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FINAL REPORT

Complexity of Problem of Limboto Lake (Postcolonial Perspective)

International Cooperation Research with

**“Sustainable Regional Innovation for Reducing Risk of High-Impact
Environmental Pollution and Research Institute of Humanity and Nature
(SRIREP-RIHN)”**

Dr. Magdalena Baga, S.S., M.Si.
Prof. Dr. Ishak Isa, M.Si.
Dr. rer. nat. Mohamad Jahja, M.Si.
Dr. Hiroki Kasamatsu

Reviewer
Collaborative Research between State University of Gorontalo (UNG)
and Research Institute for Humanity and Nature (RIHN)
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SUMMARY

The act of natural exploitation is related to the non-stop use of natural resources without regard to the consequences. This action is closely related to capitalization. The culture of hunting without keeping that took place in the colonial era, and left its mark to this day. Hunting for economic benefits without taking into account the impact on nature continues to this day. This study aims to find out that the exploitation of Lake Limboto during the colonial period continued into the post-colonial period. The lake problems do not only depend on one thing, namely natural damage, but are also caused by other factors, such as how the community around the lake is positioned socially, politically, and economically. All of these factors are interrelated with each other, and all move based on historical, cultural, and political contexts. This paper uses an ethnographic approach in tracing the data, and a cultural studies framework that is reviewed with a postcolonial perspective in analyzing cultural phenomena.

Keywords: exploitation, postcolonial complexity, culture, lake

Chapter 1

Introduction

1. Background

Exploitation of nature and hunting culture for profit occurred in the 17th century when the period of discovery of the new world began. This continued into the 20th century. There are many exploitations of nature such as animals, plants, even humans. In America in the 17th century, hunting for beaver furs made these animals almost extinct. In Africa, hunting elephants for their tusks made these animals rare, and many other hunting animals today make these animals rare. Scarcity of animals will affect the balance of nature. This action began in the era of European colonialism. All these Actions are based on the principle of capitalism to make as much profit as possible. This phenomenon also occurred in Gorontalo during the Dutch colonial period. Animal leathers were very important in those days, so crocodile hunting became a trend. In Gorontalo during the colonial period, there were still many crocodiles in the rivers of Gorontalo, and Lake Limboto was no exception.

In the writings of C.B.H. Von Rosenberg, *Reistogten in de Afdeling Gorontalo* (1865, 67–68), he wrote:

“Van reptiliën zullen wij hier alleen melding maken van de in het meer levende krokodillen (*Crocodylus biporcatus*, hoeayo der inboorlingen). Het aantal dezer roofzuchtige dieren is verbazend groot, niettegenstaande de drukke jacht, die er op gemaakt wordt, wegens de van gouvernementswege gestelde premie van *f*3.— voor een krokodil van meer dan 6 voet lengte, van *f* 1.— voor een dito minder dan 6 voet en van 5 centen voor ieder ei. Gemiddeld bedraagt het totaal dezer premiën eene somma van *f*3500.— ‘s jaars. De dieren worden gevangen door middel van haken en het zijn vooral de meer volwassenen, waarop als de gevaarlijkste bij voorkeur jacht gemaakt wordt”.

In the quote above in Dutch language, Von Rosenberg states that there were many crocodiles in Lake Limboto at the time Von Rosenberg visited the place, in 1863. Crocodile in Limboto lake sized 6 feet, which means this animal has a size of about 2 meters. According to Von Rosenberg, the size was unusually large. It might be, that was the first time for Von

Rosenberg had seen such a big beast, because elsewhere in Indonesia, crocodiles are even larger than 3 meters long.

Currently, in Lake Limboto there are no more crocodiles, it can be said like that because the animal was scarcely found. This animal became almost extinct from Lake Limboto due to hunting. In the quote above, Von Rosenberg stated that at that time these animals were hunted, because the government would buy for 3 guilders for crocodiles that were more than 6 feet, less than 6 feet for 1 guilder. Meanwhile, the price of crocodile eggs was 5 cents per egg. On average, the total premium obtained from buying and selling crocodiles were 3500 guilders per year. The animals were caught with a hook, usually used for the large, mature and dangerous crocodiles that were hunted.

From this quote, we can imagine how crocodile hunting was done for profit, without regard to its impact on the balance of nature. On one side, Crocodiles were hunted, even their eggs were also traded. That means exterminating of this beast even while it was still in the form of an egg. On the other hand, human mentality and habits make hunting for profit take place regardless of the consequences.

In the colonial era, indigenous people were generally positioned as slaves or workers. Socially, these natives are at the lowest social level, and Europeans occupied the highest social level. Meanwhile, politically, the natives were oppressed and deliberately made economically dependent on the colonial government by using political power. All of these factors are interrelated with each other, and all activities during the colonial period were inseparable from historical, cultural, and political contexts. Meanwhile in the post-colonial period, activities originating from the colonial period were maintained by using different methods but with the same goal, by making indigenous people in a place into labor for the owners of capital who did not come from that place.

2. Problem

The culture of hunting or exploitation of nature without regard to its impact dates back to the Dutch colonial era in Indonesia. This activity continues until now even though decolonization has occurred in all Indonesian territories which were under the Dutch colony. Decolonization occurred on the colonial government, but activities which are colonial culture are still being carried out until now. Thus, in the postcolonial era, hunting for profit was still practiced even though the crocodiles in Lake Limboto no longer existed, but exploitation of the lake in any form, whether it was in the form of capital ownership, monopolizing fish farming, controlling trade routes were

practices of post-colonial that needs to be observed, because this has an impact on lake conservation. Thus, the problem of this lake is not only in the destruction of nature, but also factors outside of it. So, the questions in this research are:

1. How is the community around the lake positioned economically, socially, culturally, and politically?
2. Are the systematic colonial practices that made the people in the colony (in this case the people around the lake) as workers from the owners of capital still being carried out today?

3. Purpose

Based on the problems and questions above, the objectives of this research are

1. To obtain data and information on how the communities around Lake Limboto are positioned economically, socially, culturally, and politically
2. To find out whether colonial practices are still sustainable today on the lake management.

4. Research Benefits

This research is expected to provide information on how the management of the lake so far has resulted in natural phenomena such as narrowing and silting of the lake to be much faster in the last hundred years due to the management of Lake Limboto that is not well-systematic. This research is also expected to present an academic manuscript that can be used as a reference on lake management.

Chapter 2

Postcolonial Theory

Research with the framework of Cultural studies is needed to examine phenomena related to environmental and human issues in the environment. Cultural Studies examines culture related to power. Cultural Studies believes that culture does not move in a vacuum, there is power that makes culture move and develop which cannot be separated from the historical, social, political, and economic context.

Meanwhile, the Postcolonial perspective goes hand in hand with Cultural Studies, namely observing and criticizing cultural movements that cannot be separated from historical, social, political, and economic contexts, but the Postcolonial perspective places more emphasis on the mindset and practices of the colonial period which are still ongoing continued through the decolonization period. However, this mindset manifested in different forms in practice during the decolonization period.

Postcolonial Ecocritic Studies believe that what is happening to the human environment today is rooted in the European colonial period. This is reflected in the texts of the colonial era. Postcolonial ecocriticism is basically a theory that looks at colonial influences on the environment in literary texts (Graham Huggan and Helen Tiffin, *Postcolonial Ecocriticism: Literature, Animals, Environment*, 2015). However, this theory actually uses theories about ecology that are studied from a postcolonial point of view with the term Postcolonial Ecology. Thus, we can use this theory to look at the complexity of the Limboto Lake problem in terms of cultural movements.

Chapter 3

Method

3.1 Semi -ethnographic

This research is a follow-up research that will be carried out around Lake Limboto by the research team. This research can be considered as applied research after preliminary research that is exploratory in nature to identify the area and object of research. This research model uses a qualitative descriptive method, which is a research model that uses a lot of description and interpretation of the data. This study also uses a few ethnographic methods so that it can be called semi-ethnographic because researchers do not fully use ethnographic research in full. According to Endraswara (2006, 50), this study model studies cultural events that show how a society that is the object of research thinks, lives and behaves.

To collect data, interviewing with the community around the lake will be conducted. The main informants interviewed were the Village Head or Village elements, also especially the people who cultivate fish in Lake Limboto, and who utilize the lake's products in any form, whether in the form of fisheries or agriculture. A qualitative approach is used to understand the phenomenon of ethnicity and culture from the perspective of cultural studies. Because this research uses ethnographic description method. In implementing the ethnographic-description method, the researcher is tasked with paying attention to ethnic groups as research objects, which are adapted to the research problem.

