

# Analysis of the Community Flood Adaption Strategy and Community-Based Disaster Management by Go River in Medan City

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## ABSTRACT

The title of this research is “Analisis Of The Community Flood Adaption Strategy and Community-Based Disaster Management by Go River in Medan City”. Activities of Go River in the management of the flood disaster based on community groups in Medan city done between the time before flood disaster, when the next, and after the disaster. The purposes of the research is to described the implementation of Community-Based Disaster Management conducted by Go River and to know disaster adaptation strategy of the community after go river began a program to Community-Based Disaster Management. In this research researchers used the qualitative method by staying tightly focused in the discovery of fakta-fakta as the actual state of things. Through research descriptive of this, writer would like describes how the disaster management the role of based on community groups that have been undertaken by by an organization in club level for Go Riverr against the priorities raised in the community flood adaptation in Deli River (River Flow Areas). The research results show that the program disaster management community-based done go river in laksanakan in three periods disaster: 1.Pre of disaster programm are “Menanam Untuk Kotaku” (plant to my city), River School , River Cleaning Programm, and Deli Reading; 2.The event of disaster (emergency response plan and built the emergency posts); 3.After of disaster (Deli River Research and Capture the Caring Group). In addition Go River also encourage adaptation the community to reduce disadvantages when of disasters, through: 1.Non technical adaption (keep a river from rubbish; valuables in a high place and away from puddle which dirty); 2. technical adaption ( making retaining walls in the river close to the residential area, make levees of sacks are contains sand, and exalt building / a house located at the river)

**Keywords:** Disaster-Adaption Strategy, Disaster management, Deli River.

## INTRODUCTION

Almost all countries in the world experience flooding problems, not least in developed countries. Flood problems have existed since humans began living and carrying out various activities in the area in the form of a river flood plain. Land conditions in this area are generally fertile and save a variety of potentials and conveniences so that they have a high

attraction to be inhabited and utilized by humans. Therefore, large cities and trade centers and other important activities such as industrial estates, tourism, transportation infrastructure and so on are mostly growing and developing in this region. For example, in Japan as many as 49% of the population and 75% of the property is located in floodplains, which cover 10% of the land area; while the remaining 51% of the

population and only 25% of the property are outside the floodplain which covers 90% of the land area

Indonesia is a country that experiences flooding every year, even flooding often occur in big cities. This phenomenon is a problem that must be resolved immediately, because it has become a routine of major cities in Indonesia and floods that have caused many losses. Based on data from the National Disaster Management Agency (BNPB) in 2016, there were 766 floods in 2016, 612 landslides, 669 tornadoes, 74 combinations of floods and landslides, 178 forest and land fires, 13 earthquakes, seven volcanic eruptions, and 23 tidal waves and abrasion. The disaster caused 522 people died and disappeared, 3.05 million displaced and suffered, 69,287 houses damaged, 9,171 seriously damaged, 13,077 moderately damaged, 47,039 slightly damaged, and 2,311 damaged public facilities (National Disaster Management Agency), 2017).

Especially for the problem of flooding in the city of Medan, it seems that it is inseparable from the geographical conditions of this city which indeed traversed a number of large rivers and small rivers along with several other tributaries. The big river that divides the city of Medan is Belawan River, Deli River, Percut River and Kera River and Babura River. As we know, Medan is a city where the pace of the economy and other social aspects are very rapid. Starting from the establishment of a small village by a high-ranking Karo nobleman, the city was transformed into a municipality, center of government, economy, education and so forth. With these developments, causing enormous interest from residents around the city of Medan to migrate and make a very large urbanization so that the main concern of the city of Medan (Piolina, 2009).

The problem of flooding in Medan City has now become a chronic disease and an annual tradition. Actually a variety of efforts have been made, and there are countless amounts of funds that have been

devoted to various flood management projects in this city. During the last ten years, efforts to flood have spent at least Rp. 300 billion (Tarigan, 2015). From the disaster data of the Regional Disaster Management Agency (BPBD) of Medan City during 2016, the types of disasters that often occur are fires with 142 occurrences. Includes residential, land and vehicle fires. Fire occupies the first position, which is 59 percent of the disaster data that occurred in the city of Medan. Furthermore, there are 33 strong winds or tornadoes. Resulting in houses damaged by strong winds and fallen tree roads with a percentage of 24 percent. The flood disaster amounted to 11 percent with the number of 17 floods occurring in the coastal area. Another disaster is around 6 percent, consisting of a collapsed bridge and a landslide which has resulted in collapsed houses (Medan City Disaster Management Agency, 2016).

The existence of young people who are active in community activities is one solution to efforts to empower the surrounding community. Youth with all their potential is expected to be able to raise the level of the surrounding community through various activities carried out. One form of movement carried out by youth in tackling floods in the city of Medan is like what the Go River organization did. The Go River organization along with dozens of volunteers focused activities on improving ecosystems and sociocultural communities on the banks of the Deli River. Go River in its various activities is very active in the process of disaster management and flood disaster mitigation in Medan, especially at the Deli River River. Go River actively provides counseling to the surrounding community so as to always maintain the ecosystem around the river to prevent the adverse effects of flood disasters. In addition, Go River often invites youth communities and government agencies in their various activities. In fact, when the flood occurred, Go River, which had a flood warning early warning system, always gave early warning and participated in the

evacuation process of flood victims around the Deli River. The purpose of this research is to find out the implementation of community-based disaster management carried out by Go River and to find out about community disaster adaptation strategies after Go River implemented a community-based disaster management program.

## LITERATURE REVIEW

### Understanding of Flood Disasters

Flooding is the amount of water discharge that exceeds a certain water drainage capacity, or the overflow of water flow in a riverbed or channel so that water is abundant from the left and right of the river embankment or channel. In a more technical interest, flooding can be referred to as a pool of water that occurs in a location caused by: (1) Changes in land use in a watershed (DAS); (2) Waste disposal; (3) Erosion and sedimentation; (4) Slums along the drainage line; (5) Improper planning of flood control systems; (6) High rainfall; (7) River physiographic / geophysical influences; (8) River capacity and inadequate drainage; (9) Effect of tide; (10) Decrease in land and rob (inundation due to tides); (11) Land drainage; (12) Weirs and water structures; and (13) Damage to flood control buildings. (Kodoatie, 2002).

According to Government Regulation No. 38 of 2011, flooding was an event of overflowing river water exceeding the riverbed. Flooding is a condition where a large amount of water is flooded by an area. Whereas flash floods are sudden floods caused by clogged rivers and deforestation along the river flow (Ramli, 2010).

### Factors Causing Floods

Here are some factors that cause flooding according to Ramli (2010):

- a. High rainfall.
- b. Ground surface is lower than sea level.
- c. Located in a basin surrounded by hills with narrow or limited outflow of water.
- d. Many settlements are built on the plains (banks) along the river.

e. River flow is not smooth due to the large amount of garbage and buildings on the riverbank.

f. Lack of land cover in upstream areas.

### Flood Management

Floods that occur almost every year must be anticipated to minimize the losses caused. Mistra (2007) and BNPB (2007) explain that the impact of flooding can occur in several aspects, namely: (1) Population Aspects, in the form of fatalities / deaths, drifting, drowning, injuries, lost victims, displacement, outbreaks of outbreaks and residents isolated. (2) Government aspects, in the form of damage or loss of documents, records, equipment and office supplies and disruption of the running of the government. (3) Economic aspects, in the form of loss of livelihoods, traditional market malfunction, damage, loss of property, livestock and disruption of the community's economy. (4) Infrastructure aspects, in the form of damage to houses, bridges, roads, office buildings, social facilities and public facilities, electricity installations, drinking water and communication networks. And (5) Environmental aspects, in the form of damage to ecosystems, tourism objects, rice fields / agricultural land, sources of clean water and damage to dikes / irrigation networks.

