

# Community Participation in Reducing the Risk of Flood Disaster in Tuminting District Manado City

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**Abstract.** Floods have undesirable impacts including physical, social, economic, and environmental impacts, such as (1) Physical impacts are damage to public facilities, such as offices caused by flooding, and (2) Social impacts include death, health risks, mental trauma, disruption of educational activities, and other basic needs, (3) Economic impacts include material loss, disruption of economic activities such as people unable to go to work and others and (4) Environmental impacts include water pollution such as pollutants brought by the flood. Based on the results of the research and discussion above related to community participation in flood control in Tuminting sub-district, the following conclusions can be drawn: (1) Community participation in Tuminting sub-district in the implementation of development is good in providing ideas/ideas, providing material and financial assistance and participation in contributing energy is quite good. Although there are still some residents who have not been actively involved. The enthusiasm of the community in the Tuminting Sub-district to attend meetings in development planning is quite good, and working together in handling the flood problem is quite good, (2) The efforts of the Tuminting sub-district government and the Tuminting, Sumampo, and Mahawu sub-districts in disaster mitigation activities and inviting the community to participate in flood disaster management is very good.

**Keywords.** Flood, Participation, Community, Management, Disaster

## 1 Introduction

Floods, landslides, earthquakes, tidal floods, and volcanic eruptions are some of the other natural disasters which are events that result in loss of life, if not anticipated properly.

The city of Manado is known as a city that has a high enough risk of flooding. This is because the city of Manado is surrounded by two rivers, namely the Tondano River and the Tuminting River. The condition of these two rivers has undergone land changes due to human activities, so community participation is needed in reducing the flood disaster that occurs. In the concept of hydrology, the intensity of rainfall that is high above normal, causes the drainage system and artificial flood storage canals to be unable to accommodate the accumulation of rainwater so that it overflows. The capacity of the water drainage system is not always the same but changes due to sedimentation, river narrowing due to natural and human-made phenomena, clogged garbage, and other obstacles [1]. Deforestation in rainwater catchment areas also causes an increase in flood discharge because the water supply entering the flow system becomes high and exceeds the drainage capacity [2]. The reduced water catchment area also contributes to the increase in flood discharge, because if there is high rainfall, most of the water will become surface water flow which directly enters the water drainage system so that its capacity is exceeded and flooding occurs (Lempoy et al, 2017).

Manado city is geographically located at 01o 29'35" South Latitude and 124o 50'29" East Longitude. The administrative area of Manado is 57.26 km<sup>2</sup> with a

population of 408,354 people. The climate in this city is a tropical climate with an average temperature of 24° - 27° C. The average rainfall is 3,187 mm/year (Sudamara et al, 2012). Manado city is also surrounded by hills and mountain ranges. The land area is dominated by hilly areas with some lowlands in the coastal area. Manado City has two major rivers, namely the Tondano River and the Tikala River where these rivers have the potential to cause flooding in Manado City (Sahetapy et al, 2016).

If the rainfall has exceeded the capacity of the land surface and the river water overflows due to the amount of clogged garbage, it is due to the low participation of the community in the surrounding environment. The river that should flow as usual due to the blockage will not run smoothly and flood disasters will occur easily. Factors that cause flooding can be caused naturally and also due to changes. In areas where flooding is dominant, it is the result of human activities that cause changes in spatial planning and have an impact on natural changes. Environmental degradation such as loss of ground cover in catchment areas, river silting, and so on can also be caused by human actions.

Floods have undesirable impacts including physical, social, economic, and environmental impacts, such as (1) Physical impacts are damage to public facilities, such as offices caused by flooding, and (2) Social impacts include death, health risks, mental trauma, disruption of educational activities, and other basic needs, (3) Economic impacts include material loss, disruption of economic activities such as people unable to go to work and others and (4) Environmental impacts

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include water pollution such as pollutants brought by the flood.

Flood disasters are natural disasters that always occur at every arrival of the rainy season. The cause of flooding in general can be caused by two main factors, namely natural or human factors. The presence of high-intensity rains and the destruction of watershed retention areas (DAS) are some of the other causes of flooding. Floods sometimes occur in a fast time with a fast inundation time, but sometimes floods occur for a long time with a long inundation time. Floods can occur due to high rainfall, overflow from rivers, broken river embankments, high tides, clogged drainage channels, or collapsed dams. Floods develop into disasters if they interfere with human life and even threaten their safety. As it is known that the handling of this flood problem has been regulated in the Presidential Regulation of the Republic of Indonesia No. 24 of 2007 concerning Disaster Management, which includes floods and others where this regulation is stipulated to improve the welfare of people's lives against disasters such as floods so that they are directed and not sustainable. Flood control, of course, requires community participation. Only the community itself can identify needs and know the order of priorities. The low sense of solidarity between residents and the lack of maximum socialization about flood problem management is allegedly one of the causes of flood disasters that continue to occur when the rainy season arrives.

