Japanese Government Efforts in Flood Disaster Risk Reduction

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Abstract

Japan is an island nation prone to floods and tsunamis. The mountains that dominate Japan form short rivers with steep slopes. The rivers transport sediment to the plains, creating medium-sized floodplains. Japan's rivers are prone to flash floods due to their steep basin slopes and relatively short lengths. The ratio of peak discharge to watershed area is relatively large, ranging from 10 to 100 times that of major rivers in other countries. The water level rises and falls very quickly. This research aims to find out the Japanese Government's Efforts in Flood Disaster Risk Reduction. The method used in this research is descriptive qualitative research using purposive sampling technique on the activities of the Overseas Work Lecture (KKLN). Informants appointed as samples are Dr. Aulia Fabianda Anwar Tinumbang from Asisstant Professor. Graduate School of Engineering Kyoto University. KKLN activities are organized by the Defense University Disaster Management Study Program online through the Zoom application. KKDN activities were attended by all 26 Disaster Management Study Program students and also attended by the Head of the Disaster Management Study Program and Disaster Management study program staff. The results showed that the Japanese Government's efforts to reduce flood disaster risk and increase national security.

Keywords: Government Effort, Disaster Risk Reduction, Flood.

INTRODUCTION

Japan is an island nation in East Asia. Most of the Japanese islands are mountainous and some are of volcanic origin. The highest mountain in Japan is Mount Fuji, a volcano. With a population of 128 million people, Japan is the tenth largest country in the world. Japan is a country on the Ring of Fire. Japan is a country prone to natural disasters.

The cause of natural disasters in Japan has several reasons. The first reason is that Japan is an archipelago of volcanic islands with around 129 volcanoes. Of these, 50 are still active, which is why Japan is often hit by volcanic eruptions. The second reason is the position where the two plates meet. Japan is located at the confluence of two lithospheric plates (earth's crust), the Pacific Plate and the Asian Continent. This makes Japan prone to natural earthquakes, especially tectonic earthquakes. According to the local Meteorological and Geophysical Authority, Japan has an average of about 124 low-level earthquake tremors per month. As Japan is surrounded by water, earthquakes can trigger tsunamis.The third reason is tropical cyclones. A tropical cyclone is a scientific term for a hurricane. Tropical cyclones that form in the Atlantic or eastern Pacific make Japan a country prone to hurricanes or typhoons.

According to the Big Indonesian Dictionary (KBBI), a disaster is an event that causes loss, distress and suffering. While natural disasters are disasters caused by nature such as earthquakes, strong winds, floods and others. Based on Law Number 24 of 2007, disasters are divided into three types, namely natural, non-natural and social disasters. a series of events caused by nature, including earthquakes, tsunamis, volcanic eruptions and others. Meanwhile, non-natural disasters are events caused by failed technology, failed modernization, epidemics, and disease outbreaks. Finally, social disasters are events that occur due to social conflicts such as conflicts between communities or tribes that cause great losses to the surrounding area, and terror.

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Focusing on flood disasters in Japan. Japan is also prone to floods and tsunamis. The mountains that dominate Japan form short rivers with steep slopes. Rivers transport sediment to the plains, creating medium-sized floodplains. Japan's rivers are prone to flash floods due to their steep basin slopes and relatively short lengths. The ratio of peak discharge to watershed area is relatively large, ranging from 10 to 100 times that of major rivers in other countries. Water levels rise and fall very quickly.

There are five factors that contributed to the Japanese flood disaster due to the worst rainfall in Japan in more than two decades:

1. Hurricane Season and Record Rainfall. Heavy rains begin when the typhoons that hit Japan start the annual season. Between July and October or November, the islands experience an average of six typhoons per year.
2. Geography is complex. About 70% of Japan's land is made up of mountains and hills. So houses are often built there. This situation makes many homes vulnerable to landslides and possible flooding.
3. Wooden Houses. Many Japanese houses are built of wood, especially traditional houses that are still popular in the countryside. Their foundations are also made of wood, which is ideal for earthquake flexibility, but struggles to withstand compressive loads from floods or large landslides.
4. Evacuation Orders. During the worst rains, Japanese authorities issued evacuation orders for about five million people. But the orders were not binding and were ignored by many. People have what is called normality, which means they try not to run and ignore negative information. This human nature results in people's inability to respond to sudden disasters such as landslides and flash floods.
5. Climate change Many residents may be lulled into a sense of security through years of experience with severe but non-lethal weather systems. Many people in affected areas say that the rain is like nothing they have ever seen before.