Disaster risk can be reduced if the mitigation capacity (resilience, preparedness) of the disaster from the community increases. Disaster risk is generally formulated in the equation

$$R = (H \cdot V) / C,$$

Where: R = risk;

H = hazard

V = vulnerability

C = capacity

Theoretically R will be proportional to C and H, and inversely proportional to C.

### Definition of Disaster Management

Disaster management is a systematic and comprehensive effort to cope with all disaster events quickly, precisely, and accurately to reduce the loss of life and the losses incurred (Ramli, 2010: 10). Disaster

management is basically a concept of disaster management. In Law No. 24 of 2007, disaster management is a series of efforts which include the establishment of development policies that are at risk of disasters, disaster prevention activities, emergency response and rehabilitation. Disaster management can be divided into three levels, namely at the location level, unit or regional level, and national or corporate level. For the location level called incident management at the regional level or unit called emergency management), and at the national level it is called crisis management

- 1) Incident management: Namely disaster management at the location or directly on the scene. Disaster management at this level is technical.
- 2) Emergency management: Namely disaster management in the area that coordinates the location of the incident. This level includes strategy and tactical.
- 3) Crisis management: Crisis management is at a higher level, namely the national level. This level is more strategic and determines policy.

### **Disaster Adaptation Strategy**

#### **Strategy**

Strategy comes from ancient Greek, which means "the art of war". A strategy has the basics or schemes to reach the intended target. So, basically the strategy is a tool to achieve the goal. In the general Indonesian dictionary, Strategy is the science of war strategy to achieve certain purposes.

#### **Adaptation**

In Psychology, there are several insights about the adaptation mechanism of adaptation. Gerungan (1996) states that self-adjustment is changing oneself in accordance with the circumstances of the environment, but also changing the environment in accordance with the conditions (self-desire). Changing yourself according to the environment is passive (autoplastic).

The objectives of the Adaptation are:

- a. Facing the demands of the situation consciously.

- b. Facing the demands of the situation realistically.

- c. Face the demands of the situation objectively.

- d. Facing the demands of the situation rationally.

In the study of human adaptability to the environment, ecosystems are the whole situation, where adaptability takes place or happens. Because the human population is spread in various parts of the world, the adaptability context is very different. A population in a particular ecosystem adapts to environmental conditions in specific ways. When a population or society begins to adjust to a new environment, a process of change will begin and may take a long time to adjust..

#### **Adaptation Strategy**

Sunil (in Hardoyo, et al., 2011) defines adaptation in environmental uncertainties and disasters as the handling of unavoidable impacts in environmental changes. Adaptation includes adjustments in attitude towards uncertain conditions. Adaptation is strongly influenced by certain socio-economic and ecological conditions. In the environmental changes that occur in coastal areas, the concept of adaptation refers to the strategy: (1) protection of land areas from the ocean, so that land use can continue; (2) accommodation, namely to make adjustments to the environment; and (3) a strategy to avoid or migrate, namely to leave coastal areas to other safer areas.

As is known that Go River is one of the movements initiated by community groups and the City of Medan government as an effort in flood mitigation in the city of Medan based on the reconstruction of the functions of the Deli River. In the implementation of flood disaster management, the Go River itself refers to three classifications of disaster management in the area; pre-flood, during floods, and post-disaster disaster. In the aspect of flood management itself, Go River has two strategies, namely technical and non-technical.

#### **Concept Definition**

To facilitate and be able to provide clearer directions in achieving research objectives, it is necessary to define conceptually the variables in this study. The conceptual definition is:

Community-based disaster management in this study is a systematic and comprehensive effort carried out by the Go River organization to deal with all the Sungai Deli River Basin watersheds in a fast, precise, and accurate manner to reduce loss of life and the losses incurred. The stages of disaster management in question are Pre-Disaster, During Disasters (Emergency Response), and Post-Disaster.

The strategy of flood adaptation is human responsive behavior towards environmental changes that occur. Responsive behavior allows them to organize certain systems for their actions or behavior, so they can adapt to existing situations and conditions. In this study the adaptation strategy in question is a response made by the Sungai Deli Watershed in facing flooding in the form of both technical and non-technical development.

Communities are groups of people who gather together in one container with one common goal and interest.

## **MATERIALS & METHODS**

The method used in this study is a descriptive research method with a qualitative approach. research using descriptive methods intends to make a systematic, factual, and accurate alignment of the facts and characteristics of a particular population. then this research is research that is directed to provide symptoms, facts, or events systematically and accurately about the characteristics of the population and analyze the truth based on the data obtained. The location of this research is in the Sungai Deli Watershed, which is in the area of Aur City, Medan, North Sumatra. The city of Medan was chosen because of the frequency of flooding of the Sungai Deli Watershed, which is located in the Aur Medan sub-district, which lasts almost all year. While the unit

of analysis in this research is the Go River Organization which is located at Jl. Avros No.60B, Kp. Baru, Medan Polonia, Medan City, North Sumatra.

### **Research Informant**

Qualitative descriptive research is not intended to make generalizations from the results of his research. Therefore, in qualitative research there is no known population and sample. The research subjects that have been reflected in the focus of the study are deliberately determined. The subject of this study became an informant who would provide various information needed during the research process, the research informants included several types such as: (1) key informants, namely those who knew and had various basic information needed in the study; (2) the main informants, namely those who are directly involved in the social interactions under study; (3) additional informants, namely those who can provide information even though they are not directly involved in the social interactions studied

The research subject becomes an informant who will provide various information needed during the research process. Informants of this study include:

#### **a. Informant**

Those who know and have various basic information needed in research. The key informant in this study was the chairman of the Go River. The key informants in this study were:

1. Mr Ahadi, S.Pd, 36 years (Daily Chair of Go River).
2. Mr. Ahadi has been trusted as the daily head of Go River since 2014 now. He has been active in the environmental movement since 2006 before then co-founded Go River with other environmental activists.
3. Mr. Muhammad Azmi, 37 years old (founder and coach of the Go River Organization)
4. Mr. Muhammad Azmi was the first person who sparked the idea of forming the Go River. In the early days of the

establishment of Go River operational costs came from him. His background as a social activist focusing on environmental issues and social security made his desire to try to preserve the Deli Sungai very high.

### **Volunteers**

1. Iwan and M. Wahyu (Go River Volunteers)
2. Iwan (27 years old) and M. Wahyu (26 years old) are volunteers who from the beginning Go River was established to take part in the Go River activity, which is when both of them were still people. Both are graduates of the Medan Technology Institute (ITM)
3. Sugiati Santoso, SE, MSP (Chair of North Sumatra KNPI)  
Since 2016 Sugiati has worked with Go River in the Deli river conservation program. Organizational KNPI has always been active in the activities carried out by the Go River including the Oath to Preserve the River and the August 17 Ceremony at the Deli River.

### **Deli River Society**

#### **a. Mr. Supardi**

30-year-old man who worked in one of the shopping places in Medan City became a resident of the Aur Village since 7 years ago. He lives on the banks of the river precisely in the village of Aur.

#### **b. Mrs. Indah Siregar**

The 59-year-old woman who has lived along the river since 20 years ago is a retired private plantation. Now he lives with his daughter-in-law, children and grandchildren.

#### **c. Mrs. Herlina**

The 29-year-old woman who has lived for 5 years on the banks of the Deli River claimed to have familiarized herself with the floods. Housewives with 1 child spend a lot of time on the banks of the river. Like most other riverbank communities, he conducts washing activities, toilets, and disposes of garbage on the river banks as well.