The problem of flooding in the Tuminting District of Manado some time ago is an incident that has occurred repeatedly and has become a serious concern for the local community. The flood that hit the city of Manado some time ago, based on data from the Manado City Regional Disaster Management Agency (BPBD), released the number of districts affected by the disaster, namely Singkil District (five villages), Tuminting District (five villages), Bunaken District (one village), Paal Dua District (six villages), Tikala District (four villages), Wenang District (two villages), Sario District (three villages), Malalayang District (four villages) and Wanea District (three villages).

One of the strategies used in dealing with flood problems is how to participate in each community group. Community participation is a technical process to provide wider opportunities and authority to the community, so that the community can solve various problems together. This division of authority is carried out based on the level of community involvement in these activities. Community participation aims to find better solutions to problems in a community, by opening up more opportunities for the community to contribute so that activities run more effectively, efficiently, and sustainably.

Based on data from the Manado flood on January 22, 2021, there were eight sub-districts in Manado City, North Sulawesi that were hit by floods. The Manado City Regional Disaster Management Agency (BPBD) reported that rain was one of the triggers of the disaster. The Manado City BPBD noted that high-intensity rain triggered the overflow of water in the Sawangan and Tondano watersheds. The eight affected districts are Malalayang, Wanea, Sario, Paal Dua, Pikkala, Wenang,

Tuminting and Singkil. The flood resulted in three deaths and one missing, more than 2,000 people fled to safer places. Meanwhile, the flood also resulted in material losses, including 10 heavily damaged houses and three moderately damaged houses. Other public facilities affected, were 20 units of elementary school, and 7 units of junior high school. When a flood occurs, the water level is monitored at a height of 50 to 400 cm (BPBD Manado City, 2021).

Based on environmental problems regarding the flood problem, it is very important how to handle the flood problem because flooding can cause losses to the community and also damage the environment. This condition requires the authorities and the wider community to be responsive and caring (have a social attitude) to participate in efforts to quickly and accurately deal with flood victims. Public awareness, both individually and in groups, for flood victims needs to be increased. The authorities, in this case, the government need to continue to encourage the social and economic potential of the community so that each citizen has a positive attitude toward the people who are receiving the flood disaster. Natural disasters cause various sufferings and losses to human life, both in terms of moral and material as well as social, which exceed the limits of a person's or society's ability to cope with the resources of the victim.

The urgency or priority of this research is to provide an overview of the causes of flooding, the magnitude of the losses, policies, and programs to overcome, the obstacles faced, as well as community participation; both in the pre-disaster period, during the disaster, and after the disaster. So that in the future corrective steps can be taken in handling flood problems in Tuminting District.

## 2 Research Method

The research method used in this research is the descriptive research method. According to Nazir (1991), the descriptive method is a method of examining the status of a group of people, an object, a set of conditions, a system of thought, or a class of events in the present. The purpose of this descriptive research is to make a systematic, factual, and accurate description, picture, or painting of the facts, characteristics, and relationships between the phenomena being investigated [3]. In connection with this research, the situation that will be seen is how community participation in reducing the risk of flood disaster in Tuminting District, Manado City.

This study looks more at community participation in Tuminting District, Manado City in dealing with flood problems. That community participation is carried out starting from the planning, implementation, acceptance, utilization, and maintenance stages, monitoring, and evaluation of the handling of flood problems.

## 3 Results and Discussion

### 3.1 Description of Research Site

Tuminting District is one of 11 sub-districts in Manado City, North Sulawesi. Tuminting sub-district has 10 villages, namely: (1) Bitung Karangria, (2) Islamic Village, (3) Maasing, (4) Mahawu, (5) Sindulang I, (6) Sindulang II, (7) Sumompo, (8) Tuminting, (9) Tumumpa I, and (10) Tumumpa II. Historically, the word tuminting comes from the word tinting (Bantik language), which means to stretch. The word tinting is inserted with it, so it becomes timinting, which means stretched. For example, one end of the tied rope stretched down, or one end of the hanging puya (oil paper) stretched down. It is said that there used to be dripping water in Tuminting. The dripping water looks like it is stretched out, which in the Bantik language is called timinting. The location of the dripping water is near the Sospol Kodam Merdeka Manado, Mahawu Village, Tuminting District. In its development, the word timinting changed its form to tuminting and was immortalized by the elders as the name of a settlement with the name Tuminting. Tuminting means the same as timinting, which means dripping water. In the context of this research, the research is only focused on the Tuminting, Mahawu, and Sumompo villages which are always flooded every year.