Flood event in Japan in July 2018. The death toll from flash floods and landslides in Japan, caused by heavy rains over the past week, has risen to 176, according to the latest report released by the local search and rescue agency. The death toll reportedly makes the flash floods one of the deadliest natural disasters to hit Japan since the 2011 Fukushima earthquake and tsunami.

Nine people are still missing, and 75,000 rescue workers have been deployed to continue searching the affected areas. Storms predicted for the next few days could again trigger flooding and landslides, risking an increase in the death toll. Given the devastating impact of the disaster, Japanese authorities reported that thousands of homes were damaged, and nearly 17,000 households have lost power since last weekend. Telecommunication signals were also reportedly disrupted in some areas of the disaster, hampering communication between individuals.
Due to the significant losses from the 2018 floods, the Japanese government is working on disaster risk reduction to improve the country's security.

RESEARCH METHODS

Research method is a scientific method that aims to obtain information or data with special methods. The scientific method is in conducting research based on scientific characteristics that are rational, empirical and systematic (Darmadi, 2013). The research method is the nature or steps of defining and selecting the topic of the problem which will be used as a determining factor in formulating the research title (Muhidin Sirat, 2006). The research method aims to enable researchers to understand the workings or stages in the implementation of

research. Researchers can easily obtain answers or results on the theme of the problem under study so that the research can be carried out as well as possible.

This research uses a qualitative-descriptive method, which is a type of research that explains or describes real phenomena or events, which can be natural or non-natural, which summarizes the functions, characteristics, changes, relationships, similarities and differences between phenomena or events (Sukmadinata, 2017). The purpose of this research is to make or design a description or description that is arranged systematically, factually and accurately about the facts, properties and between the events under study. The sampling technique uses purposive sampling on Overseas Work Study activities in Japan. Overseas Work Study activities are carried out by the Defense University Disaster Management Study Program online through the Zoom application. The data from this study were obtained from interviews with Dr. Aulia Fabianda Anwar Tinumbang from Asisstant Professor. Graduate School of Engineering Kyoto University, documents, and data related to the research objectives.

RESULT AND DISCUSSION

There are two types of disasters that cause huge losses to Japan. First, heavy rains and typhoons. In July 2018, heavy rains resulted in 237 deaths and 8 missing persons. The economic loss caused by the heavy rains was about 1,094 billion yen.

In October 2019 and it happened in the eastern part of Japan. Of course, this also includes Tokyo, Chiba, and Tohoku regions. Japan's forecasts again announced that they were down 120 points from the lowest level compared to the previous occurrence. And unfortunately, this was one of the strongest and largest storms in history. And in both cases. Many moons that had started were destroyed. In rivers, it is the small and medium-sized retreats that cause high damage. Namely in July 2018. More than 200 people died, representing the highest daily fly count in history. On the other hand, the damage from the typhoon resulted in huge economic losses of around $20 billion. This is the largest economic loss due to flooding in Japan's history. Seeing that reducing disaster risk is important, and to do so requires understanding the structure of what appears to be disaster reality. But some tasks require damage costs. And there are weak points of quality and situation. This can make them more vulnerable to adverse disaster impacts such as population, property, socio-economic.

The flood happened after the devastation in Japan. It did not affect the way the Japanese government promoted hard and soft measures against flood disasters. And we can't avoid that. Especially since your skills and exposure come with an increased risk of flooding.

1. Increasing hazard (extreme-rainfall). Number of days with daily precipitation of 100 mm or more (extreme rainfall) in Japan
2. Increasing exposure. Concentrated population on low-laying areas
3. Increasing vulnerability. Change in population and future prediction (Ministry of Internal Affairs and Communications)

Disaster risk reduction and risk-informed governance

1. Disaster risk reduction aims to prevent losses and alleviate the impacts of disasters, by reducing vulnerability and exposure.
2. The Sendai Framework calls on governments to strengthen risk-informed governance to manage disaster risk.
3. This requires collaboration between government, scientists, private sector, etc., and investment in the data, tools, etc., to support data-driven risk assessment.

