



## Adaptation of Generation Z in Facing Flood Disasters in Sewu Village, Surakarta City

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### ABSTRACT

Flood disasters are hydrometeorological disasters that occur due to high rainfall and low public awareness which can trigger the formation of an imbalance between the capacity of water catchment areas and the carrying capacity of rivers. Losses resulting from flood disasters include economic and social losses, and even loss of life. Flood disasters often occur in urban areas with fairly rapid development, such as the city of Surakarta, so people need to adapt to survive in flooded areas. This research aims to determine the adaptations made by Generation Z in Sewu Village in facing flood disasters using a phenomenological approach. The older generation in Sewu Village views annual flooding as routine, yet concerns arise about whether the tech-oriented but socially less sensitive Generation Z can carry on traditional flood adaptation practices. The sampling technique was carried out through purposive sampling with the criteria of Generation Z who had been affected by flooding and had lived for more than five years. There are three types of adaptation implemented by Generation Z in Sewu Village, namely physical adaptation through a commitment to protecting the environment and understanding relocation and the function of adjusting the shape of buildings, social adaptation by forming positive perceptions and social support, and economic adaptation by maintaining valuable items to reduce the risk of damage can increase expenses.

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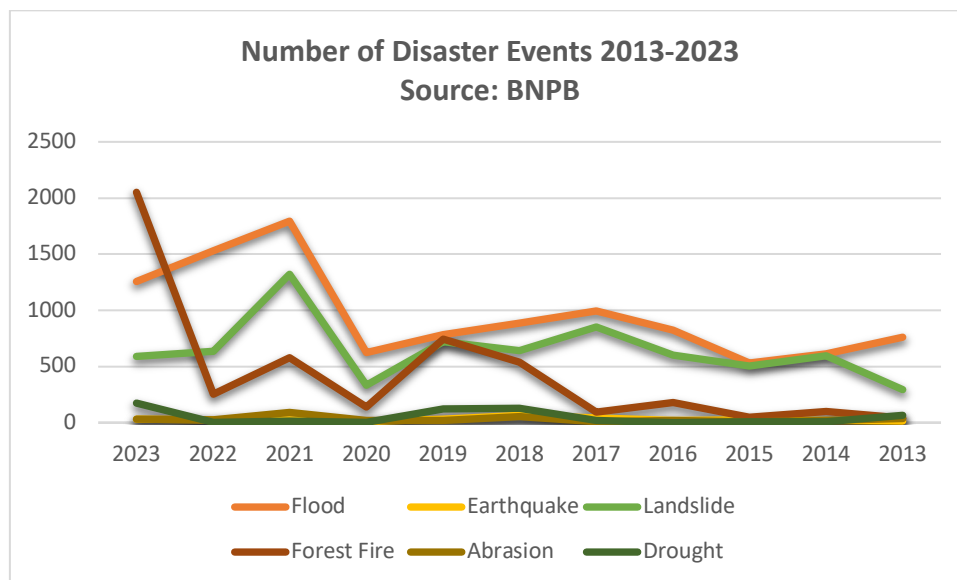
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## 1. INTRODUCTION

The flood disaster is one of the hydrometeorological disasters that causes a lot of damage to material aspects in the affected area (Cabrera & Lee, 2020). Flood disasters can occur when there is high rainfall, reduction in conservation areas, the emergence of settlements in riverbank areas, and the formation of an imbalance between the capacity of water absorption areas and the carrying capacity of rivers, resulting in disruption of community activities. Flood is a hydro-meteorological natural disaster that causes puddles on the earth's surface and often causes material losses to the community and at worst kills people (Syafitri et al., 2021). Changes in landuse and poor drainage systems cause a reduction in the capacity of water catchment areas in urban areas (W. Handayani et al., 2020; Ridwana et al., 2022).

Currently there are major changes in rainfall patterns that can trigger natural disasters such as floods, droughts, landslides and storms (Suryanto et al., 2021). The increasing trend of flood disasters due to extreme weather changes can have various negative impacts on socio-economic aspects (Winsemius et al., 2016). Losses resulting from flood disasters include economic and social losses, and even loss of life. Based on data obtained from BNPB, in 2013-2022, flood disasters contributed to the number of disaster events with the highest intensity compared to other disasters.