### 3.2 Community Participation in Reducing Disaster Risk

The problem of flooding in the city of Manado is a classic problem because it always repeats itself every year, where the Tuminting sub-district is one of the sub-districts in the city of Manado that is often affected by floods. The rapid development of access to information, especially for urban communities, including in Manado, into social media causes flood problems to often become the main issue and topic in formal and informal discussion spaces in Manado city. It is not uncommon for people to ask for quick performance from the government, regardless of the process and mechanism for budgeting activities that sometimes take a long time. The higher expectations of the community become a challenge as well as a sign of the increasingly complex management of a city as it grows and develops. Because of the program, the role and involvement of the community in dealing with flood problems is a must. The participatory planning process in Tuminting District can be seen from various aspects, one of which is the level aspect. The levels of participation include ideas/ideas, decision-making, implementation/implementation and evaluation carried out at each stage. In Tuminting Subdistrict, participatory planning activities are often carried out, because in that area often floods occur. Apart from the level aspect, there is also the involvement of each individual in this activity. Where every party involved is those affected by the flood and those who are not affected by the flood. A development program will basically be achieved, if it involves all parties in the development process. So that the higher the role or involvement of the community, the faster the development process can be realized, including how to organize and cope with flood disasters.

Based on the data obtained, it is known that there are several forms of participation involving the community in Tuminting District, Manado City.

### 3.3 Participation In The Form Of Money Or Goods

One of the forms of Tuminting community participation in supporting flood disaster management programs is in the form of money or goods, where the assistance is given voluntarily to communities affected by floods. As stated by the informant Mr. Jonly, aged 48 who stated that: ... when there is a flood we always provide direct assistance to several families affected by the flood. Usually the items we help with are giving rice, supermi/indomie and once we helped provide blankets to flood-affected families. (Interview, September 11, 2021)

In addition, based on the results of an interview with Mr. Sofyan, aged 52, who stated that: ... when we talk about flooding in Tuminting, it never ends, because this sub-district always floods every year. So when we talk about community participation, it seems that it is still lacking because the government is more active. Disni (Tuminting) community participation is high during the rainy season or when they directly feel the impact of the flood, while during the dry season their participation decreases. As a person, when there was a flood in early January, I also helped provide basic food assistance to several neighbors whose houses were flooded. (Interview, September 11, 2021)

In addition to the two informants above, there are several other informants who also convey the same thing, namely that community participation tends to increase only during floods. Where residents will spontaneously aid in the form of money or other basic needs to families who experience or are directly affected by floods.

Thus, community participation in the form of giving money or basic necessities in the form of rice, clean water, supermi/indomie will certainly support the implementation of the prevention program. This form of community participation is a very real effort in helping other residents who are affected by disasters or affected by floods.

### 3.4 Participation In The Form Of Thoughts Or Ideas

In addition to participation in the form of providing money and food assistance, it is also known that there is community participation in Tuminting District in providing ideas and ideas in overcoming this flood problem. Based on the results of an interview with Mr. Marcel who stated that: ... we in Tuminting on average already know that every year there will be floods. Because we know that the condition of the sewer is not so good. Therefore, we always recommend and ask the Manado city government or related agencies to be able to make repairs to each sewer. Moreover, in Sumompo sub-district, the condition of the waterways is not good, (Interview, 12 September 2021)

The same thing was also stated by Mr. Jonly who explained that the maintenance of the cleanliness of the water flow/drainage in general, the community really hopes for the city and sub-district governments. Although sometimes people also do mutual cooperation to clean the environment.

Thus, the existence of brilliant ideas or ideas from each individual or group can support the success of a plan that has been set and will be implemented. Therefore, the contribution of thoughts in the form of suggestions or ideas is highly expected to assist in efforts to achieve and improve development programs that will be and have been carried out in order to achieve maximum results. Community participation in the form of thoughts or ideas is a form of participation that is no less important than community participation in the form of money or objects which are usually conveyed in deliberation or delivery of development programs. From the results of the research that has been carried out, community participation in the Tuminting, Mahawu, and Sumompo villages in the form of thoughts and ideas is relatively large, because every time the people in the village contribute brilliant or creative thoughts and ideas for the success of the development to be implemented.