#### **d. Mr Sayuti Lubis**

This 45-year-old man has lived in Kampung Aur since birth. Everyday selling in a stall

in the Aur village area near the riverbank to make ends meet. In collecting data researchers use several research techniques as an effort to obtain and obtain the information needed. At this stage the researcher will conduct interview observations, as well as record documents that support the research process. Observation is a way of collecting data by conducting direct observations of an object in a given period and carrying out systematic records of certain things observed. The number of observation periods that need to be done and the length of time in each observation period depends on the type of data collected. If the observation will be carried out on a number of people, and the results of the observation will be used to make comparisons between these people, then observations of each person should be carried out in a relatively similar situation.

When conducting this research the researchers conducted an observation in the Sungai Deli Watershed, which is located in the sub-district of Aur and Hamdan in the sub-district of Medan Maimun, Medan. Researchers also observed when Go River volunteers conducted a river school program and routine checks in the Sungai Deli River Basin.

Secondary data is data obtained not directly from the object of research. Researchers get ready data collected by other parties in various ways or methods both commercially and non-commercially which can be in the form of documents, magazines, journals. When conducting this research the researcher conducted secondary data collection by examining the report documents of the empowerment program carried out by Go River volunteers and related books and journals. In addition, the author also saw news related to the floods and disaster management of Go River volunteers in the mass media and online media. Qualitative data analysis is carried out if the empirical data obtained is qualitative data in the form of a collection of

words and not a series of numbers and cannot be arranged in classification categories / structures. Data can be collected in a variety of ways (observation, interview, document digest, tape) and is usually processed first before being ready for use (through recording, typing, editing, or writing), but qualitative analysis still uses words that usually arranged into expanded text, and do not use mathematical or statistical calculations as an analytical tool. Data analysis techniques used in qualitative research include transcripts of interviews, data reduction, analysis, data interpretation and triangulation. From the results of data analysis, conclusions can then be drawn.

## RESULT

### Community Based Disaster Management Program by Go River

The community is a collection of individuals who have likes, hobbies or a love of the same thing without the task of division of tasks towards these individuals. In the field of Anthropology, communities are often referred to as social organizations, which mean the existence of a bond of solidarity between individuals, which is usually determined by similarities which include similarities in terms of feelings, customs, languages, social norms, and ways of life together which is generally called community sentiment.

Until 2017, Go River has implemented various programs both technical and non-technical in order to realize the sustainability of Deli River. The program includes:

#### Pre-disaster

According to the Big Indonesian Dictionary, disasters mean something that causes or causes distress, loss or suffering. Whereas natural disasters mean natural disasters (Purwadarminta, 2006). According to Law No.24 of 2007, disasters are events or series of events that threaten and disrupt the lives and livelihoods of people caused by natural factors and / or non-natural factors and human factors resulting in human casualties, environmental damage,

losses property, and psychological impact. Disaster is a meeting of three elements, namely disaster threats, vulnerabilities, and capabilities triggered by an event. Pre-disaster management duration of time from before the disaster occurs to the stage of attack or impact.

This stage is seen by experts as a very strategic stage because at the pre-disaster stage the community needs to be trained in responding to disasters that will be encountered later. The training given to officers and the community will greatly affect the large number of victims during an impact disaster, early warning is introduced to the community in the pre-disaster stage.

#### "Planting for My City" Program

A series of activities to commemorate National Awakening Day, Deli River Lovers Community, Go River in collaboration with Indonesian Green Culture, USU Nature Lovers Biology and Environmental Studies (BIOPALAS), Youth AL-Huda Helvetia and Medan City Sanitation and Landscaping Service in cleaning the Deli River and plant trees in the river of the Deli River. This activity was carried out with residents of Sukaraja Village. This activity was carried out right under the Delta Juanda bridge, Medan. This activity is held on Sunday 21 May 2017. Communities around the middle and lower reaches of the Deli river such as Medan Tuntungan Subdistrict, Medan Sunggal, Medan Marelan, Medan Labuhan etc. mostly only use the Deli river for bathing, washing, toilet (MCK) activities where the area is an industrial area that produces a lot of industrial waste. Some of them are Pb heavy metal waste which of course has a negative impact on the health of the community.

Pollution of the waters of the Deli and Belawan Rivers is caused by industrial activities, residential environments, markets, hospitals and various other activities along the river. Seventy percent of pollution along the Deli River includes solid and liquid waste from domestic activities. Solid domestic waste or garbage produced in

Medan City is 1,235 tons / day. The liquid waste that contributes to pollution to Sungai Deli comes from 24 types of medium scale industries and 40 small industrial scales, 4 hotels and 1 hospital. Based on data from the Bapedalda of North Sumatra Province (2007) in (Panjaitan, 2009) related to the Report on the Regional Environmental Status of North Sumatra Province in 2003, there were 57 industries located along the Deli river and 22 along the Belawan river. These types of industries include cooking oil processing, metal processing, plastic factories, gluing plywood, textiles, paints, dry batteries, dolomite fertilizers, metal coatings and others. Data from Bapedaldas (2007) shows that the womb

Cu heavy metals in the Deli River flow range from 0.006-0.01 mg / l and Pb 0.01 mg / liter.

This phenomenon drives the Go River to help balance the Deli River ecosystem by planting trees around the river. Not only that, the aim of this program is to campaign to the public that many people still care about the existence of the Deli River. Therefore, people who live and live around the river should also look after them. This was confirmed by Wawan who is a Go River volunteer:

*"... just look if we see the corners of the people's houses there must be garbage in bahwahnya. Whether it's their garbage or rubbish that is washed away from other areas, the existence of the garbage is proof that our society's habit no longer places the river as an aspect of life that must be respected. By planting trees in their environment (residents) at least we have shown to the community that there are still people who are willing to take care of the Deli River and that the people should also follow it ... "*

The same thing was also conveyed by M. Wahyu as the Go River Volunteer as follows:

*"... it must be admitted, not many containers like this (Go River) can be found in Medan City. A place for people who are dirty-dirty to contribute to returning River Deli's face*

*as usual. Many locations I saw were eroded due to erosion. So with this tree planting activity, this natural water retainer will work optimally in the future and of course hopefully people will realize the importance of the river. Don't just complain about the people if they are flooded, but planting trees doesn't want to, throwing trash still into the river. Nature and humans must respect each other. This activity is the form ... "*

Planting activities for my city throughout October to November 2017 have managed to plant 300 mahogany trees and 1000 mangrove trees along the Deli River. The tree seedlings are donations from several community groups and the Medan City government itself. Together the government and the Go River together with the communities in it planted the seeds in stages. The planting started from Avros pier and continued towards the Medan Johor District area. Right on November 19, 2017 this activity has succeeded in planting all the seeds from the donation.



Figure 1: M. Husni, Head of the Medan City Parks and Cleanliness Service Conducts Tree Planting in the Deli River Area

When this activity was carried out it also received the attention of the community along the Deli River. It appears that some people came with sickles and hoes to help clean the grounds behind their houses with the tools they had. Not infrequently the community also participated in the tree planting activities. Until November 1300 the tree seedlings had succeeded along the Deli River along the 28 km. This activity will continue to be encouraged until all riverbanks can be planted. Because Sungai Deli is in 3 different administrative regions,



Go River will also try to coordinate with the local government so that the program "planting for my city" can run continuously. Go River through this activity hopes that within the next ten to fifteen years Sungai Deli will return to the beautiful trees.

### Go River River Institution School

The river school program is a result of the initiation of out-of-school education that has been promoted by several educational institutions in Indonesia. In this context Go River collaborated with various schools in the city of Medan to participate in a series of activities at Sungai Deli.