**Figure 1.** Number of Disaster Events 2013-2023

In general, flood disasters often occur in low topographic areas with quite high rainfall, and in some areas flood disasters have become a routine that occurs every year. Flood disasters often occur in urban areas with fairly rapid development due to reduced rainwater catchment areas (Sugandi et al; 2021). Sewu Village is located in Surakarta City, which administratively borders the Jagalan Village in the north, the Sukoharjo Regency (Bengawan Solo River) in the east, Sangkrah Village in the south, and Gandekan Village in the west. In 2022, Sewu Village will be the area with the most flooding impacts in Jebres District with a figure reaching 481 people. Every year Sewu Village always experiences inundation because of its location close to the river and at several points it has low topography. Repeated experiences can help the community to increase their understanding of flood disasters (Demski et al., 2017).

The existence of natural factors that trigger flood disasters makes prevention difficult so floods can only be controlled by reducing the impact of losses (Musfida et al., 2021). The magnitude of losses experienced by affected areas is directly proportional to the high level of flood vulnerability (Kheradmand et al., 2018). Flood disaster control to reduce potential losses can be done by

implementing adaptation strategies. Adaptation is society's response to existing threats by adapting to social conditions and accompanied by maintaining existing resources (Wong-Parodi et al., 2015). Community adaptation is very dynamic because it is influenced by knowledge, economics, management, and related institutional factors (Wijayanti et al., 2023). Forms of adaptation can take the form of attitudes and actions taken to reduce losses and take advantage of existing opportunities (Spaccatini et al., 2022). Settlements with high population density can adapt by implementing living in harmony with disaster. The concept of living in harmony with disaster focuses on community readiness to face flood disasters so that they can continue to live in disaster-prone locations (Effendi, 2021). Adaptations carried out by the community can take the form of local wisdom passed down from generation to generation which is considered effective in reducing the impact of flood disasters. Adaptation that is carried out well can produce an attitude of community preparedness in facing flood disasters (Happy et al., 2022). The implementation of adaptation carried out by the community must be carried out continuously by paying attention to the physical and social conditions of the surrounding environment.

Most of the people of Sewu Village, especially those who belong to the older generation and are often affected by floods, consider floods to be a regular visitor every year. However, as time goes by, the role of the older generation in dealing with floods through local wisdom will be replaced by Generation Z. The formation of intensive interaction between Generation Z and technology has resulted in lower social sensitivity and brain attention span, so many of them choose practical things due to a lack of brain ability to focus optimally (Poláková & Klímová, 2019). Currently, Generation Z, who grew up in the era of globalization and modernization, is required to be able to survive complex problems and be full of challenges (Bhakti & Safitri, 2017). The lack of communication skills possessed by Generation Z has given rise to many negative stereotypes aimed at Generation Z, namely that they are a generation that is selfish, instant, and less integrated with society due to technological advances. Society's assessment of Generation Z can be a problem whether Generation Z in Sewu Village is able to continue the adaptations that were previously formed by their parents. Based on the background that has been presented, this research aims to analyze the adaptations made by Generation Z in facing the flood disaster in Sewu Village, Surakarta City.