3.2 Data Collection and Instruments

This research data collection will use in-depth interviews, and secondary data. In-depth interviews are needed to get an overview and understanding of how the community carries out their daily activities, especially in managing the products of Lake Limboto. In addition, secondary data in the form of historical sources written in the past are needed to harmonize field data.

The instrument used in this research is an interview guide. An interview guide that lists the main issues that will be asked of the informant is used to maintain the consistency of the interview process so that it is in accordance with the research problem. The interview guidance, which is the

steps for conducting the interview, contains: identification of informants/resources, determination of informants, distribution of interviews, substance of interviews, and the main issues that will be asked of the informants.

To get people who deserve to be interviewed, the researcher will move from the base informant, namely the Lurah or Village Head who knows statistical data on ownership of fishing gear, or lake fish managers, as well as owners of lands in the dry part of the lake. Also, the people around the lake who are in direct contact with activities on the lake every day. Taking pictures was done to document the situation and research location. Therefore, the research tools used are: an interview recorder (voice recorder), a video capture tool (handy cam), a shooting tool (camera), and a recording tool (note book + pen).

3.3 Research sites

This research was conducted mostly around Lake Limboto, Gorontalo Province. Lake Limboto stretches more to the west, namely to Gorontalo Regency, but a little part of the east still includes the Gorontalo city area. Thus, the research sites will be taken by sampling, but will still include sub-districts and villages in the city and district of Gorontalo that surround the lake, especially in parts managed by the community to obtain lake products.

Chapter 4

Finding and Discussion

Around Limboto Lake, there are about seventeen villages located right on the shores of the Lake, most of villages which are located in Gorontalo Regency and there is one kelurahan (village) located in the Gorontalo City area, namely Dembe Village. The rest of the villages are in the Gorontalo Regency area, namely Iluta Village, Bua Village, Ilohungayo Village, Barakati Village, Payunga Village, East Tabongo Village, East Limehe village, Teratai Village, Bolihungga village, Hunggaluwa village, Kayubulan village, West Pentadio village, Hutadaa village, Tilote village, Ilotidea village, Tabumela village. In these villages, the researchers conducted interviews with the head of villages, or village officials, businessmen, and also with fishermen from the village.

From the interview, we got that there are two kinds of fishermen in Limboto Lake area. The first is the traditional fishermen that called as *nelayan tangkap* (catchfisherman) and *nelayan budidaya* (fish farming fisherman). From the interviews, we know that who and which area dominate the exploitation of the lake.

Finding

2.1 Villagers and their activities on the field

2.1.1 Dembe 1 Village

Dembe village is located near Limboto Lake, but this village is part of Gorontalo City, and this village is the only one area of Gorontalo city that is near the Lake. We have interviewed the head of Dembe 1 Village, Mr. Adriyun Katili. He explained that almost all the inhabitants in Dembe 1 village are fisherman. Nevertheless, there are two kinds of fisherman; fish farming fisherman and catch fishermen. The catch fisherman are dominant from inhabitants of Dembe 1. Meanwhile the fish farming fishermen are some of inhabitants from Dembe 1, but there are also people from outside the village of Dembe 1.

The catch fisherman goes to the lake every day and every night looking for fish. The catch fishermen are not as rich as the fish farming fishermen who have their own place. The catch fishermen look for fish everywhere on the lake, meanwhile the fish farming fishermen have permanent place for putting on their fishing nets.

The catch fishermen do two ways to catch fish. The first, they catch fish everywhere. The second, they cultivate a small group of water hyacinth to trap fish. Nevertheless, this technique is only profitable for a moment, because when the west wind blows, the water hyacinth will flow following the wind blowing. It does not always stay at the place. Some fishermen already pegged it with bamboo. The fish is not stucked under the water hyacinth, but between the water hyacinth. At night, the fishermen do what is called *Dayahu*, they just need to take the fish from the water hyacinth. It means the water hyacinth was deliberately made into a fish place, and the water hyacinth cultivator are the fishermen around the lake. Nevertheless, this technique has bad consequences. The water hyacinth develops very fast and it will be able make troubles for the fisherman.

According to the head of Dembe 1, even though some fish farming fisherman come from Dembe village, but many of this kind of fishermen are from outside the village of Dembe 1. The people from outside the village do not ask for permission from the village head to have fish farming on the lake, because this situation has been passed down from generation to generation. There are already unwritten regulation on the lake, when someone wants to occupy the area on the lake to be the place for fish farming, they have to buy it. This transaction happens only between fisherman and fisherman. This condition has been passed through from generation to generation. Here, the village government does not have any enforced regulations. Moreover, the area of the lake which is the place of fish farming belongs to *Kabupaten Gorontalo* (Gorontalo regency) area.

The village government do not know where the exact area of the fish farming from some certain owner from outside the Dembe village, and how big the area of fish farming is. But, we can monitor the residents of Dembe if they own it. The consequence is the village government cannot collect the tax from the businessman of fish farming. If there is a tax collection, it may not be the matter of Dembe village, because the area of fish farming on the lake in the Gorontalo district, not the city of Gorontalo. Moreover, there is no rules to regulate if someone want to build fish pond on the lake, they must report it to village government first. Also, there is no rules to regulate if the ownership has been moved to other person, it must be known by the village government. Actually the intervention is not with the village, the provincial BAPPEDA (Regional Planning and Development Institution) should be the one because the management of the lake is under BAPPEDA.

Nevertheless, the village government heard how the businessman from fish farming run their business. They have their own salary system, the regulation of salary is not village government's matter. But, The village government cannot tax the businessman because there is no rule for that, and also the fish farming businessman from Dembe have their pond on the lake in the area of Gorontalo regency, meanwhile Dembe is a part of Gorontalo City.

Actually, a *Panwas* (lake supervisor) group ever supervised the lake. But, It regulated the tools used in fishing. It has a regulation about the size of the tools of fish catching to preserve fish in the lake. Usually, some fishermen used electric current to catch fish. They would be stopped by this Panwas. Nevertheless, these supervisors on the lake seems to be no more since 2015.

The case is the same with the floating restaurants on the lake. They are located on the territory of the Gorontalo regency in Iluta, and in Dembe. There is no rule for building restaurant on the lake, and what the consequences of that. Nevertheless, the control of this lake is the authority of the provincial government. The government has a *PERPU* (regional regulation) to regulate the lake border area. This regulation actually aims for future revitalization. It can be seen just now, there have been boundaries for the area of lake. There are areas that cannot be inhabited by people outside the dike, and some are free for occupy on the lake. The rules regulate approximately 50 to 100 meter not be able to be occupied. The problem is, the residents who have lived next to the dike and they have certificate of ownership.

The inhabitants of Dembe 1 village are very close to the coastal area of the lake. This is different from the area in Batudaa village. In the northern part of Gorontalo regency or the eastern part, the boundary of the lake is still many kilometers from the residents' houses. It means that a few will be executed later. But, the inhabitants in Dembe 1 are directly adjacent to the most part of Iluta and Barakati. People will be highly affected when there is relocation. Since a lot of the fish farming fishermen come from Dembe village, they rely their lives on the lake. Even though, the business does not always make profit because of some condition such as climate change and water hyacinth, the fishermen still depend on the lake. They still get abundance of profit when there are no obstacles on the fields. The obstacles that the fishermen face every day is water hyacinth. It looks like an ordinary grass, but actually this plant can make troubles for the fisherman on the lake. When there is a strong wind blowing on the middle of the lake and there is a big bunch water hyacinth, the fisherman's boat can get caught in the water hyacinth, and the boat might break and get stuck in the water hyacinth. Some people have died in such incident.

The part of the lake which is on Dembe's side, there are a lot of water hyacinth. People and TNI (Indonesian National Army) cooperated to try to clean the lake regularly, but since the plant grows up very fast, people meet the obstacles to clean the lake completely. Then, according to the head of the village, people depend on the help of the provincial government to provide them tool machine to get rid of water hyacinth. Once, People of Dembe and Scouts about 100 people tried to remove this plant from the lake. The area to be clean was approximately 50 x 60 m wide. It was already clean, but in two months later that part of the lake was full again with water hyacinth. This condition shows that people cannot remove the water hyacinth manually. The village must have a machine to make get rid of this plant, and it must be removed simultaneously around the lake. The fast growing of water hyacinth not only become a problem for the fisherman, but it also makes a contribution to shallowing of the lake.