### **3.5 Participation In The Form Of Energy/Physical**

The simplest and most common level of community participation given by community members in helping the successful implementation of a development program is in the form of energy or can be called gotong royong. Gotong royong is the mobilization of unpaid labor for a project that is beneficial to the public or useful to the government.

Based on the results of the study, it is known how the activities carried out by residents after the flood occurred. In general, all informants stated that their activities would clean the environment around their homes from garbage and mud carried by the flood or for those who were not directly affected they would provide assistance with basic commodities such as rice, instant noodles to families who were directly affected. As stated by Mr. Karel who stated that: ... when there is a flood we are always alert, and after the water recedes we collectively immediately clean up the garbage and mud around our house. (Interview, 12 September 2021)

Based on the information above, it can be stated that the existence of mutual cooperation activities is always accompanied by the selfless mobilization of energy for the public or collective interest. Mutual cooperation activities are always carried out to ease the implementation of development programs, especially those related to handling this flood problem.

Community participation in development can be seen starting from development planning, preparation of development programs to the stage of supervision. With this community participation, it can be said that a government, both village/kelurahan, has been able to carry out its role, namely carrying out the role of increasing community participation in development. In planning a development program, the community must be the main priority in carrying out village/kelurahan

development planning, where the community must be really involved in it.

The first thing is that participation in planning is carried out directly by the community to the village government and indirectly through the Village Community Empowerment Institute (LPMK). The results of data analysis show that the proposals in planning in the form of repairing physical development facilities damaged by floods have been submitted by the community. This also applies to community activities that have been involved in the planning process, although some have not been involved due to limited time and energy. However, in general, community involvement in ideas and contribution of energy is good. But on the other hand there are people who do not participate in obeying the rules not to build buildings on riverbanks, there are people who do not actively participate in the success of government programs, namely relocating residents to several locations, including in Pandu, Ringroad Flats for residents living in the area. disaster-prone areas are reluctant to be relocated or move to the places that have been provided.

Therefore, to reduce the potential adverse effects of floods effectively, the community must have a commitment to carry out flood prevention activities as programmed by the government. This is because flood preparedness consists of activities that enable communities and individuals to act quickly and effectively when a flood occurs. This helps the community in shaping and planning what actions need to be taken when a flood occurs. Contributions from the community can be in the form of labor, time, ideas, etc. This is a tangible form of participation in tackling flood disasters. Therefore, efforts are needed in terms of increasing public awareness and understanding of the causes of floods and their impacts. Because it must be recognized that participation in planning is a very important component for the success of flood disaster management. Participation in the planning of flood disaster management programs can develop the independence needed by the community.

Participants are all parties involved and or affected by the development, both beneficiaries or risk recipients or affected by changes due to the development program carried out. The study of community participation in disaster risk reduction programs in the Tuminting sub-district is in line with the participation theory proposed by Cohen and Uphof, where community participation participates in decision making (Participation in decision making). In principle, the success of development programs depends on the involvement or participation of the community and vice versa development can stimulate community participation. In addition, Wood (in Supriatna, 1985:37) said that community participation in decision-making involves giving suggestions aimed at accepting or rejecting the program to be implemented. So community participation in decision making is a process in choosing alternatives based on thorough considerations so that plans, strategies and policies are obtained to achieve the goals that have been set.

The existence of community participation in Implementation (Participation in Implementation) is in

line with the opinion of Cohen and Uphoff (1977:68-69) who stated that participation can be done in the form of contributions of thoughts, materials, or money, and participation in the form of labor.

## 4 Conclusion

Based on the results of the research and discussion above related to community participation in flood management in Tuminting sub-district, the following conclusions can be drawn:

1. Community participation in the Tuminting sub-district in the implementation of development, both in providing ideas, providing material and financial assistance, and participation in donating energy is quite good. Although there are still some residents who have not been actively involved. The enthusiasm of the people in the Tuminting District to attend meetings in development planning is quite good, and working together in handling the flood problem is quite good.
2. The efforts of the government of the Tuminting sub-district and the Tuminting, Sumampo and Mahawu sub-districts in disaster mitigation activities and inviting the community to participate in flood disaster management have been very good.

## Acknowledgments

I would like to thank the Chancellor of the Manado State University, the Dean of the Faculty of Social Sciences and Law, the Chair of the Research and Community Service Institute, and the IJCST 2022 committee, who have assisted in the publication of this article.

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