The activities are held at the Avros Educational Park, which is the current Go River base camp. At the base camp participants will be given education about the history, function and potential of the Deli river for the city of Medan. In this activity, participants will be divided into several groups (according to the total number of participants) where each group will be 15-20 people.



Figure 2: Submission of the Go River Institute River School Material

The material to be given is usually like river identifiers and their parts, the importance of rivers for human life and how to preserve the environment. In the river school, Go River invited participants to be actively involved in campaigning and introducing the Sungai Deli tourism ecosystem to the wider community by providing feature writing training. In this feature writing participants will write down their observations and views on Sungai Deli as long as the participants see the Deli River at that time and the participants' expectations towards Sungai Deli.

The expectations conveyed by the participants became a separate reference for the Go River community to be more active and work hard to restore Sungai Deli as usual. River school activities were not only provided by volunteers but participants were invited directly to review the condition of the Deli River using Go River's LSR type boat. The same thing was also conveyed by the daily chairman of Go River, Mr. Ahadi, S.Pd:

*"... the easiest thing to convey information about social actions like this is young people. I have to admit that the river school is very effective if it is used to campaign for Sungai Deli to the community. It must be admitted that these young people are the trend holders among the people, this is because they (young people) are a generation who is tech savvy. So my friends and I also aggressively collaborated with various schools or with administrators of scout activities at the school. It's a shame if such activities (Scouts) are only filled with games and rigging materials, even though there are big things we can do with the group such as promoting their awareness of the ecosystem of the Deli river. Regarding our costs also do not set prices, participants are only required to pay for lunch. Only that, the others are self-reliant, we are responsible for it. Because we hope this campaign can be carried out effectively, that's all ... "*

The Go River river school activities are held at Avros pier. At the dock, the manager has provided a location with a stair model as a seat that directly leads to the Deli river. In this activity the Go River as an organizer will provide a series of material for river school participants which includes the history, function, and potential of the Deli river if managed well in the future.

River school activities are not only material, after the materials have been provided, by using a fleet owned, Go River will invite river school participants to go along every corner of the Deli river. There were three groups of people who routinely participated in this activity, namely the

Indonesian National Youth Committee (KNPI) of North Sumatra, Medan 16th Middle School (SMP), Medan Dharmawangsa High School, Nurul Huda Mosque Youth.

### Swear to preserve the river

As Mr. Ahadi said earlier, targeting youth groups is the main target of the Go River. These groups are expected to become patrons in their daily lives in the community and then carry out campaigns that are carried out by Go River. This river school activity also received serious attention by the groups involved. One of them is Sugiat Santoso who is the chairman of the North Sumatra KNPI. The following are the results of the interview with him:

*"... I did not expect Avros Educational Park to have a movement that was so great for the sustainability of the Deli river. They (Go River) are very consistent in implementing this program. Deli River is a big river because it controls almost all the livelihoods of the residents of Medan and the other two regions (Karo and Binjai Regencies), so that it is very natural if the Deli river is getting serious attention at this time. As a youth group we are also obliged to participate in this campaign. So officially I will also make a memorandum of understanding that the North Sumatra KNPI will join Go River in campaigning for the Deli River ... "*

This joint activity with the North Sumatra DPD KNPI was named "Swear Clean the River". This activity is a collaboration between Go River and the Indonesian National Youth Committee (KNPI) of North Sumatra. This activity was held to commemorate Youth Oath Day which fell on 28 October. This activity cleared the Deli River on 28 October 2016. This activity was held at Avros Educational Park. The activity of swearing to clean the river between the Go River community and the KNPI conducted a cooperative relationship or synergy in cleaning the Deli River and vowed to maintain the river.

This activity was the first to do with the Youth Oath Commemoration in Avros

Educational Park. The Youth Oath Commemoration app was filled with various activities such as the musical monologue of youth oath, distribution of plastic garbage bags, and walking down the Deli River by rubber boat. In the apple together, all elements of the youth from the community vowed that they would always care to clean and maintain the Deli River whose condition is now increasingly concerned. This activity was also attended by the Deputy Mayor of Medan, Akhyar Nasution.



Figure 3: Oath Activities to Preserve the Go River River with the North Sumatra KNPI DPD

In addition to working together with the North Sumatra DPD KNPI, Go River also worked with teenagers at Nurul Huda Sungai Deli mosque, Go River with teenagers at Nurul Huda mosque to hold Sungai Sekolah activities, at Avros Pier, Avros Street, Medan. This activity was held on February 26, 2017. This river school activity was carried out by teenagers at the Nurul Huda Helvetia Mosque in Medan. In this activity there were 25 youth teenagers in Al Huda Mosque. This activity was carried out to provide education and understanding of maintaining the River Deli and training in cohesiveness in organization. The presentation given by the Al Huda Mosque adolescents was more profound than the material given to school children because the teenagers of this mosque on average had gone to college and worked.

The material begins with introducing river ecosystems, introducing the ecosystem of a river, such as good river flow, light, temperature, flora, fish, invetebrates, and others. The material giver carried out by Go

River volunteers themselves said to guard the river, especially Sungai Deli, from upstream to downstream by not dumping garbage into the river flow. In this activity, it was also conveyed to restore Sungai Deli to not only one group but to more than one person, even more whose aim was to work together to conserve the Deli River.

The involvement of the school and the youth group became a passion for Go River administrators. The activities that have been carried out by Go River turned out to get tremendous sympathy from the wider community. The kampanye strategy with the nuances of learning by doing turned out to be able to reach out to young people with maxima. However, Go River is aware that limited resources are still an obstacle to the current campaign. This was confirmed by Mr. Azmi:

*"... the enthusiasm of the people sometimes we cannot serve all because of our current limitations. In terms of education, we only have one location, namely a dock that can only accommodate fifty people. Moreover, the implementation of education will not be maximized. Not to mention the boat for river flow. Only able to serve 35 people. So for now a routine program that has taken place with several agencies (KNPI, Dharmawangsa High School, Medan Middle N 16, and adolescents of Al Huda Mosque) is optimized. Although we also do not close the door for all other community groups to participate in our series of activities in maintaining and managing the Deli River ... "*

At present the limitations of supporting facilities are still an obstacle for Go River in creating educational campaigns. Activities carried out in the Avros Educational Park area can only be enjoyed by a limited circle of people, given the limited facilities and infrastructure that Go River currently has.

#### **Deli Reading River (Children's Reading Park)**



Figure 4: Reading garden atmosphere filled with children around the Deli River

Children as the next generation of the nation, need to get certainty to grow optimal growth. Likewise children living on the banks of the river Deli. River Deli Reading is the main program of Go River since 14 November 2015. River Deli reading is done every Saturday afternoon. Activities Sungai Deli read this was done in Kampung Aur with the children at Kampung Aur, of course. Go River volunteers will bring books they have and usually they get from people who donating books to them or buying their own books. They bring these books with the LSR boat owned by Go River. The Sungai Deli activity reads what was done in this Aur Village making children in Kampung Aur happy and feeling enthusiastic. When they still saw from far away the arrival of Go's LSR boat

River they immediately felt pleasure and hurriedly called their friends to witness the arrival of the Go River team. Seeing the pleasure makes Go River a pleasure because this activity has its own benefits and satisfaction for children there.

Usually they are placed somewhere and will be lined up with books ranging from textbooks to story books and children there will be free to choose books that they like. Usually Go River volunteers will lead them and teach them how to read if there are children who have not been able to read or tell them stories. This activity is carried out only for 2 hours and is done once a week on Saturday afternoons if river water is possible because to bring books to use boats. If the condition of the river water

again rises and strong currents are not possible for the team to carry out these activities.