4.1.2 Iluta Village

In Iluta village, there are two kinds of fisherman, namely *nelayan tangkap* (catchfisherman) and *nelayan budidaya* (fish farming fisherman). From the interview, we got that it is estimated that almost half of inhabitants of village are businessman. The reason is, since the Location of Iluta not far from the deepest area of the Lake, some villagers become businessmen for fish farming. Fishermen can catch and cultivate fish from 06:00 AM to 09:00 AM, and then from 2:00 PM to 6:00 PM. Fishermen also receive support from the village government such as nets. Fishermen will begin to catch the fish following the direction of the wind. The obstacles usually emerge when the west wind blows, their boat path is obscured by water hyacinth. Water hyacinth is also as the cause for a large number of dead fish in the lake. During the dry season, there are fishermen who keep fishing. At first, they will use the barrel as the buoy. Then, when the barrel deflated, the fishermen will sell it as scrap metal.

Some businessmen like Om Lunde (this is his nickname) often holds back the price of fish when its price rises which is causing the competition between the fishing entrepreneurs, so that it causes the workers moving to the other entrepreneurs. The workers who guard the net on the lake get a month's salary approximately Rp.750.000 – Rp.1.250.000. To cross check the information from the head of village, we interview Mr. Suleman Moha or Om Lundhe. He owns 100 net ponds with measuring 5 x 5 meters. A box can accommodate 3000 fish seeds. For one harvest in 4-5 months, it can be up to 5-6 tons of production with a selling price of 30 thousand rupiah per kg.

For production costs is almost 5 billion in the one harvest. First, they still use bamboo as a net retaining tool, then they replace it with a barrel. Finally, they choose to use iron as a retaining tool. For the rest of the bamboo or barrel that cannot be used anymore, they let it sink in the lake. Unlike iron, it is still lifted up to be sold to scrap metal collectors.

He has 3 workers in this netting business. There are those who serve as fish feeders, sorters of fish based on age, and guards of the fishing nets itself. Their salaries range from Rp. 1.500.000 – Rp. 2.000.000 (plus fish sales bonus and THR (holiday allowance) during the fasting month). His net profit is about 100 million/harvest, because fish seeds are cultivated gradually, so in a month, they can reach 1 or 2 harvests.

There is also a net businessman like Om Lundhe, his name is Ka Pulu, he has several net blocks. 1 block is 4-6 bundles of 6 x 12, and 6 x 10 nets with 15-20 tons in 1 harvest. Moreover, in a month, it can be up to 3 times harvesting, because the nursery is carried out gradually. He has approximately 10 workers, each of them has different task. Each worker has to guard a block. Some workers have to feed and other workers have to sort fish for the growth of harvest. For the workers who have responsibility for guarding a block will get the net profit which is about 20 – 25 % from the owner.

According to Om Lundhe as a net entrepreneur, he will agree with a village regulation plan that regulates the management of the utilization of Limboto Lake, especially for net entrepreneurs, If it will be applied in his village. For example, he will give his consent for a retribution of Rp. 50.000/kg every time fish leave the pier. In Iluta, the fish leave the pier reaching 10 tons per day. In a month, it will be able reaching 15 million retributions from fish selling. Furthermore, the parking management can reach 5-7 million/month. During the fasting month, the fish that come out from the pier, can reach 25 tons/day.

4.1.3 Barakati Village

We interviewed the head of the hamlet Hungayo Barakati, Ms. Hestin Montale. According to her, there used to be around 60 people or more as fishermen in their hamlet, but now some of them are no longer active on the lake. They have already started planting plant. Fishermen and farmers coexist in this area. Usually, villagers here are both fishermen and fish farmers. Every neighborhood has its own private fish pond, which is managed by the residents. The head of the

hamlet has a sister who has her own nets, which she handles on her own. This implies that no one must be paid as a worker, because villagers manage their own pond by themselves.

Usually, a fisherman must provide a buoy, such as a cork, for the installation of nets, as well as a pipe pole in the shape of a square-shaped plot. For this business, the community does not require an approval for installation. The size of fish ponds usually are 4x8 m², 4x4 m², 6x6 m², and 6x 4 m² nets. In a 4x4 m² area, there are usually 10 nets installed, however there are other occasions when just 6 nets are installed. The sizes of 4x5 m² and 4x6 m² are presently the most popular sizes. The sizes utilized generally in Iluta village are 8x8 m² and 10 x 10 m² depending on the size of the fish, they want to harvest. In most cases, each individu has an average of ten nets. Only one or two persons have a total of fifteen nets. Nebvertheless, in Iluta businessman can have many fish pind because they employ many people as helper to guard the ponds.

The average fish harvest lasts evry three months. Fish with general size give 1 kilo 5 tails, or with 1 kilo 4 fish also available. The fish's weight is determined by the number of fish captured. To count the production of fish, it is simply multiply, one net generally has aproximatelly 1000-2000 fish. A patch of 4 x 6 m² is usually planted with 2000, possibly 4000 seeds. However, the 2000 seeds are more common. One net can hold up to 1.5 tons of fish, but it still requires fish food because this has an impact on the fish's quality. According to the head of hamlet, it is not easy to maintain fish farming business because the price of feed is expensive lately. She still has nets, but she no longer keeps the fish farming. This is due to the fish food has become prohibitively costly, costing roughly 400 thousand each bag/sack. It is different with the fishermen who catch fish randomly. They generally collect the catch. Accordingly, Fish are frequently bough and paid for on the spot, with some weighing 100 kilos and others 200 kg.

Sero as the traditional fishing gear is now used by fewer people. Now, the fishing gear made of iron. The bamboo as the basic material of sero will be left on the lake, if it is already deteriorated. Accordingly, people from Hungayo Barakati are no longer use bamboo for fishing gear, because bamboo is easily to be weathered. The weathered bamboos is one of the cause the lake to be shallowed. Since the fisherman don't pull them off, it causes them to pile up on the lake. Now, people prefer to use tires, because they are more durable. The bamboo can not be lifted on land if the water level rises. Then, if the bamboo is rotten, they are not lifted and must be left in the water.

Water hyacinth is normally cleansed by people, but because there are too many of that plant it can not be removed completely, it returns. However, on the net pond area, the fishermen still continue to follow the village's directions for cleaning. It is difficult to travel to the lake in present day because the lake is full with water hyacinth, which makes it appear like a rice field from afar. This water hyacinth has already traveled many kilometers following the stream of water. The water from the lake does not come here if there is a flood.

Speaking about the rule for build the net ponds, there are no unlawful expenses associated with the installation of nets. There are many net ponds are being sold because the cost is high. Many farmers used nets in the past, but since fish food has gotten more costly, people become catch fishermen again now.

In this village, farmers and traders are the most profession that inhabitants do at present. The fish harvest is purchased at a price of 30 per kg when acquired on the spot, and 35 per kilo when sold. The most common fish offered are tilapia and catfish. There are now less than ten persons have net ponds. In comparison to other villages according to the head of hamlet, actually people from Hungayo village use more nets than other villages. Some people still have fishing nets, but they are not loaded with fish anymore. Actually, the distance between the house and the net is about 200 meters, but It is now quite difficult to get there due to an abundance of grass and water hyacinth. If the lake will be cleaned from the water hyacinth, it is hoped that once it has been renovated, Because the lake is already deep people would no longer utilize bunggo or bamboo. They will very certainly employ tires and ropes that have been multiplied. The rope serves as hang the anchor. The rope costs over 200 thousand each ball. There has no any data yet gathering from the village about the amount of fish net on the lake. It might be from the Department of Fisheries, we can get the amount. The fish nets are sometimes installed here by people from nearby settlements. However, it is more dominating from the last village, where a lot of their netting ends.

4.1.4 Bu'a Village

In Bu'a village, we interviewed a villager named Maslan Pauweni who lives in Bu'a village but he was ever the head of Iluta village. He explained that fishermen in this area generally have a floating net business. Floating nets were supplied to several of the groups of fishermen that received aid in Bu'a village. But, in Iluta village where he had lived for two years, almost half of the inhabitants in Iluta have floating net business at present, in the past time they used to use cages.

There are actually groups of fishermen, but their work is always hampered by the disturbing broad bunch water hyacinth, which have damaged many of the nets, except for some nets that have been fenced off by some fishermen to avoid the water hyacinth. Around 30 fishermen received support lately in the form of *Jala Buili* (in Gorontalo language).

