch did not know Jakarta's geographical location and topographical structure at that time.

Floods in Jakarta in 1654 The governor at that time, Joan Maetsuycker (Joan Maetsuycker), led Batavia. Another big flood hit Batavia. The cause was heavy rain and overflowing of river water (especially the Qilong River) and water transportation from upstream in Beitenzog or Bogor. During flooding, the channel is blocked by sand, and the track cannot function properly. Joan Martsuycker built several other canals, but his efforts failed because the canals were always full of garbage, dirt, and sand.

Jakarta Floods in 1872 To be precise, during the leadership of Governor James Loudon, floods hit Batavia again (1872). The cause is the same, namely heavy rain and river flooding. The canal can no longer function because it is always clogged with garbage, dirt, mud, and sand. Efforts to clean the drains were often carried out, but they were still fruitless because the cleaned sludge was still allowed to accumulate on the edge of the canal. Jakarta Floods in 1893 In 1893, Governor Carel HA van der Wijck (Carel HA van der Wijck) took over Batavia and experienced another flood. The cause is high rainfall.

Causes of Floods in DKI Jakarta

The area of DKI Jakarta is almost open. It covers 50% of the scope of growth and expansion in the field. The 13 rivers that cause the inundation are flooded. Caused by river flooding It causes flooding. The flood problem This is increasing money significantly is rising population growth and national growth In the banking sector is changing place of residence. According to Prihatin (2013), many factors cause flooding in the DKI Jakarta area. Overall, that's all. Be the first warning of what is happening. Big changes. Part of the multi-city space, DKI Jakarta area, Bogor area, Reservoir area, Tangerang, Bukashi area. With this change, the number of domains decreases. It should serve as a fishing ground. Rain due to population decline in this area, Then the rain that falls on the ground flows towards it It does not sink onto the road and onto the ground.

According to the DKI Government, Jakarta (2010) confirms the flood. It is worried that he is distraught that it must be for a world scale in progress DKI depicts the state government of the colony's problems and problems, and others, according to Joey. So two years after Sheavia was built in this year, only 1621 will this city be restored to form. Flood logo. It was filled with a highway in 1918. The water stage depends on the reports at the time from one or about the neighborhood as an adult. My attempt went to the Dutch colony. This is called the Western partnership during this year. The development of the

protector of the West, the development of the flood of the West is a mental way. Herman V Veren.

According to the director of irrigation and irrigation Series appearance Flood in a short period of time. It repeats every year and requires more effort. Therefore, it is high hopes that you can predict the losses. Many actions of the Constitution (government system proximity), of course, far can overcome the problem of flooding in DKI Jakarta. Solution so far, floods in DKI Jakarta are more frequent. Focus on building production—physical structures for flood control. Reduce the effects of flooding. According to Aminudin (2013), floods are natural disasters due to heavy rains Altitude due to inconsistency with proper drainage channels. Soak the area that the people who are there don't want. This flooding can also be caused due to a breakdown in the existing water flow system, so that the lower area is affected by the flood delivery. Then according to Kodoatie, ET, AL 2002 in Nurhaimi A and Sri Rahayu (2014), two factors cause flooding: Unnatural Causes and Causes (from human activities). Natural examples are: (a) heavy rain; (B) Geographical Effects on rivers in the upstream and downstream areas; (C) sediment deposition; (D) Drainage network system is not running well; (e) cheap seawater pairs. Then an example of Unnatural (human activities) would be: (a) Changes in the river transfer area caused by deforestation; (B) garbage disposal into rivers; (c) lack of well-maintained flood control structures; (D) Lack of river flow.

Handling of Floods in the Middle of the Covid-19 Pandemic

Flood disasters, especially during a pandemic, are a severe problem and invite enormous concern. Due to the coronavirus outbreak, the suffering of residents is already very heavy, and it gets worse if this natural disaster hits them. BNPB data shows that flood disasters have increased during the outbreak of the coronavirus. During 2020, for example, the number of flood events was recorded at 1,138. This figure is up from 790 the previous year.

In that year, floods took first place with the most disasters, followed by 880 tornadoes and 577 landslides. Meanwhile, from the beginning of 2021 to last Tuesday (6/4/2021), according to the same data, flood events were recorded at 481. The Institute of Sciences Indonesia (LIPI) briefly highlighted the threat of increased flooding amid the Covid-19 pandemic. According to LIPI, Indonesia has 5,590 main rivers, and 600 of them can cause flooding. The flood-prone area, which includes the main river, reaches 1.4 million hectares. Executive Director of the National Indonesian Forum for the Environment (Walhi), Nur Hidayati, said that the increase in flooding in various areas from

2020 until now was mainly due to extreme weather factors due to climate change. He said this condition was mainly due to the La Nina incident, which made rainfall increase.