## 2. METHODS

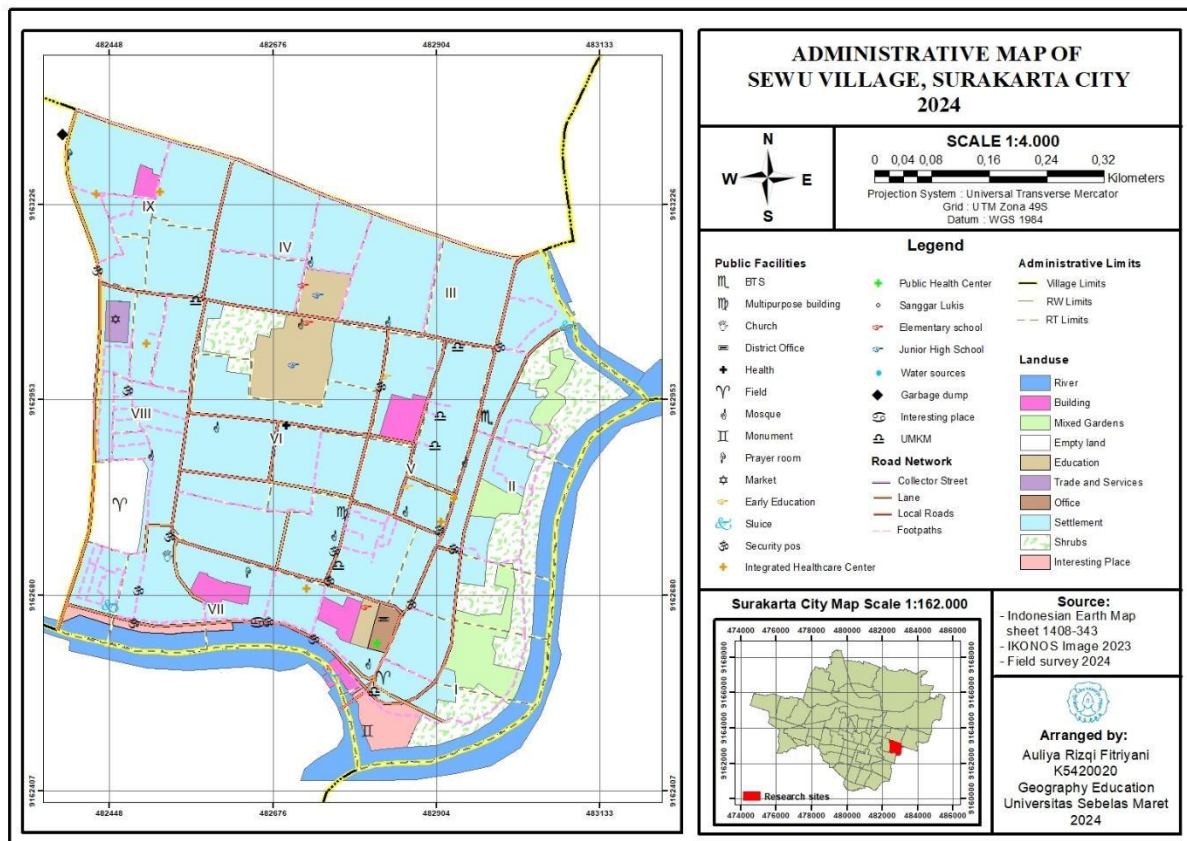
This research is qualitative research using a phenomenological approach. Qualitative research is carried out to analyze a phenomenon based on perception, behavior or actions and then describe it naturally. The phenomenological approach is carried out by looking at the informant's point of view based on previous experiences. The sampling technique used was purposive non-probability sampling with purposive sampling because the informant criteria were determined by the researcher. The main informants in this research are Generation Z with an age range of 20-24 years who have been affected by flooding and have lived permanently for more than 5 years. The chairman of SIBAT, Sewu Village, acted as a supporting informant to validate what was conveyed by Generation Z as the main informant. Data collection techniques were carried out using observation to determine the environmental conditions of the research location, in-depth interviews by asking questions that lead to information about flood disasters, as well as documentation studies in the form of recording, data on the number of flood disaster incidents, recording the results of in-depth interviews, and taking photos. The data analysis technique used is thematic analysis based on theory driven through data reduction, data presentation and meaning synthesis.

## 3. RESULTS AND DISCUSSION

### 3.1. Description of Research Location

Sewu Village is one of the villages in Jebres District which is located in the southern part. The Sewu Village area is one of the flood-prone areas in Jebres District because to the east it borders

directly on the Bengawan Solo River and to the south it borders the Pepe River. Sewu Village has a gentle topography with a slope of 1-10% and a height of 70-90 meters above sea level (masl). With an area of 48.5 hectares, Sewu Village has 9 Neighborhood Units (RW) and 34 Neighborhood Units (RT) with a population of 5,041 people in 2022. Based on observations, the population density in Sewu Village is quite dense. However, from 2008 to 2023, the Surakarta City government facilitated a relocation program carried out in stages for people living on the banks of the Bengawan Solo River, including in Sewu Village. The relocation program was formed as a government effort to reduce the impact of flooding in the Bengawan Solo Riverbank area.