In Bu'a village, nowadays there are only a few of floating net fisherman in this village; in other villages, there are still many because the fishermen work together to supervise each other. In this Bua village, there have been numerous cases of fish theft, so that is why the fishermen no longer want to keep fish in their nets buoyant. Usually at harvest time, the fish that is estimated harvest will reach 2000 fish are only 200 and 300 fish left. This occurs especially in the West Bu'a line.

Maslan compared this situation with the Iluta village. Because there is no electricity network that reaches there (West Bu'a Line), there are many fish stealing. But, in Iluta village, the fishermen unite in band together. If the fishermen go home, the other fishermen will stay to guard so that there will be no fish theft in Iluta village. Accordingly, the number of fish harvests reaches hundreds of thousands of fish which they keep on rafts.

In Bu'a, floating nets usually size of 4x6, 4x4, 3x4, and 2x4 meter. However, the problem emerges during a flood in the west, then the water hyacinth is swept away by the flood. This is the cause of the fisherman's nets sinking. Eventually, leaving the fishermen in Bua village disappointed. If the water rises in West Bua, the net will also rise, and the water rises and passes through the nets. This condition can make the fish come out of the net. Thousand of fish could be released out of the net because of this condition.

According to Maslan, he employ services. He uses help from his relatives. He gives twenty percent from the fish's selling price as an incentive for helping him. However, there are permanent employees in Barakati and Iluta village. They are paid a monthly fee 1.5 - 2 million. It is because their seed production has reached tens of thousands of seeds. Fish seeds which feed regularly will be big more quickly. As a result, the filtration must be done by classification, starting with the smallest fish up to the largest, in order for the food to be distributed equitably. One raft (floating net) is usually controlled by one person and the feeding distributed from the net owner. The supervisor's responsibility is only to feed and segregate the fish by the classification until the harvest arrives. If the harvest falls short of the aim or the price of fish falls below the agreed-upon level, the salary of supervisor will be maintained. Those earning up to \$2 million per month are

responsible for supervising up to 40 thousand fish with only one raft or even two rafts. These supervisors usually have second job, such as farming, during the dry season, especially those who have land on the lake's edge. The dry land regularly will be utilized to cultivate maize if the lake dries up.

If the bamboo stick rots, it will not be taken from the lake, it will be left in the lake. This is one of the reasons why lakes become shallow. The Sulawesi River Basin Institute has provided instructions and education to manage and protect Lake Limboto, which is not only for fishermen but also for farmers who are on the mountain slopes which usually cause flooding who often cut trees illegally, resulting in flooding. This flow also sends sediment material, accelerating the silting of Lake Limboto. On the same time, fishermen use bamboo to catch fish by making fish traps from bamboo and placing them at the bottom of Bamboo Lake, causing sedimentation in Limboto Lake. Because there are no local laws or permits for the use of bamboo nets, fishermen from other areas, such as fisherman from Limboto and Telaga, put up nets in Bua using this bamboo tools.

The local government requested fisherman helped by the TNI (Indonesian National Army) to clear the water hyacinth. This is still a challenge since water hyacinth develops fast, and until now there's no way to stop it. But, some people in the other village like Pentadio village use special tools to clean the lake from the water hyacinth. As a result, most of inhabitants in Bu'a become a catchfisherman in this Bua, besides a few of businessman in fish farming. In this village during the dry season, people search for alternative employment, such as farming, mining, vegetable trading, and other types of production.

4.1.5 Village Ilohungayo

In Ilohungayo village, we interviewed some people, such as the head of the village and a villager, According to him, in the Ilohungayo there are ninety nine the head of family working as fishermen. There are sixtythree people cultivate catfish using tarpaulins. Then, there were those who used net ponds, but now they do not use it anymore. There are catfish ponds built by fishermen, they use concrete and tarpaulins with measuring 3 x 9 and 5 x 7 metres. Nevertheless, the main fishing net entrepreneur are in the Iluta. In Ilohungoyo village there is no fish shelter. In this village. Fisherman who cultivate catfish need 2, 5 million capital to growing catfish. There is effort from the village government in Ilohungayo to prevent the growing of the water hyacinth by building fence, but it does not mean much. In this village, the management of the fishermen's

products managed by the fishermen. Besides working as fishermen, the villagers in Ilohungayo also work as the traders, laborers, and the miners.

From the other interview, we got information from Mr. Mery Tanio. According to him in Ilohungayo village, there are net fishers who have workers from the other villages. They do this because the villagers in Ilohungayo do not work honestly when they must guard the fish pond. The guards usually collude with the fish thieves in this village. They usually know each other, whereas the guards were paid weekly or monthly.

Speaking about water hyacinth, according to Tanio, It is difficult to be cleaned. However, the spray from helicopter can work. In 2000, he advised to get the spray for water hyacinth and a tank for each fisherman. But, he actually did not account the consequences of spraying this plant. It might be able to contaminate the water and other living things in the lake. About the remnant of Sero (the fishing equipment made by bamboo) usually were left in the lake unless they still looks good, then they will be picked up for reusing. Some people think that the remnant of Sero contribute the shallowing of the lake, but some people do not agree with this thought.

The fishermen in Ilohungayo village manage their income independently without any tax from anywhere. In the past, there was a money collection from each fisherman but there was no clarity where the money actually spent.

4.1.6 Payunga Village

After Bu'a village, there is other village that is close to Limboto Lake. We interviewed Tutan Igilasi. He is the Head of Hamlet of North Balangga in Payunga Village. North Balangga Hamlet located precisely next to the Limboto lake. North Balangga is only about 50 metres from the lake. Thus, the profession of the inhabitants is mostly as catch fisherman. This hamlet is frequently flooded beside hamlet Bulalo. Besides as village official, Tutan Igilasi is also a fisherman. He often goes to the lake on holidays.

The management of the village must be related to the income and expenditure from the fishermen. According to Tutan, when the fishermen get fish and then sell the fish in the Payunga market, they will automatically be charged a fee. Then, the fee will become the income of the Payunga village. This thing will only apply to fishermen who go to the lake at night and come back in the morning, because they will immediately sell the fish at the market every Monday, Thursday, and Sunday. If the fishermen go to the lake in the dawn or in the morning and come

back after 12 pm, they will immediately sell their fish at the Tabongo market, so the fee will automatically become the income for the Tabongo village, not Payunga.

On the other hand, Mr. Tutan said that the cleaning management of the Limboto lake from water hyacinth around the Payunga Village has not been done routinely. Maybe the water hyacinth cleaning will still be done by volunteers or partners from the TAGANA and Indonesian National Armed Forces (TNI), but it will take a long time certainly. Meanwhile, according to him, the growth of water hyacinth is very fast, so it becomes a national problem recently. In addition, the lack of public awareness of the water hyacinth's bad effects makes this problem cannot be solved yet.

The growth of water hyacinth also happens because of a trap in Gorontalo namely *bibilo* which uses water hyacinth in it. Unfortunately, *bibilo* actually makes the water hyacinth problem even more unsolvable. In short, *bibilo* is a trap tool used to catch fish made of bamboo. The fishermen outsmart the fish by inserting the water hyacinth into the *bibilo* that it looks like a shelter for the fish, so the fish will be attracted to and trapped in it. Basically, this tool can not only lure a lot of fish into the *bibilo*, but it will also cause some problems such as the silting when inserting process of the water hyacinth coincides with the soil and the growing of water hyacinth rapidly as well.

Based on Mr. Tutan's explanation, his parent who work as fisherman said that there was no culture of catching fish using the *bibilo* trap in the past, so the distance between the lake shore and hamlet 3 was about 200 metres with the depth of the lake was about 8-10 metres which is likened to the height of the bamboo tree at that time. Meanwhile, the depth of the lake is only about 5-6 metres recently if the lake water overflows and it will be less than 5 metres without overflowing. Moreover, there must also be cooperation between the government and the society in cleaning the lake from water hyacinth. The construction of embankments or barrier for the large rivers such as the Hutabohu river and the Biyonga river, so this will not trigger silting of the lake due to soil sedimentation caused by soil erosion that is carried away by water when the heavy rain occurs. The lake was some hectares in size in the past, but it is only a half hectare at present, because some areas in Tabongo and Limboto have become a land where a lot of corn planted. Mr. Tutan suggests that heavy equipment like excavator should be provided, so it can dredge or lift the soil erosion caused by the heavy rain. Therefore, soil sediment cannot be formed.