Anticipation of flooding also needs to be done. One of them is by ensuring that the water supply is clean from garbage and changing the habit of throwing trash into the river. This flood anticipation is considered very relevant to efforts to prevent the transmission of Covid-19 because these actions are also related to efforts to maintain health and safety during floods. Always wash your hands with soap and clean water as often as possible, for at least 20 seconds. Keep wearing a mask when interacting with officers, RT RW officers, or (during) the evacuation or temporary evacuation period and of course keep a safe distance.

BNPB provides support in handling flood emergencies in Jakarta and surrounding areas. BNPB's Rapid Reaction Team (TRC) coordinates with BPBD DKI Jakarta in dealing with floods in the region. TRC BNPB assisted 2,000 cloth masks to BPBD to support health protocols during the pandemic. The team also reviewed the evacuation points and conducted a quick assessment of the local government's support from time to time.

The BNPB Operations Control Center (Pusdalops) reported a flood incident in Cipinang Melayu Village, Makasar District, East Jakarta City. A total of 333 families or 1,109 people have affected in the area or around 23 RT (8 RW). Based on developments at 14.00 WIB, the number of displaced residents was 1,222, with details of 918 adults, 151 adolescents, 89 toddlers, and 64 elderly.

On the same occasion, the Executive Director of the Asia Pacific Center for Ecohydrology - UNESCO Category II Center (APCE - UNESCO C2C), Ignasius Dwi Atmana Sutapa, explained several main factors causing flooding, namely high rainfall due to climate change, reduced water catchment areas, changes land use, inadequate waterways and the behavior of people who do not care about the environment. Various obstacles were also faced in dealing with flood disaster problems, including decentralization policies, non-optimal resource management, and overlapping authorities between sectors and levels. The lack of coordination between related parties to deal with the flood problem is also the cause of the difficulty in overcoming this problem. If floods occur during a pandemic, the problem will become more complex, both related to physical distance, it will be more challenging to do, and lack of clean water.

In addition, M. Fakhrudin, Researcher of LIPI Limnology, also highlighted the need to manage the Ciliwung Watershed (DAS) to reduce flooding. He explained that the

watershed functions as a hydrological system. The condition of the watershed in Ciliwung is getting more critical every year. Moreover, the potential for flooding from upstream is increasing in quantity. Due to urbanization in Jabotabek, especially in Bekasi and Bogor, changes in land use exacerbated the flooding. In principle, rainwater should be absorbed as much as possible, reducing river flow and increasing groundwater reserves massively. The role of the government with the concept of zero runoff has supported this direction. This is an opportunity for the local government and the community to collaborate to do something small. Still, the effect is expansive, for example, by making infiltration wells in every resident's house. The improvement of forest functions also needs to be controlled, including the preservation of the lake for flood control.

The Head of the CiliwungCisadane River Basin Center, Bambang Hidayah, also stated that the Jabodetabek flood control concept is currently divided into upstream, middle and downstream parts. The upstream idea is carried out with reforestation activities, management of bungs and dams. The central concept is to build potential pools and infiltration wells and requires community participation. At the same time, the downstream idea is carried out by building dams, sedimentation traps, and river normalization.

In line with that, DudiGardesiAsikin, Secretary of the DKI Jakarta Water Resources Service, also added that the principles of flood control in Jakarta are revitalization of polders, construction/ improvement of pumps, construction of reservoirs/situ/reservoirs upstream, construction of river embankments, construction of infiltration rivers. Routine activities of dredging, draining, constructing infiltration wells. In addition, there is a mud raid program.

For the Bogor area, R. Soebiantoro, Head of the Bogor Regency Public Works and Spatial Planning Agency, has also made physical and non-physical efforts to prevent flooding in 2020. The principle is the same as the programs that have been carried out. Non-physically, RT-RW compilation, zoning arrangement, commensurate line arrangement, drainage, and licensing arrangements, and arranging instrumentation for controlling the use of space around the river are carried out. Meanwhile, the construction and maintenance of the site are physically carried out, care of green open spaces, rehabilitation of irrigation canals, and creation of infiltration ages.

CONCLUSION

This year's flood is undoubtedly different from previous years because it co-occurred as the Covid-19 pandemic, and it is not sure when it will end. Floods will impact the

economic loss of people's lives, such as damage to houses, electronic equipment, office buildings, motor vehicles, etc. Even the negative impact of flooding is the emergence of casualties. Floods during the Covid-19 pandemic require people to remain vigilant at all times. We need to pay attention to that at the time of the Covid-19 pandemic, it will be complicated to implement a health agreement to deal with all flood victims in Jakarta. Large numbers of people gather in refugee camps, which could lead to new clusters of the spread of Covid-19. So that people still have to be vigilant and comply with the health protocol rules.

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