**Figure 2.** Administrative Map of Sewu Village

### 3.2. Flood Phenomenon in Sewu Village

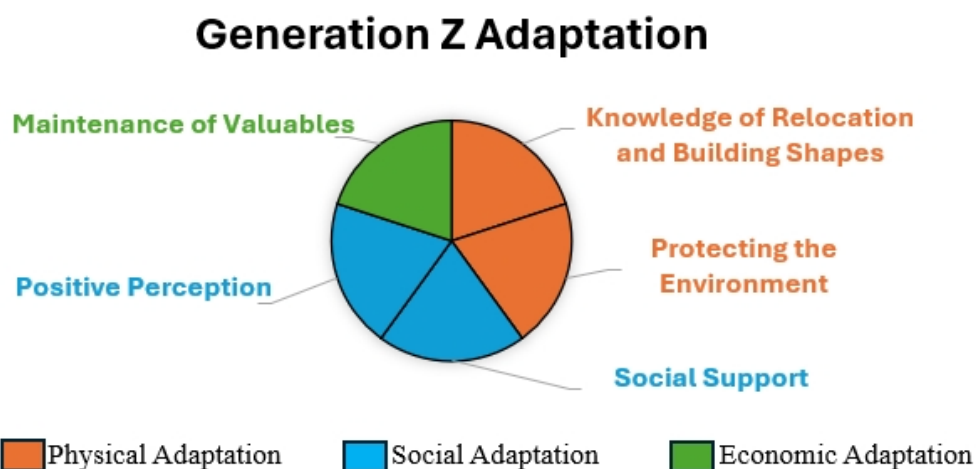
Over the last two decades, the phenomenon of flood disasters has often occurred in Sewu Village, ranging from minor to severe intensity. The most severe flood disaster occurred at the end of 2007 which affected most of the areas along the Bengawan Solo River, including Sewu Village. High rainfall over a long period is one of the triggers for overflows in the Bengawan Solo River. In early 2023, Sewu Village was again affected by flooding due to high rainfall. According to information from several respondents, the flood disaster that occurred in early 2023 was the worst flood disaster because it came suddenly and had quite a wide impact after the construction of the Demangan Sluice Gate.

When a flood disaster occurs, Sewu Village has a Community-Based Disaster Preparedness Community (SIBAT) which was formed in 2015 as one of the disaster risk management programs by the Indonesian Red Cross (PMI). In the Surakarta City area, SIBAT communities were formed in three subdistricts that were vulnerable to flood disasters, such as Sewu Subdistrict, Sangkrah Subdistrict, and Semanggi Subdistrict. In the process of its formation, SIBAT City of Surakarta ran in collaboration with the International Federation of Red Cross and Red Crescent Societies (IFRC) and Zurich

Insurance. SIBAT Sewu Village also collaborates with external stakeholders such as BPBD Surakarta City, BBWS Bengawan Solo, Perum Jasa Tirta, and the academic community of Sebelas Maret University (Handayani & Miladan, 2020).

### 3.3. Adaptation of Generation Z in Sewu Village

As people who live in flood-prone areas, Generation Z in Sewu Village has several adaptation strategies to deal with flood disasters. The active role of the community is very necessary because of the unavoidable nature of disasters so communities need to increase their preparedness to be able to live side by side with disasters (Pradika et al., 2018). The adaptation strategy carried out by Generation Z in Sewu Village is carried out according to the needs, abilities and conditions of each individual. There are three types of adaptation carried out by Generation Z, including physical adaptation, social adaptation and economic (Asrofi et al., 2017).



**Figure 3.** Generation Z Adaptation diagram

#### 1) *Physical Adaptation*

The application of physical adaptation can be done by changing environmental conditions according to one's abilities. People living in riverbank areas implement physical adaptation by relocating. The relocation program is considered an adaptation because by structuring settlements it can bring changes to the environment to reduce the impact of flood disasters (Rosantika & Swasto, 2021). Currently, the empty land along the riverbanks due to the relocation program is being used by the community as a place to plant fruit and tree seedlings, both individually and in the community. The relocation land is used to increase green open space and avoid development (Boudreault et al., 2023).