The lake around hamlet 3 is also overgrown with grass and water hyacinth due to the transition season, so they cannot go to the lake easily. In fact, fisherman usually experienced how difficult it was when they returned from the lake, and their way home are already full of water hyacinth. It could be take 3 hours to open an access way that was covered by water hyacinth. Moreover, the existence of water hyacinth can be so dangerous, because it can make people trapped in the lake. According to Tutan, he and SAR team once tried to find someone who was lost in the lake, and finally they could find after 40 days. Hence, people cannot go fishing alone to the lake. It would be better if the water hyacinth which was brought by the west wind towards Iluta immediately lifted. Then, the water hyacinth in the middle of the lake could be also lifted using a special tool to dredge and lift it. In addition, it should be better if there is specific fund for the water hyacinth cleaning.

Nowadays, the water hyacinth cleaning mostly only focused on the pentadio area, because it was close to tourist attractions. According to him, the government should be aware of the water hyacinth's bad effects which can cause silting of the lake, especially since water hyacinth has begun to grow from 2010 until now. Mr. Tutan as the Hamlet Head always reminds the government officials about the water hyacinth problem to be discussed with provincial government in every meeting, but they often ignore it. As a fisherman, Tutan knows that in the future, the water hyacinth problem will be very detrimental. Moreover, public awareness is very important for the water hyacinth cleaning, because if no one starts to solve the water hyacinth problem, it will harm the society. In addition, the government should be aware of this problem, so the society will also be encouraged. Mr. Tutan added that it is rare to find lotuses because of the water hyacinth which is growing rapidly. Hence, in the past, there are many lotuses on the lake. He said, in the 89's, the fish was very easy to find like Dumbaya fish. Then, about 10 years ago, Timeduo fish and Hunthala fish were often found in Limboto lake. Now, it is difficult to find them.

Mr. Tutan also suggested that if the water hyacinth will be cleaned by the government, the society should also be aware of not pulling the water hyacinth back into the water. In addition, some fishermen are often caught using electric current, because there is no regulation in the using of fishing gear. However, Indonesian National Armed Forces (TNI) will control those irresponsible fishermen. Actually, there was also an incident of fishermen that use lion trawls. Then, it caught and burned with ther fishing gear using electric current, because it is very harmful.

Based on what Mr. Tutan said, some people who feel disadvantaged because of the use of the lion trawl will use a slingshot as a weapon to against the fishermen who are still using the fishing gear.

It is about 30 % of the Payunga village society work as fishermen and others as traders. Due to the silting of the lake, the local society do not become the fish farming or aquaculture fishermen, because of soil sedimentation caused by soil erosion during heavy rain. According to Tutan, Limboto lake could be separated into two parts, because the lake is close to the Limboto and the another lake which is close to Batudaa. This will happen because the Hutabohu River as one of the largest rivers is the largest contributor to the soil sedimentation caused by the heavy rain. Because of the heavy rain, there will be excessive soil sedimentation that can be a land. Also, Mr. Tutan stated that if some areas become some hectares of agricultural land, and the half become a land 10 years later, there will be a probability of the water crisis. The silting of the lake is more likely due to the excessive soil sedimentation which is caused by heavy overflowing water. Soil sedimentation can be the material for making bricks. In the Limboto area, there was a training of making bricks in Kayu Merah. However, there is no news about the training wheter it is still continued or not. Tutan said if that training continues, it will be very good for solving the siltation due to the soil sedimentation.

Limboto lake is very important for the 30 % of the society who work as fishermen. When there was a drought in 2001, many of them went out to look for another work outside. Some people went to Manado and Central Sulawesi to be a trader. Furthermore, other people have to work as miners in the Bumela. Some people decided to stay outside of Gorontalo for trading. Then, it is important for the present generation to get education in raising their awareness of the importance of the natural resources in Limboto Lake.

In east wind season for 6 months, it will be very profitable for fishermen, because it means they can freely catch fish, unless there is a transition season for 3 months. During that time, they will find difficulty in catching fish. In the difficult condition like this, 30 % of society who work as fishermen will be a laborer in the certain projects. Then, they will work in the central market. Mostly, they are the young people. Moreover, some young people will work as vegetable farmers by making a field approximately 60 x 60 metres.

Base on what Mr. Tutan, fishermen who go to the lake at night and come back in the dawn like him. Mr. Tutan will sell the fish directly to the traders at TPI (Fish Auction Place). If the fishermen come back in the afternoon, the fish will be sold in the market. Furthermore, there is

market that has a table to sell fish. So, the fishermen can sell the fish for Rp. 100,000, then 10% of that income will be a fee. Also, the fishmonger have to pay the water that they use to sell the fish.

4.1.7 East Tabongo Village

In this East Tabongo village we interviewed the head of the village. The East Tabongo village is not a part of Limboto lake. This village is a bit far from the lake, so that the villagers mostly work as farmers (corn, vegetables, etc). According to the head that the villagers who work as fishermen can be found in the East Limehe, Ilomangga, and Teratai village.

4.1.8 East Limehe Village

In East Limehe, we interviewed the head of a hamlet in East Limehe village, named Udin. According to him, East Limehe village is primarily populated by kangkong (*Ipomoea aquatica*) farmers, with a minor number of fisherman. It can be understood because this village is a part of the lake in the past that become dry at present. During the wet season, the area is frequently inundated with water from the lake, posing problems for plant cultivation. Fishing activity is a small part of the village's economy, and it is declining nowadays. However, pond owners (catfish farming) constitute the majority of aquaculture fisherman, with a number of approximately ten people. From growing up process through sales activity, the cultivation process and the results of agriculture are treated independently. This is the reason why fish cultivators do not employ any worker.

In relation with the regulation to use the lake, there are no restrictions governing the maintenance of the Limboto lake, thus anybody can utilize it. The government's involvement in the Limboto lake's use is limited to providing support to fisherman, such as Government assistance providing nets and fish seeds. During the wet and dry seasons, fishermen have a hard time finding fish. Flooding and water hyacinth are the constant problem. The excessive growth of water hyacinth might obstruct fishing boat access. Looking at the way the wind is blowing, the community must examine the water hyacinth-covered region.

Residents' activities are also influenced by the wet and dry seasons. During the rainy season, the water level will increase to the point that it will inundate people's homes. The harmful impact

of floods can be lessened with the government foresight, such as providing basic supplies and home appliances. Meanwhile, the lake water level will drop throughout the dry season, making it harder for fisherman to access the lake. As farmers or a few of them move down to mining, communities whose livelihoods are beginning to be disturbed will begin to switch. Many inhabitants also resort to rice growers during the dry season. The people have turned the muddy ground of the former Limboto lake into agricultural land.

From other interviewee in the village, we got some other information. In 2019, around 62 families worked as fishermen in Limehe village. They work in separated types of fishing to catch fish, such as catch fisherman, and fishing using traditional net called bibilo. The results are directly sold in the market, Mujair auction, or it is called penadah or Fish collector. Usually, several people are waiting on the edge of the lake to buy the fisherman's catch. The sales process usually does not involve direct sales from fishermen to consumers, but rather involves second salers (the second saler get like a commission). There are currently no regulations to manage the commercial outcomes of fishermen in Limboto Lake. However, some rules are more market-oriented, there is no legalisation because fishing is only a seasonal occupation. The village regulation does not exist yet. When the lake water recedes, fishermen look for new professions or other alternatives, such as fishermen who sell vegetables and become farmers even changing careers as a miner.

The government's insurance for fishermen program (subsidy) is limited to 50,000 rupiah per year. However, this insurance is only valid until the beginning of 2019, and it has not yet been extended. There was once an accident to a fisherman. The fisherman drowned but he did not obtain insurance. There are no fishermen who build a hut as a rest place around the lake. So, they must spend the night on the boat. Nevertheless, Farmers make up the majority of the professions in this village.

4.1.9 Teratai Village

This village is located in the westside of Limboto lake. It is not far from East Limehe village. In this village, we interviewed Aryanto, Deputy Chairman of the Village Consultive Body (BPD). According to him, there are locals who work as fisherman, both as catch fishermen and cultivation fishermen. Even though they do not have help workers, around 10% of fisherman in this village are aquaculture fishermen. The amount of fisherman decreases as a result of siltation on the lake. Fishermen sell their catch directly to the market or to collectors, without stopping on intermediaries.

In relation with taking benefit from the lake, the government has not yet imposed any restrictions on the use of Limboto Lake. On the otherside, the local government's efforts to control the construction of fish ponds for aquaculture fisherman have progressed slowly. To manage of the activities of those who use Lake Limboto, it has been done some socialization attempts that have been launched.