The location of River Deli reads this plan will be carried out in Sukaraja just under the Delta Juanda Bridge. The Sungai Deli reading activity is not only focused on one riverbank location but this community will take turns doing this activity. Possibly this activity will be carried out in Sukaraja just under the bridge in Delta, Juanda, but this community again makes a more comfortable place for these children when carrying out the reading process because the place is empty land which is very unfortunate if not utilized.

Some of the land has been cleared and planted with tree seeds and part of the area is made for children there. The existence of children there is quite a lot, they often do activities there such as swimming, fishing every afternoon with this reading activity can add to their activities and get their own knowledge for them.

This activity certainly made them feel happy and surely they were very active as evidenced by several times when carrying out cleaning activities the children there were involved and they were very happy with the condition of the boat as well.

This program aims to improve the literacy culture of children in particular river literacy. The expected results are children able to maintain clean the river by not throwing garbage into the river. This program too helps them get to know the river ecosystem. This program has a positive impact on children who are on the riverbank in filling their free time every afternoon.

#### **When a disaster occurs (emergency response)**

The emergency response is a series of activities carried out immediately at the time of the disaster to deal with the adverse impacts, which include the process of searching, rescuing and evacuating victims, fulfilling basic needs, protecting, managing refugees, and restoring facilities and infrastructure.

According to the Go River data, the worst location if the Deli River overflows is Kelurahan Sei Mati. In the kelurahan, floods often claimed lives on Sunday, March 3, 2012 where two children were victims during the incident. At that time the related institution, namely the Regional Disaster Management Agency (BPBD), could only go down to the scene of the incident to help evacuate the population. This makes Go River establish a post in the Avros Education Park area as part of preparedness to help the community if a flood strikes the population. The Go River program in the event of a flood until the emergency response period is as follows:

#### **Emergency Response Plan (ERP)**

Training activities are related to efforts to increase knowledge, attitudes and community skills in urban waste management. Emergency Response Plan (ERP) or better known as Disaster Emergency Response was introduced by Go River Camp in Avros Educational Park to community groups in the Sungai Deli watershed alternately.

With makeshift tools, Go River tries to provide an understanding through the ERP method when flood disasters hit the Deli River. The participants will be faced with the conditions simulated in the Deli River area. One of the tools used by participants in ERP is a life jacket or life jacket that functions when we are in the water. The purpose of this training is to properly understand the various things related to ERP as a system that is always needed and applied in an emergency so that control can be carried out quickly and precisely.



Figure 5: Implementation of an Emergency Response Plan (ERP) in the Deli River Region

Go River in implementing the Emergency Response Plan (ERP) did not only involve the community living in the Sungai Deli watershed but also the various communities in the city of Medan. This was confirmed by Mr. Ahadi, S.Pd:

*"... we must admit that the flood disaster due to the overflow of the Deli River was not only a disaster for residents living in the watershed, but all residents living in this city (Medan City). So for the Emergency Response Plan we have to give the mate to anyone who wants it. Including other community groups that care about disasters ... "*

This was also confirmed by Ninik who was a participant in the Emergency Response Plan (ERP) held by Go River;

*"... at first I was afraid to jump directly into the river. But after entering I was taught to calm down and control myself in the face of disaster. This activity is very useful for us as participants. Even though there are no disasters every day but at least I and my friends can understand how to overcome them. And maybe we can all provide assistance when the disaster comes later ... "*

The concept of participation can be interpreted as a tool to develop themselves as well as the ultimate goal. Both are one entity and in reality often present at the same time even though the status, strategy and approach to methodology are different. Participation will lead to a sense of self-worth and personal ability to be able to participate in important decisions concerning the community. Participation also produces empowerment, where each person has the right to express opinions in making decisions concerning his life.

With the education provided by the Go River, people have knowledge about the signs of the flood. This is certainly a good thing, with the knowledge that is owned by the community can quickly take action in preparing themselves and reduce the risk of flooding. The author sees that the unconsciousness of the community, especially those located along the river

about greening the environment and the preservation of river water by removing garbage in the river, MCK (Bathing, Washing, Toilets) carried out in rivers is a bad habit that damages the quality of river water and also worsens flooding, due to garbage -The dumped waste will accumulate at the bottom of the river which causes the river to become shallow.

An emergency plan is a formal written plan, which is based on the potential for accidents that can occur in the plant and the consequences that can be felt inside and outside the workplace and how an emergency should be dealt with immediately. A response plan the emergency department is concentrated on actions to be taken in the first few hours in a crisis

#### **Establishing Disaster Response Posts**

At present the Go River already has 5 rowboats and 1 motorboat. The six fleets can be used by BPBD officers and Go River volunteers who are trained to participate in helping evacuate residents. Disaster management in the emergency response period when there was a flood in the Deli River basin (DAS) by Go River is still inadequate because it is still limited in terms of facilities and infrastructure.



**Figure 6: Go River Fleet Prepared to Help Communities Experiencing Flood Disasters Go River**

Realizing that currently the government is related in this case BPBD has limited resources. Moreover, flooding that happened on the Deli River sometimes came suddenly. Go River as one of the community groups who are present in the midst of the community is always active in providing assistance to both workers and

infrastructure who are always ready to provide assistance to flood victims. In addition to alerting the evacuation fleet, Go River will also set up public kitchens to help people meet food needs during the flood disaster. This is as stated by M. Wahyu as a Go River volunteer:

"... the flooding in Medan is very difficult to predict, sometimes it comes suddenly, so we must remain alert. If it's been flooded, we will definitely go from the Go River, usually the first time we jump in, amidst the flood victims. We distribute food and even sometimes we make soup kitchens in the office ... "

During the flood, Go River will be under the coordination of the BPBD in providing assistance. This is done so that the search, rescue and evacuation of victims, fulfillment of basic needs, protection, management of refugees, and restoration of facilities and infrastructure can be carried out systematically. When the Go River flood occurred, it also affected the people to save themselves and valuable and important property, namely by collecting electronic items at a higher place, saving valuables. Adaptation strategies carried out in the community after natural disasters can be done with appropriate natural disaster management, so that people can be active again after natural disasters. The magnitude of the potential threat of natural disasters that can threaten and influence the social and economic life of the Indonesian people at any time and to minimize the risk of future events, needs to be addressed by increasing capacity in handling and reducing disaster risk both at the Government and community level.

#### **Post-disaster.**

There are several aspects that must be done in post-disaster activities, namely rehabilitation and reconstruction activities. Rehabilitation is the repair and recovery of all aspects of public or community services to an adequate level in post-disaster areas with the main goal being normalization or the proper functioning of all aspects of government and community life.

Reconstruction is the rebuilding of all facilities and infrastructure as well as institutions in post-disaster areas, both at the government and community levels with the main goal of growing and developing economic, social and cultural activities, upholding law and order, and the rise of community participation in all aspects of community life ( Ramli, 2010).

The impact of the floods caused by the overflowing of the Deli River often results in the destruction and destruction of community-owned facilities. Psychological and material impacts will not be completed when the flood recedes. In the period of 2012 to 2015 the North Sumatra BPBD noted that floods caused by the overflow of the Deli River had damaged at least 3458 residents' houses and more than 127 public facilities. However, with the repeated occurrence of flooding on the Deli River, it does not make people intend to live in other regions. therefore, the community will begin to build their lives after their homes are damaged. Usually the city government assisted by the TNI, POLRI and BPBD itself will work together to help the community to rehabilitate and reconstruct various aspects damaged by the disaster.