The people of Sewu Village who were not facilitated by relocation by the government made physical adaptations by adjusting the shape of their houses by raising their houses to two floors or by making anjang-anjang inside the house. Anjang-anjang are usually located at the bottom of the ceiling of the house to store items when a flood occurs, made of iron or wood. The community feels that the existence of this anjang-anjang is beneficial because they can help in evacuating valuables more efficiently.

The decision to relocate and adjust the shape of the building was made by Generation X and Millennials who are the parents of Generation Z, but this can become knowledge and knowledge passed down from generation to generation that can be applied in the future as a form of anticipation of flood disasters. Based on the results of the interviews, they understood the

meaning and progress of relocation in Sewu Village, as well as the purpose of adjusting the shape of the house.

Apart from physical adaptation carried out individually by the community, the Surakarta City government also provides facilities in the form of the establishment of the Demangan Sluice Gate which was inaugurated at the end of 2021 to regulate the elevation of the Pepe River which flows into the Bengawan Solo River. The formation of the Demangan Water Gate is considered effective by Generation Z, Sewu Village, because it can reduce the number of flood disasters in Sewu Village. Regarding the role of Generation Z in physical adaptation, they play more of a role in protecting the environment in the form of a commitment not to litter. Generation Z's commitment to protecting the environment is the result of moral education that has been instilled since they were small.

## 2) *Social Adaptation*

The social adaptation carried out by Generation Z in facing flood disasters involves building positive interactions and providing mutual social support. Successful social adaptation can occur when the community has a positive perception and takes appropriate actions to reduce the impact of flood disasters. (Septian et al., 2022). Positive perceptions can arise from awareness and acceptance that the place where they live is an area prone to flood disasters. Through this acceptance, Generation Z in Sewu Village is making social adaptations by utilizing stress coping strategies that focus on emotions through positive reappraisal (creating positive meaning) and accepting responsibility (adjusting to existing conditions) (Maryam, 2017).

Generation Z's positive perception of flood disasters is in the form of considering floods as a 'blessing' because they are thought to foster an attitude of caring for each other so that a sense of kinship is instilled by helping each other and joking around to avoid stress due to flood disasters. Positive interactions carried out when a flood disaster occurs can help reduce trauma and post-traumatic stress symptoms when a flood disaster occurs (Li et al., 2023). The family attitude that is formed when a flood disaster occurs creates a sense of security and comfort so that the people of Sewu Village can living in harmony with disaster.

## 3) *Economic Adaptation*

The flood disaster that occurred in Sewu Village had an impact on the community's economy, especially for those who work as entrepreneurs. The economic adaptation carried out by Generation Z is through maintaining valuable items and household equipment by evacuating them to safer places to avoid damage which can increase expenses after a flood disaster. The priorities for valuables kept by Generation Z are important letters and documents, electronic devices and means of transportation. The actions taken by Generation Z can occur because of their perceptions, family economic conditions, and their experience in dealing with flood disasters (Septian et al., 2022).

## 4. CONCLUSIONS

Based on the results of research regarding the adaptation of Generation Z in facing flood disasters, it can be concluded that there are three types of adaptation carried out, namely physical adaptation, social adaptation and economic adaptation. The physical adaptation carried out by Generation Z is with a commitment to protecting the environment, as well as understanding the meaning of relocation and adjusting the shape of buildings. Generation Z's social adaptation is carried out by forming a positive perception of the flood disaster and providing social support to each other. In the economic aspect, Generation Z is adapting by prioritizing maintenance of

valuables ranging from important letters and documents, electronic equipment and transportation to avoid damage which can increase expenses after a flood disaster.

## 5. RECOMMENDATIONS

Based on the results of the research conducted, there are several recommendations related to the research results: 1) The focus of this research is only limited to Generation Z in Sewu Village, for this reason further researchers can examine the comparison between the adaptations made by Generation Z and the Millennial Generation. 2) The results of this research can be used as a consideration in determining policies for flood disaster management in Sewu Village

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