In order to control the installation of new nets in Lake Limboto, measurements and identification of lake borders have been carried out. Residents with nets and residential dwellings outside the permissible boundaries will be encouraged to take out appointments or transfers, with the government bearing the operating costs in the form of compensation. Aside from fishing, a small number of individuals also produce kale for sale and use as cow fodder. The use of water hyacinth as an animal feed has been attempted, but no results have been obtained so far. The government previously released the broom fish into the lake to combat the proliferation of water hyacinth. This has a detrimental influence for aquaculture fisherman since these fish frequently destroy the lake's nets.

The fish farmings are processed both in groups and individually in Teratai Village. The profit sharing is used to process nets in groups of 5 to 10 persons with a profit-sharing arrangement. Meanwhile, Individually managed nets have a net number of around 3 to 5 nets with a 3 X 4 size. The number of nets held in group net processing might range from 10 to 15 With a cover area of the lake 100m X 100m. The fish farming or aquaculture fisherman must raise and return the net on flood circumstances since it will be swamped. This condition lead losses of the fish farming. Until now, this condition has resulted in a drop of aquaculture fishermen in this village. In addition, the fihermen face other obstacle when floods strike. It will spread water hyacinth across residential areas, making mobility impossible. Accordingly, for the time being, there are not many Teratai village people work as aquaculture fisherman.

4.1.10 Bolihuangga Urban-Village

At Bolihuangga village, the head of a ward is Mrs. Asma Singo. She has given her consent to be interviewed. According to her, the majority of residents in Bolihuangga Village work as farmers in rice and cornfields. Furthermore, many individuals seek grass near rivers and lakeshores to sell to cow ranches; one boat costs 50,000 rupiah in one haul. Aside from grass, there are

kangkong plants that may be marketed and utilized as cow food. Two of the five wards in the Bolihuangga village are the closest to the shore of the lake, particularly ward 4 and 5, the majority of people work as a fisherman. It is stated that around 30% of the residents in Bolihuangga work as a fisherman, some also work as fishermen and farmers, as farmers are highly reliant on the seasons.

In Bolihuangga, one or two persons have cages; some have cages but do not work as fishermen, such as Muhammad Singo, Ibu Asma's cousin; he only pays the fishermen who are hired. Although the owner is from Bolihuangga, the cages are located in the Batudaa region. When floods hit, fishermen can catch a lot even though their houses are flooded too, especially in hamlet 3 and 5 since they're near one of the streams. If it is flooded, not only houses but rice fields are inundated in water, many people become fishermen while during the dry season, people swarm to produce corn and chili on dry ground.

Some of the fishermen in Bolihuangga are still using electric shocks to capture fish, despite the government's ban via socialization and counseling. Nevertheless, the lack of public awareness and no official control, this practice still continues today. The consequences are solely in the form of seizure of electric tools or other harmful instruments. This action was not effective, because they do not serve as a deterrence to the criminals, and the confiscation is only carried out when the raids are not conducted daily. Some of fishermen employ tiger trawls, rafts, and drums.

During the dry season, the fisherman will create nets, which will subsequently be released into the lake when the rainy season begins. When the tools are broken, the fisherman will retrieve them rather than abandon them in the lake. Some are handled individually, as well as those who are controlled collectively. The community will sell fish around the bridge in the Bolihungga region, as well as at retail centers and marketplaces.

As well as in other villages water hyacinth in Bolihuangga is extremely bothersome to the fisherman. However, unlike Kayubulan village, where water hyacinth is used to make tissues and sandals, people in Bolihuangga have no idea how to handle and use this water hyacinth

4.1.11 Kayubulan Village

Mr. Ramlian Amran as the Development section of Kayubulan urban village stated that Kayubulan urban village consists of five neighborhoods. He also stated that the society mostly work as traders nowadays. Based on the data, it is only about 30% of the Kayubulan urban village society who work as fishermen who live around the 5th neighborhood, so it is close to the Limboto

lake shore. There are some people who work as the fish traders. They sell the freshwater fish obtained directly from the lake or the marine fish obtained from the fish auction. Most of the fish obtained from the lake are directly sold in the daily or weekly markets around the Kayubulan urban village. Around the 5th neighborhood, residents' houses can be found which are similar to the housing area. The fishermen live in those houses. There are approximately 7 houses inhabited by them which can be found in that area.

According to Mr. Ramlian, one of the factors that causes the society who work as fisherman are only about 30 % is the silting of Limboto lake. It encourages people to switch their profession become traders, casual daily laborers, bentor drivers and other transportation. The silting of the lake causes the reduction of fish amount, and moreover the location of the lake will move away when the climate change, so the fishermen cannot reach the lake easily. Besides trading, the society can go fishing when the lake overflowing, although there are several houses around the 5th neighborhood that are submerged in water due to the overflow of the lake. In addition, Mr. Ramlian said that the fish farming using cages only lasted until 2009. After that, the fish farming using cages cannot be done because of the lake silting that happens frequently. Meanwhile, the fish cages itself could not be not even lifted and it was drowning in the lake.

In addition, the rapid growth of the water hyacinth causes a reduction of the number of people who work as fishermen, because they find the difficulty for accessing the lake. Moreover, according to Mr. Ramlian Amran, there are several fishermen who often tell stories that the water hyacinth also affects the number of fish they got. For this reason, there are an MSME (Micro, Small, Medium Enterprises) in this urban village that utilizes the growth of water hyacinth become the unique handicrafts such as bags and other trinkets.

The fishermen in the Kayubulan urban village are not fishermen in groups like fishermen who go to the sea. The fishermen in this urban village are more individual. In addition, Mr. Ramlian Amran said that they often use nets and bu'ili as their tool to catch fish. According to Mr. Ramlian, there are no specific regulations about fishing gear that exist in the Kayubulan urban village itself. However, counseling from the Department of Fisheries and Marine Affairs is often carried out regarding any fishing gear that can be used or any fishing gear that fulfills the standards in fishing around the Limboto lake. Hence, it is rare to find the fishermen who use stun equipment nowadays. Also, Mr. Ramlian Amran said that there some craftsmen in 4th neighborhood who

often make nets and sell it directly to some people who need it. In fact, there are many people who often buy the nets.

4.1.12 Hunggaluwa Urban Village

In Hunggaluwa urban village, there are also five neighborhoods. The 5th neighborhood is the one of neighborhoods that is close to the Kayubulan urban village. Fishermen can be found easily in the 5th neighborhood, because this neighborhood is very close to Limboto lake. However, Mrs. Dewi Isa stated that there are several residents in the 5th neighborhood who work as construction workers and bendor drivers. In addition, she said that the fishermen in the Hunggaluwa urban village use several types of fishing gear such as bu'ili, nets, pajala, trawlers, and stun equipment. According to Mrs. Dewi, the electric tool is only used occasionally. For example, it used when siltation happens in the summer. When using the stun gun, the fishermen will get a lot of fish. There are two types of electric tools which are the road stun gun and the boat stun gun. Mrs. Dewi said that the boat stun gun is the most frequently used, because it can catch more fish. According to her, the fishermen who use stun equipment do not know that there is a prohibition against the use of this tool, so there are still many fishermen who use the stun gun nowadays.

Moreover, if the fishermen use trawls and catch the small fish, they will be immediately thrown into the lake, because sometimes the fish is already dead, so it is not valuable for the fishermen. Then, the fishing nets which is made of the wood or bamboo materials will be left in the lake covered by the water hyacinth or submerged due to the overflowing lake when the fishermen will not use it anymore. Some of the fishermen are the fish distributors as well, but they sometimes get a damnification, so they prefer to sell their fish directly in the market. Furthermore, Mrs. Dewi stated that no one cultivates the fish using cages or cultivating the fish in the lake in this neighborhood in this neighborhood, because their problem is the the growth of water hyacinth certainly. In fact, according to Mrs. Dewi, if the access to the boat has been blocked by the water hyacinths, then the fishermen cannot get a lot of fish. However, there is an utilization of water hyacinth and the animal excrement become the biogas. Sadly, the utilization stops. Hence, the right solution to solve the growth of water hyacinth cannot be found yet. In addition, Mrs. Dewi stated that the overflowing lake is very detrimental for the fishermen, because they cannot go fishing. Also, the overflowing lake can make some areas get flooded. Unfortunately, some residents do not have a side work, so they will use their remaining money to fulfill their needs until the overflowing

stops. Mrs. Dewi said that the residents find the difficulty to get a side work. For example, the residents cannot be the farmers who is only dependent on the season for farming. Therefore, the residents very depend on the lake. Actually, there are the rice fields in the 5th neighborhood where the workers will be paid at the harvest time. However, the residents cannot depend on it for a long time, they want to go fishing as usual. Mrs. Dewi Isa stated that none of their husbands want to go to the mines, because they do not want to take any risk of working in the mines, so they choose to survive in the difficult life until the Limboto lake problem solved.