Recovery management (post-disaster) is the regulation of disaster management efforts with emphasis on factors that can restore the condition of the community and the environment affected by the disaster by re-functioning of institutions, infrastructure, and facilities in a planned, coordinated, integrated and comprehensive manner after the disaster -fasenyanya namely:

a) Rehabilitation is the improvement and restoration of all aspects of public or community services to an adequate level in post-disaster areas with the main goal being normalization or the proper functioning of all aspects of government and community life in post-disaster areas.

b) Reconstruction is the rebuilding of all infrastructure and facilities, institutions in the post-disaster area, both at the government and community level with the

main goal of growing and developing economic, social and cultural activities, upholding law and order, and the rise of community participation in all aspects of community life in the post-disaster area.

Some programs that are designed are:

### **River Deli Research**

Go River in carrying out research in collaboration with several organizations. One of them is research initiated by the Department of Anthropology, Faculty of Social and Political Sciences, University of North Sumatra. This activity was carried out by USU's Anthropology Faculty of Social Sciences in Visual Anthropology. In this activity anthropology students chose the Deli River area as a place to conduct research. In this activity Go River was trusted as a partner in conducting research. This research carries the concept of Live In Research. Go River provided material to anthropological students regarding the existence of the Sungai Deli and they also followed the Deli River and after that they made a description of the Deli River. In this activity anthropology students also interacted directly with the communities that were in Deli River Suburbs located in Sukaraja, Burung Beach, Kampung Aur, and Kampung Badur.

The results of the research that have been carried out will be printed and submitted to stakeholders including the government in which it is one of the government's references in the formation of various regulations relating to the Sungai Deli watershed as well as communities living in the vicinity of the Deli River Basin.

With various limitations, the program carried out by Go River must be carried out in stages. In recent years, the program run by Go River has been focused on the Aur village area, Medan Maimun District. The Kampung Aur area is known to the people of Medan as a densely populated riverbank area. During implementing the program in the Kampung Aur area, there were several obstacles experienced by Go River. First, the obstacle of Go River in

implementing its program is social factors. many families living on the banks of the Deli River are residents who have lived there for more than two generations. Flood is one that cannot be separated by their lives. Substitution of regional heads does not necessarily give a change to the river condition of Deli. This is as expressed by Mr. Sopyan:

*"... I think they are used to it here. Just imagine, every year there must have been a house inundated, in fact no one complained then moved. The severity of people here does not care about their environment. Bathe, wash, defecate, and throw garbage into one here (pointing at the river corner of Deli). Then how do you want it to flood. Ask people here, how many have saptitank, almost all of them defecate directly into the river. Nearly 72 years of independence in Indonesia, the Deli river was totally untouched. Even though this river is a source of water for the people of Medan. Not to mention its existence which is very potential to be used as a transportation route ... "*

The custom of the Deli riverbank community throws garbage in the river resulting in a riverbank filled with garbage. According to Go River data, there are 50 points of garbage that can be found in the Medan City area. Most of the garbage is household waste that is disposed of by the surrounding population. In addition, the habit of residents defecating on the river exacerbates the condition of the Deli river. Most of the people of the river Deli defecate directly on the river. As for residents who have private toilets direct their disposal to the river.



Figure 7: Waste Stacks and Household Disposal Pipes

When the flow of water rises, the garbage will be carried away and sometimes it will be involved in several places such as bridges that have poles or pipes that are on the riverbank. This then makes the flow of water not smooth. When the rain occurs, the Deli River will experience a rapid increase in volume at some points due to the rate of water being held back by rubbish piles along the river flow. The amount of waste is also a barrier from this community when doing river flow, which is cleaning the river because the Go River Community is active using LSR boats.



Figure 8: One of the Boat Fleets Owned by Go River

LSR boats are the indices of this Community. Some River Deli Care Communities, the Go River Community that has complete tools ranging from transportation and cleaning equipment. At present, the Go River Community has 2 transportation equipment, namely the LSR type engine boat and the rubber boat that still uses paddles. Boats that are often used by this community for river and river cleaning are LSR type boat engines. The boat owned by the Go River Community is not given or donated from certain parties but from a volunteer and coach in the Go River Community, Mr. Azmi. He bought the boats to make it easier for this community or other communities who want to join them to clean the river.

#### **Collaboration between Community Care for Deli River.**

Go River along Go River is not the only community action group that cares about the current condition of the Deli

River. There are many groups, each of which has its own focus, including the Deli River Child Care Community (KOPASUDE), Public Participation for Women's and Children's Welfare (PUSPA). This is in line with the fragment of the interview of Mr. Ahadi, the daily head of Go River:

*"... we can see for ourselves now how the River Deli banks are. Just now I saw a community group ngelem (inhaling goat brand glue) on the riverbank. What we can do. It's useless when we preserve the environment without building people. They are the closest to this river. They also become the front guard in maintaining this river. So we invite other communities, we are fixing them together. Those who can teach, teach, who can farm, let's plant it ... "*

Collaboration between KOPASUDE, PUSPA, and Go River finally succeeded in penetrating community bases living on the banks of the Deli River. Through this activity PUSPA built a homestay as a place for children on the banks of the Deli River to learn and avoid violence. PUSPA provides additional tutoring for elementary and middle school age children regularly. KOPASUDE itself in this collaboration program formed a learning studio intended for children who wished to take part in the training in recycling non-organic waste commonly found along the Deli River. In addition, KOPASUDE also formed a reading studio dedicated to children on the banks of the Deli River. Go River itself as one of the partners in charge of helping prepare various needs and is always willing if involved in various programs. One program that was recently conducted with STIPAP-LPP. STIPAP-LPP is one of the higher education institutions in agriculture. On this occasion Kopasude with several students from STIPAP-LPP Medan carried out greening around the banks of the river by planting trees from their own tree seeds. The STIPAP-LPP Medan student immediately reviewed the location from the outskirts of



the Deli River. They have stayed for 3 days and 2 nights to take part in this activity.

The theme of this activity is "Green Steps Restore City Breath". This goal itself is done to beautify the city area, especially on the banks of the river. In this activity the STIPAP-LPP Medan students immediately planted tree seedlings that they had prepared and were assisted by several Go River volunteers. Medan STIPAP-LPP students not only planted trees for viewing steps but they also interacted with communities around the banks of the Deli River. This situation is very helpful from the KOPASUDE Program itself in preserving the river area by doing greening around the banks of the river. KOPASUDE hopes that the collaboration carried out by the STIPAP-LPP Medan students can take place again to treat the riverside area. This was stated by one of the Go River volunteers, Fati, who said that:

*"... we must understand that the Sungai Deli problem is now very complex. Not only can we preserve nature, but on the other hand the habit of the people is still positioned to not respect the river. It's like this, we clean the river, people still throw garbage into the*

*river. Will not meet the sustainability, bang. So with KOPASUDE and PUSPA, we are trying to get into the pulse of the people through children ... "*

This was confirmed by Intan, PUSPA volunteer for Sungai Deli:

*"... I see it is very complex, from drugs to trivial reasons for littering. Every house must throw trash behind his house, every child must be familiar with drugs. So KOPASUDE, Go River, and PUSPA collaborate to strengthen each other with their respective flagship programs ... "*

Some activities involving Go River, KOPASUDE, and PUSPA are in commemoration of the 2nd Kopasude anniversary, Kopasude held a general discussion with the theme "Management of Deli River Towards Medan Ecotourism". The discussion held at Ahmad Yani Park, Imam Bonjol Street, Medan also attended Syaiful Anwar, S.Pd, MA, Ilhamsyah (Medan City Environment Agency), and H.T Bahrumsyah, SH as chairman of the Medan City DPRD commission B as the speaker.