Impact assessment of climate change on hydrologic extremes and adaptation strategy planning by policymakers

1. MEXT has began a 5-year climate change impacts assessment program since 2007, involving multidisciplinary collaborations.
2. Example of research collaboration for developing adaptation strategy in Japan:
   a. Modeling researchers (meteorologists)
      - Future climate projection data,
   b. Impact assessment researchers (hydrologist)
      - Flood-inundation modeling and projections
   c. Adaptation strategy planning by policymakers
      - Incorporation of climate change scenarios data into flood control planning

Japan's New Policy on Water-related Disaster Risk Reduction. The impacts of climate change are water disasters will continue to intensify. It is necessary to enhance the methods of measures to improve safety quickly. right now, with Japan facing a declining and aging population, it is necessary to achieve safe and secure compact plus network urban planning to maintain regional vitality. With, remarkable progress is being made in technologies such as 5G, AI, Big Data and IT. It is necessary to utilize these technologies in disaster risk reduction, including evacuation.

New policy for Japan
1. Transition to river basin disaster resilience and sustainability by all
   a. Measures to be implemented with the cooperation of all stakeholders in any kind of place around basins.
   b. Accelerate preventive disaster risk reduction
   c. (river basin disater resilience and sustainability by all project)
2. Revise plan for flood control
   a. Upgrade flood control plans considering the impacts of climate change

On flood disasters, the government has recognized that the impact of climate change is real. Flood disasters will continue to increase. So it is necessary to improve. To improve safety quickly. Currently, there is a social trend in Japan. With Japan going through a declining and aging population. Plus a network or one planning to maintain. So, because, the elderly are increasing. and the population is decreasing. In recent years. Contributes to the increase in the vulnerability of society during disasters. Because older people It is very difficult to evacuate quickly during a disaster. In addition, technology, AI, Big Data and IT. Have developed significantly in recent years. So it is necessary to utilize these technologies in this regard including evacuation. So the new policy for Japan focuses on 2 main topics. First is, the transition to disaster resilience based rever and sustainability of access to all of its society optimally.

To prevent plots and use the return of flooding. For example, by strengthening and finding solutions that can turn disasters as a negative impact into a positive impact, such as using water from floods for agriculture, stagnant water is drained into dams and drains water to other areas so that it can be channeled properly. The need to provide understanding to the community about the impact and management of flood disasters so as to reduce the impact caused. In an area prone to flooding, the government requires providing information to the community about the vulnerability of the area where they live and the need for relocation to a safer place. This relocation aims to increase the safety of the community from the losses caused by the disaster. This also makes the government to be able to formulate policies in disaster management, both in drainage systems, evacuation routes, and conducting early response and discovery during planning is also very important.

In the policy, revise the flood disaster risk control plan, conventional flat control in this case in the policy Normally, based on historical rainfall data. Or strict level records. The current

era of climate change can cause, much more severe disasters than the disasters that occurred before. More damage. If the rainfall is much more severe. Therefore, in determining measures or considerations in disaster risk reduction, it is necessary to consider the impact of climate change.

To make this information available to policymakers, we need to work with scientists, engineers and other stakeholders. From various regions, the role of companies is very important. One such effort is that the Japanese government has now decided to change their policy from what they believe to be a mind control convention based solely on historical documents, to a new approach to improving flood disaster risk reduction.

CONCLUSION

Japan is an island nation in East Asia. Japan is a country on the Ring of Fire. Japan is a country prone to natural disasters. Focusing on flood disasters in Japan. Japan is also prone to floods and tsunamis. The mountains that dominate Japan form short rivers with steep slopes. Rivers transport sediment to the plains, creating medium-sized floodplains. Japan's rivers are prone to flash floods due to their steep basin slopes and relatively short lengths. The ratio of peak discharge to watershed area is relatively large, ranging from 10 to 100 times that of major rivers in other countries. The water level rises and falls very quickly. In reducing the impact of disasters, it is necessary to increase disaster management capacity, reduce vulnerabilities that can cause losses caused by disasters, and reduce the impact of hazards from disasters, so that by increasing capacity, it can reduce the impact of existing disasters.

In flood disaster risk reduction, there are New policy for Japan is transition to river basin disaster resilience and sustainability by all (Measures to be implemented with the cooperation of all stakeholders in any kind of place around basins, accelerate preventive disaster risk reduction river basin disater resilience and sustainability by all project) and revise plan for flood control (upgrade flood control plans considering the impacts of climate change).

Although Japan often has disasters. Japan is able to quickly get up and repair infrastructure and damage caused quickly and efficiently with technology and strategies in dealing with disasters both the threat of disasters in the next few days to disasters that may reoccur 10 years in the future so that in the future it does not cause large losses and becomes a country that is resistant and resilient in the face of various disaster threats.

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