4.1.13 West Pentadio village

In this village, we interviewed a housewife. She does not allowed her name to be mentioned in the report, but she allowed us to interview her. When the interview was conducted, we cannot meet some village official, because they had meeting in the regency. West Pentadio Village, particularly Hamlet 1 is located near Limboto Lake. Fishermen, bentor drivers, and traders are the most common occupations in the hamlet. When there was a flood, only a few areas of the west Pentadio Village were affected by flooding, only around the hamlet 1 mosque and its surroundings, so this flood disaster did not disturb the daily activities of the resident, as well as the fishermen. Even while the fisherman in west Pentadio continues to go down to the lake throughout the floods, they do change professions or engage in other activities to support their family.

When the water level rises, it is simpler for fishermen to catch fish since they only need to sit on the lake's edge, however, a small number of fishermen still use boats or tires to search for fish in the middle of the lake. On the other side, some fishermen have difficulty catching fish since the lake water has an unpleasant smell during a flood, resulting in only a few fish being caught. The Fisheries conditions in west Pentadio Village are practically identical to agricultural conditions; there are periods when a large number of fish may be caught, and other times when only a few can be caught. Meanwhile, when the lake water near west Pentadio village recedes during the dry season, fishermen will have to trek quite a distance to find deeper areas where they may catch fish.

Although the flood had little impact on fishing, the enormous population of water hyacinth made it impossible for fishermen to access the lake because it had obstructed the entrance to the lake. Fishermen were unable to go down to the lake for weeks while waiting for the wind to deliver it and were forced to live on a meager income. Some, though, are compelled to descend. The

government has organized and paid the people to clear the water hyacinth and has even hired an excavator to uproot it, yet the problem persists. In relation with the using of fishing equipment, stun devices is already illegal in west Pentadio Village and if discovered, the equipment will be seized and the perpetrators handed a warning. Even though stun equipment and tiger trawls have been prohibited, some fishermen are still using them in 2020. Because not all fishermen can use fishing rods, there may still be individuals who utilize stun equipment or tiger trawlers in other areas. Then, that if the tools are confiscated, they may seek identical ones elsewhere. In the community of West Pentadio, no one uses fishing equipment such as rafts any longer. The lake near west Pentadio village is administered and exploited entirely by the local community, with no involvement from outside parties such as investors or others.

4.1.14 Hutadaa Village

In Hutada'a village, we interviewed Mr. Gani. He is a man from Community Empowerment. According to him the majority of the people in Hutadaa Village used to work as fishermen in Limboto lake. However, as time passed and development occurred, half of the people of Hutadaa Village changed professions, some becoming drivers, spice traders, and craftsmen, while others are fishermen. Fishermen in Hutadaa Village used to make cages together, then they were replaced with stick nets and then switched again to floating nets. However, the population of water hyacinth on the lake and the west wind made their fishing gear look like nets; the net was dragged towards Tapolu. Consequently, it made fishermen experience large losses and reduced people's desire to catch fish in the lake. The majority of people who still open cages are in the Iluta village, whereas Hutadaa village has not installed cages or nets at all since being threatened by the water hyacinth population in 2008-2009, because of the large losses. When they were using rafts and nets, completely damaged rafts and drums are mostly left in the lake; usually, firewood seekers will pick them up if they can still be used.

People who continue to catch fish use Landra nets and Bu'ili, and there is also new fishing gear made from used tires, such as mines that are placed at the bottom of the lake, then the fish will enter the tool. Furthermore, despite a new gear, one or two fishermen continue to use electric shocks to catch fish. Mr. Gani himself used a stun device in the past, but he has not used one since 1996 due to regulations prohibiting it. There are no fishermen in Hutadaa village who use bombs to catch fish, but they do use anesthetics to catch Duwiwi birds that live around the lake. The lake

is entirely owned and managed by the community; there are no outside investors or capital owners who employ fishermen from Hutadaa Village.

When floods occur as a result of heavy rainfall, lake water overflows and enters people's homes, causing economic hardship and forcing people to evacuate. The community will be in refugee camps for the fourth week, or approximately 25 days, on December 1st, 2021. There were 22 family heads from Hutadaa Village who fled, and 21 family heads from Buhu Village who sought refuge in camps and at the market. When it rains, 23 tributaries enter the Limboto lake, but only one river, the Tabongo, discharges the water, even though the river is not yet stable. The flood affected 371 households or 1310 people in Hutadaa Village, which is spread across three hamlets. However, only residents who were affected by severe flooding were directed to live in refugee camps including Mr. Gani's house. Mr. Gani's house has a water level of about 10-15 cm. This flood also damaged the homes of several other residents. The displaced people are expected to be able to return in February 2022.

People try to continue their work, business, and daily activities as long as they can in these difficult conditions, but some are paralyzed and forced to stop and remain silent. For them, fishermen, in this flood conditions, fishing gear such as Pombolo and trawl cannot be used because these tools are covered with rising water, allowing fish to escape, so during this flood, fishermen catch fish using angling, Landra nets, Buili, Pengapi (cork fishing rod), and other traditional methods. However, due to the presence of water hyacinth, fishermen continue to have difficulty catching fish. As a result, water hyacinth is the most common problem encountered by fishermen, both in normal and flooded conditions.

To address the water hyacinth issue, the government held training for water hyacinth crafts but was not guided to the marketing stage. In 2012-2013, the Village Head issued an appeal requiring every fisherman who went fishing to be counted from each boat to pull water hyacinth from the lake and bring it to the mainland to be dried and then burned. However, due to the rapid growth of water hyacinth and a lack of public awareness and initiative, this appeal did not go as planned.

From 15% of fishermen, more than half of them have been disrupted due to flooding and the presence of water hyacinth exacerbates this condition. Although the water hyacinth was cleaned some time ago by the Indonesian National Armed Forces, which required a fund of 1.3 million rupiah, it remains a problem to this day due to its rapid proliferation in large numbers. Fishermen

who are no longer active in fishing due to the lake's unfavorable conditions now expect and rely on various assistance provided by the government, businessmen, and various other parties, which is usually given once a week.

As a consequence of economic conditions, a small part of the community is forced to go to the mine located in the Suwawa area, including the son of Mr. Gani who has been there about two weeks. Originally, six people from Hutadaa Village went into mining, but only one person remains, Mr. Gani's son. This is due to their inability to adapt to a mining environment that is vastly different from the lake's activities. On the other hand, if the environmental conditions are stable, the community will resume its normal activities, fishermen will return to the lake, and other workers will go about their business.

Fishermen used rafts or floating nets (Sabua) in the past, including Pak Gani, in about 10 plots in Hutadaa Village itself. They used to make a 10 x 20-meter netting plot, but the rafts and nets were dragged along by the wind blowing from the west, carrying water hyacinth. This water hyacinth not only harms fishermen by destroying fishing gear, but it can also endanger their lives, as has happened several times. Some fishermen have been trapped in water hyacinth for two days, and some have died in other villages. However, due to financial constraints, some fishermen continue to fish even though the lake conditions are poor due to water hyacinth, making it even more dangerous.

In Hutadaa Village, a market and a reservoir have been established as tourist attractions, and the village government has declared that they will be able to support the community's economy and reduce their reliance on the lake. Although for the time being, the market is still empty; no sellers are occupying the market's spaces, nor are there any buying and selling activities taking place, because the market is also still focused on serving as a refuge for residents whose homes have been flooded.

4.1.15 Tilote Village

This village has a population of 2000 people, 30 percent of whom are fishermen and the rest work in agriculture. We interviewed, the head of the Village Headman, Mr. Burhan. Traditional nets are used by fishermen to catch fish on a small scale. Generally, fishermen rarely leave their nets in the middle of the lake, so that is why fisherman from Tilote only catch fish at that time. Moreover, this village is a bit far from the lake, but it is still limboto lake area. We cannot get more information from this village.