Figure 9: Documentation of Go River Joint Activities, KOPASUDE, and PUSPA

*Go River in the series of events gave an explanation about Sungai Deli. The presentation given by the Go River community is the same as the results of the presentation presented by Syaiful Anwar, Ilhamsyah and Bahrumsyah who say that historically the Deli River has historically been a Medan ecotourism. Deli River is time to be used as the front yard of people's homes in the city of Medan by making the*

*front yard of the house must be a community trying to preserve it.*

In this activity, the Go River and Kopasude communities shared activities ranging from sowing 800 fish seeds, planting trees, coloring competitions at the elementary-junior high school level, the Handy Craft competition at the general level. This activity was carried out starting on Saturday and Sunday precisely on 1-2 April 2017.

On this occasion Go River collaborated with KOPASUDE by planting trees around the Deli River and cleaning the Deli River by using a rubber boat owned by Go River. Tree planters carried out by sticking out writings for hope in the Deli River. This activity itself is carried out together so that good relations between communities are established and there is a sense of tolerance between communities and so that the dreams for Sungai Deli are more sustainable in the future.

### **Community Disaster Adaptation Strategy in Sungai Deli Watershed**

Go River as an organization that cares about the preservation of Deli River also helped empower communities around the Sungai Deli Watershed, especially in the Aur Sub-District. The Go River program is recognized as not running maximally because there are still many people who are indifferent to the preservation of the Deli river.

Based on the facts in the field, the Medan City Government in 2010 had planned to establish a Rusunawa in Kampung Aur, meaning that all houses included in the Kampung Aur area would be torn down and replaced with Rusunawa. The aim was to abolish the slums in Aur Village and help the people not to become victims of flooding due to overflowing from the Deli River again.

According to the results of the study Elvana Febrianti (2015) revealed that the people who were in the research location (Sungai Deli watershed) preferred to stay, and assumed that flooding was a condition that they had to go through, and they would survive. The adaptation strategy of people who are victims of flooding is by physical or structural development. The assistance provided by the government is not evenly distributed to the community. Assistance provided in the form of food, medicines, blankets.

The adaptation style to the disaster in practice does not provide a significant contribution to the improvement of the Deli River Basin watershed. The community in

fact only thinks about how to deal with floods that hit without thinking about how to prevent it. The Go River disaster mitigation concept is very far from the concept of adaptation that is owned by the community. Nevertheless, Go River continues to strive for good adaptation of the community around the River Deli to minimize losses during a disaster.

### **1. Non-Technical Adaptation (No Physical Change)**

#### **a. Keeping the River from Trash**

Various ways and actions taken by Go River and the people in Kampung Aur, especially for residents who live right on the banks of the river. One form of activity that is included in the agenda of routine community activities is changing the habit of throwing garbage into the river. There is a way done indirectly by installing banners and warning signs not to throw garbage in the river.

The banner was installed on the side of the river which was easily seen by the community when standing on the riverbank, the goal was when people were about to throw garbage into the river and see the banner, there was a feeling of reluctance and confining the intention to throw garbage into the river. This is as stated by Mr. Ahadi as follows:

*"... in a place where the dumping site is usually smashed into our river and the community often uses warning banners and signposts to not throw samoah into the river. But it is difficult because the people throw garbage from the bridge and usually it is not the people around here ... "*

So far, Go River can only conduct counseling and provide suggestions regarding the impact that will be caused if the behavior of disposing of garbage is not immediately stopped. One of the factors that caused the community to throw garbage into the Deli River Basin was the unavailability of garbage disposal bins and the unwillingness of garbage trucks to pick up the garbage in the environment. Everyday behavior of the people still utilizing the

river waste disposal must be taken seriously by the government.

#### **b. Valuables placed in a high place**



Figure 10. One of the houses of the community around the Deli river

Flood disasters are known as disasters that can create material losses to society. Technically, it needs a precise strategy to prevent the huge losses incurred by this annual 'guest'. At a minimum, so that the amount is not as severe as in previous years. Floods generally hit low-lying areas. Therefore, residents living in these settlements must have preparation before the floods arrive. Aur Village people goods to a safe place when the rainy season has entered a high intensity. As stated by a resident, namely Indah Siregar:

*"... We can always move the items, especially the valuable ones to the attic or to the second floor of the house or if not, bring what can be taken to the front mosque or to a safe place. Sometimes the flood here comes suddenly and is not unexpected. So when you hear the warning about a flood, the goods are immediately lifted and they have also been plucked in the place of the brothers ... "*

That was also confirmed by Mr. Sayuti Lubis as follows:

*"... If you have heard the flood warning, surely we will quickly save the precious material, we don't know the flood that will come to the high places, but we are just prepared to be safer, and it is done almost all around the river. ... "*

Communities that do not have terraced houses, adapt to entrusting items that can still be carried in neighboring homes or relatives that are not submerged by floods. Not to forget, the urban community of Aur entrusts valuable items such as jewelry, money and important letters to relatives, because when the flood is possible the people must evacuate and leave their homes, this opportunity can be exploited by people who have bad intentions to steal.

#### **a. Steer clear of dirty flood pools**

Settling on the banks of the Deli River is utilized by the people of the Kampung Aur Deli river as a place for bathing, washing, latrines in general. Even though all the houses in this neighborhood have proper bathrooms to use and the availability of PAM water is sufficient, such activities have become a habit and have been passed down for generations. But they only do it in the river and a little away from the flooded water. As stated by one of the informants, Mr. Supardi, the researcher met at Kampung Aur:

*"... If we are used to bathing in the river, washing clothes, washing dishes, there are also those who defecate. I don't know why, we don't feel disgusted or dirty, since we were kids, we used to take a shower and defecate in the river. It's like getting used to it. If you are in the river, you can do it, you can while chatting with other mothers. children are also crowded, many swim. It's different if you take a shower in your own bathroom ... "*

The community will feed on a pool of flood water due to fear of skin diseases. Fungi and bacterial infections are the most common cause of skin diseases, especially during floods. One of the most common effects is bacterial infections such as sores. This disease affects many children who usually like to play water. This was conveyed by Herlina's mother:

*"..... Many of us who feel itchy when floods come, because the water is a lot of trash that follows too, especially if it just arrives, the smell until it really does smell, but if it's*

with the flow of the river, it's used to shower, wash clothes and other activities .....

Handling of skin diseases is important when floods occur. Skin disease is one of the diseases that cannot be avoided when floods come. The situation of settlers submerged in floods with humid weather conditions and the difficulty of providing clean water creates conditions for people who are afflicted with skin diseases that cannot be avoided.

#### **a. Making Environmental Physical Changes to Human Life**

##### **Making Retaining Walls in River Lips that are close to Population Settlements**

The flood that occurred in Aur Village was not a flood that happened only once or twice. But already subscribed every year. It even happened for a full week. With such conditions make the community have a way and action to overcome the problems caused by the flood, an adaptation that is in accordance with the local culture that is owned by the community in Kampung Aur.

On the banks of the Deli Watershed, Kampung Aur was built and inaugurated a 36 m long retaining wall in 2012, in the activities of the National Independent Urban Community Empowerment Program (PNPMMP) which was guided by the Community Self-Help Agency (BKM Aur Unite) Team 10 Coordination 1 city of Medan.



Figure 11: Wall of the River Water Buffer Embankment

The activity became a pilot project in Medan Maimun Sub-District which has the

potential of Medan City water tourism because the community together with PNPM facilitator Team 10 had mobilized self-help and established channeling for various parties.

#### **b. Membuat Tanggul dari Karung yang berisi pasir**

The Aur village community whose house on the riverbank is accustomed to facing sudden flooding. Their decision to elevate residential buildings was intended to protect property and valuables from damage caused by floods. With the elevation of the house, the loss of community property due to flooding in the Aur village can be minimized. However, not all communities have sufficient economic capacity to elevate their homes. There are also people whose houses are only one floor and crossing the river lip which makes them surrender when floods occur in the Aur village.

The Aur village community who are accustomed to facing flooding, especially those on the riverbank, always make a power outage before leaving their settlements when the floods arrive. Awareness of the importance of making a power outage during a flood disaster. The riverbank community is aware that the electric current when the floods come is not only endangering their families but all the surrounding communities.

#### **c. Elevate the house building located on the river bank**



Figure 12: Adapting to flooding by elevating the building of his house

In general, houses located on the banks of the river are the most frequently and severely affected by floods in the Aur

village. The riverbank community, which mostly builds their houses on two levels and some people whose houses are located right on the riverbank, have also tried to raise buildings so that they can reduce the consequences of the floods. On average, houses located on the banks of the river already have a second floor as a shelter when floods hit. One resident of Indah Siregar stated:

*"... We intentionally elevate our house from the ground and even make it multi-storey, so that the water rises slightly and doesn't immediately go home. In addition, if it comes to flooding, we can immediately raise valuables upstairs. Adek imagine that if suddenly the flood comes in at night, if we are not ready, we can use up the assets and goods we have. The point is that if we have more money we choose to elevate the house rather than move from here ... "*

In addition, the adaptation made by the community to avoid casualties when the floods come is by erecting houses into two levels. For them it is easier to go up to the second floor than to go up the road. In addition to avoiding their lost belongings, people who are not residents of Kampung Aur are looking for opportunities in a tight situation.

## DISCUSSION

Floods that occur almost every year must be anticipated to minimize the losses caused. Mistra (2007) and BNPB (2007) explain that the impact of floods can occur in several aspects, namely: (1) Population Aspects, in the form of fatalities / deaths, drowning, drowning, injuries, disappearances, outbreaks of outbreaks and isolated populations . (2) Government aspects, in the form of damage or loss of documents, records, equipment and office supplies and disruption of the running of the government. (3) Economic aspects, in the form of loss of livelihoods, traditional market malfunction, damage, loss of property, livestock and disruption of the community's economy. (4) Infrastructure aspects, in the form of damage to houses,

bridges, roads, office buildings, social facilities and public facilities, electricity installations, drinking water and communication networks. And (5) Environmental aspects, in the form of damage to ecosystems, tourism objects, rice fields / agricultural land, sources of clean water and damage to dikes / irrigation networks.

Community-based disaster management (community-based disaster management) according to Paripurno (2006) is an approach that encourages grassroots communities to manage disaster risk at the local level. These efforts require a series of efforts which include carrying out self-interpretation of the threats and disaster risks they face, reducing and monitoring and evaluating their own performance in efforts to reduce disasters (General Guidelines for Social Protection for Victims of Natural Disasters, 2012).

As a Community that focuses on the management of flood disasters caused by Sungai Deli, the Go River is then filled by individuals who have a focus on these two things. As previously known, Go River itself is a group that established a non-profit organization which means the Go River itself is filled with social activities related to Sungai Deli conservation and its community with funding obtained from tourism activities through Avros Education Park and individual and government institution.

Go River sees that changing community habits on the banks of the Deli River is very difficult to do. People's ignorance worsened the condition of the Deli River ecosystem. This is in line with the research of Zulfahmi Tarigan (2014) on urban flooding. GO River realizes that the Sungai Deli problem is not merely a matter of biological environment. The social environment is also one of the other problems that must be resolved. Narcotics, child violence, free sex are a small part of the various problems that people have in the Deli River.

Go River also conducts empowerment programs to help resolve the

River Deli problems completely. In this activity Kopasude and Puspa conducted a synergy by visiting Homestay from KOPASUDE on Jalan Palang Merah, Medan. In this activity the PUSPA organization conducts direct reviews with children on the banks of the River. In this activity, KOPASUDE and the PUSPA organization synergized to give birth to riverbank children who are far from violence and form positive activities so that children avoid the dangers of drugs such as processing plastic waste into various handicrafts that have high selling value.

From the results of interviews and observations showing that the level of public awareness of the causes of flooding is very high. People are aware that the floods that hit them every year are caused by their habit of dumping garbage directly into the Deli River. Human behavior that often does not care about the environment also plays a role in causing flooding, that is if they dispose of garbage as they please so that the garbage clogs the water flow. In the past two decades, flooding in the city of Medan has increased, both in size and frequency. This is caused by increased flood discharge from the catchment area, reduced channel capacity due to sedimentation, loss of natural flooding in the form of swamps, and due to land subsidence. But the adaptation of society shows the opposite. People prefer to adapt to elevate their homes to overcome the problem of flooding. Besides that, in their daily lives the community still uses the Deli River like a garbage dump. Therefore to do public awareness and preserve the Sungai Deli ecosystem simultaneously is a difficult thing to do. The community's adaptation to the flood disaster in Sungai Deli has been very far from the dream of preserving the Deli River ecosystem.

Humans can adapt and adapt quickly to the natural stresses they face. Modern science helps humans reduce disasters and respond appropriately. The view that 'earthquakes will not kill humans, but the ruins of buildings that kill them' is a clear

example that humans are now preparing themselves they are facing disaster (Houh & Jones in Kusumasari, 2014). In addition, globalization and increased international cooperation have helped the world's population to more effectively reduce disaster and limit the harmful effects of disasters on humans. The disaster management efforts carried out by Go River are undeniably far from perfect. The efforts taken are considered good enough but not satisfactory enough, considering that every year floods occur with a high ratio. Go River as a community that cares about the preservation of Sungai Deli has not been able to reach all levels of society who live in the Deli River Basin.

In terms of social and economic aspects, residents living in the Sungai Deli River Basin are classified as low-income people. Most of the surrounding communities have permanent jobs and there are also some who work odd jobs by taking advantage of the opportunities available, where small stalls that are part of the community's economic activities have sprung up in the region. The problem of flooding has a very broad impact on various aspects of people's lives. Therefore efforts to overcome them must be an integral part of comprehensive development activities in order to improve the welfare of the community. The method that is considered effective for flood handlers in the city of Medan is an integral solution that must be programmed immediately, if not then only dig a hole in the hole closure, meaning that the handling of flooding can actually cause flooding in the new area. Need to plan futures to overcome flooding in the city of Medan. Among other things, holding water upstream and pulling water downstream, then dividing the excess water (flooding) along the river channel from upstream to downstream becomes a small flood rather than being collected into a large flood in a certain area which is rarely inhabited.

Go River stated that a full commitment from the government and the community was needed in resolving flood

problems in the city of Medan. There are several technical and non-technical issues that can be used as a reference to unravel the floods of Medan City. The flood prevention efforts that have been carried out and programmed must touch the root of the real problem, not only dwell on increasing the capacity of rivers or canals which are unable to catch up with the increase in flood discharge that occurs. The Flood / Drainage Control Master Plan must be used as a reference in every flood mitigation activity, so that the drainage system that is built up is synchronized by various agencies, institutions, the private sector and the community itself. Go River hopes that together these organizations can facilitate efforts to improve the Sungai Deli ecosystem to be more effective. This is because efforts to improve ecosystems in practice can touch up to the layers of society on the banks of the river.

## CONCLUSION

1. The community-based disaster management program conducted by Go River was carried out in three periods of disaster: 1. Pre-Disaster (Planting for My City, River School, River Clean-Up, and Deli Reading River); 2. During Disasters (Emergency Response Plan and Emergency Response Command Post); 3. Post-Disaster (Sungai Deli Research and Catching Care Groups).
2. Go River encourages the adaptation of communities around Deli river to minimize losses during disasters, through: 1. Non-technical adaptation (Maintaining rivers from garbage, high-value goods and avoiding dirty pools); 2. Technical Adaptation (Making Retaining Walls in River Lips that are close to Population Settlements, Making Dike from Sacks

containing sand, and Elevating buildings / houses located on the banks of the river)

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