4.1.16 Tabumela Village

In this village, we interviewed some fishermen. Mr. Hamsah works as a lake fisherman, although he also travels to the sea on occasion. Fishing is quite popular in Tabumela Village. Capture fisherman and aquaculture fishermen make up the majority of the total. Due to increased feed prices, the population of self-cultivating fisherman continues to decline. Mr. Hamsah used to own 70 nets measuring 4 X 5 and 8 X 8, but had to sell them owing to rising feed costs. Each box may hold 2500 fish seeds, with around 1500 fish ready to harvest. He sells 1 kilo 5 or 1 kilo 6 with a harvest duration of roughly 3-4 months. He generates a crop that weighs roughly 5 tons for a price of Rp. 33,000.00 every harvest.

The other fisherman, Mr. Hamsah maintains his business as an aquaculture fisherman among Tabumela's fishermen. He has around 80 cartons of nets. The number of workers is around four, however they are not locals. Hiring local personnel, based on past experience, always causes issues, particularly in terms of net safety. Local laborers frequently commit theft, according to Mr. Hamsah. This is resulting in significant losses. The compensation scheme for aquaculture fisher personnel in Tabumela and the surrounding areas is a profit-sharing system. Mr. Hamsah worked as a net keeper for other business fisherman before becoming a net owner, earning 1.5 million each month.

Both aquaculture and capture fishermen have a variety of options for selling their catch. Fishermen frequently sell their catch straight to restaurants for yields of 1 kilo 2 and 1 kilo 3. Many of the fishermen have already given the purchasers their phone numbers so that they may be reached as soon as they are ready to harvest. Buyers who buy directly from farmers normally order between 200 and 300 kg of fish. There are purchasers who are third-hand for buyers, as well as buyers who order directly from fisherman. They frequently purchase big amounts of fish to resale to marketplaces. Fish collected by fisherman from Lake Limboto is also exported outside the province, to Manado and Central Sulawesi, by some of them. However, the number of purchasers is dwindling, and no fish exports have been made outside of the province in the last few months. This is assumed to be the result of the corona virus's recent broad spread. The local government urged net users in the lake to lift and clean the remnants of the nets from inhabitants in the lake, followed by clearing the water hyacinth. Tabumela inhabitants are asked to clean their nets without leaving any waste when cleaning the Limboto lake.

4.1.17 Ilotidea Village

Construction farming pathway is one of the government's efforts to facilitate fishermen and farmers using Limboto Lake as their main source of livelihood. The development is intended to make it easy for residents to get access to the main road, but the pathway that stretches in the middle of the Limboto lake is flooded which is estimated to be up to the waist of an adult, so land vehicles cannot pass through the pathway. This pathway was built in 2020 but not long after that the pathways was sinking with flood. After there is a pathway, fishermen and farmers do not need to follow the detour following the Telaga Jaya road which is a bit of a detour. Anticipatory action taken by the government for flood victims is by providing shelter and assistance in the form of wooden planks to serve as small platforms for residents who still want to occupy their homes. It is estimated that the lake water will recede in the next few weeks, so residents still have to evacuate until the water returns to its normal level.

In Ilotidea village, the majority of residents are casual workers and this is conditional. When the agricultural industry has low potential, residents automatically turn to fishermen or other alternative jobs in the form of gold mining workers, laborers and so on. For example, now when the land is flooded, it is impossible for farmers to grow crops, this is what makes people immediately turn to fishermen. This is based on the demands of family needs which encourage residents to change their jobs according to current conditions.

At this time the fishermen are no longer cultivating their own fish because there are several considerations so that the fishermen prefer to be fishing fishermen instead. In this case, if the fishermen want to cultivate fish, they need more capital for the cost of care and fish feed every day and can only harvest it a few months later. Then the economic cycle becomes faster when the fishermen only catch fish, because after being caught the fish can be directly sold. This is the reason why fishermen prefer to be capture fishermen rather than cultivation fishermen.

In Ilotidea village, the use of stun equipment has been prohibited by the government because it has a negative impact that can be very detrimental to residents, one of which is that it can damage the fish population in the lake, and the fisherman cannot get fish. As a result, the equipment used by fishermen is only nylon nets and fishing rods. The use of a stun device must be carried out by fishermen by walking on water, so it is not possible to use this method when the lake water is overflowing. However, it is possible if there are residents who do not comply with the regulations

that have been set, therefore the government asks for cooperation with all citizens and can report if anyone violates so that the perpetrator will be punished according to the provisions.

The problem for Ilotidea village on the lake is the same with other villages, namely water hyacinth that has penetrated everywhere, and this plant has blocked the access of fishermen's way to the lake. Moreover, according to this fisherman water hyacinth causes the fish population in the lake to drastically decrease and can even become a hiding place for dangerous animals such as snakes. Some time ago there were residents who were trapped because of water hyacinth and there was even an elderly fisherman who was trapped in the middle of the lake for 2 days, the evacuation process was hampered because water hyacinth covered the entire surface of the lake.

Residents are able to survive because they are used to the hardships of life, but it will be easier if the lake water does not overflow. In addition to making it difficult for fishermen to find fish, water hyacinth can also contaminate settlements into people's homes when the lake water overflows. The government asks residents to clean water hyacinth regularly because they see so many negative impacts that can be caused. This water hyacinth has a lot of negative impacts on the community because there are many Ilotidean residents who depend on their lives there as a main source of livelihood.

Local residents are concerned about Lake Limboto, but residents believe that programs and policies from the government are always intended to make it easier for the community, if Lake Limboto is no longer possible for fishermen to earn a living, it is the government's responsibility to find alternative jobs for the residents.

The area of the lake, which is not known to whom it belongs actually. It makes residents in a dilemma. The information from the river hall that 100m from the highest overflow is still Limboto lake. The land around the lake that enters 100m after the water discharge can be removed even though there is a certificate of ownership. But on the other hand, there is information circulating that regarding the policy of the river hall which states that, for those who have land certificates, they will be paid. The problem is what if you don't have a land certificate, this is because in the past times all land did not have certificate or administration. Then, the payment can be taken care of only if the land owner comes to claim their land to the village by showing proof.

4.2 Discussion

4.2.1 Lake Utilization and Management

From research on 17 villages around Lake Limboto, it can be seen that there are only several villages that got the benefit greatly from the use of Lake Limboto, but at the same time there are more villages around the lake that cannot take full advantage from Limboto Lake. The obstacles faced by other villages are: **first**, the depth of the lake in their villages area. This causes, they only become as catch fishermen and cannot become fish farming fishermen. Besides, they have not much capital to build the fish pond on the lake. **Secondly**, water hyacinth disturbs fishermen from being able to catch fish and manage fish cultivation. **Third**, there is no regulation from the government on how to use the lake fairly for all villages around the lake especially for business, because it does not mean that one village which has the highest depth area of the lake having more rights to manage businesses from the lake than other villages, because Lake Limboto belongs to the people of Gorontalo, especially the people around the lake.

The villages that can take full advantage of Lake Limboto are Dembe 1, Iluta, Barakati, and Bu'a, because these villages are near the deepest area of Lake Limboto, so they can take advantage of fish farming. However, the lack of regulation from the government become a concern regarding this cultivation, who can take advantage of the lake, and then what is their contribution if they get a lot of benefits from the lake. Neither the local government nor the village government makes regulations on this. Meanwhile, dozens of other villages cannot take the advantages of the lake. They only get the impact of the shallowing of the lake, the abundance of water hyacinth that is very difficult to get rid, hence they live around the lake.

In chart 1, we will show the simulation of how much the benefits of cultivating fish is in Limboto Lake. Some certain businessman who has much capital to manage fish farming in Limboto lake, can get the Some entrepreneurs who have large capital have the opportunity to get very large profits without having to be subject to taxes or other regulations in terms of managing fish farming in Limboto Lake. A certain entrepreneur in fish farming in the lake can make a profit of 30 million to 135 million rupiah in a month. These profits are very huge seeing the very poor condition of the lake.

The businessman still can run his business even though the condition of the lake is not good anymore. Moreover, this business is not disturbed by the presence of water hyacinth around the lake, because the fish pond guards always clean the area where the fish is grown, but they do not

care where the water hyacinth goes. Thus, this lake is only profitable for certain people who have capital, while other people living around the lake who should be able to also take advantage of the lake, cannot do anything about the narrowing and shallowing condition of the lake. In addition, the rapidly growing water hyacinth reduces the ability of local fishermen to earn income, especially when the rainy season arrives, the condition of the people living in shallow areas becomes even worse.

From the mapping simulation of the lake area (picture 1) used as an area for fish cultivation, it can be seen that the cultivation area is around villages that take the benefit from the lake, because that part of the lake has the highest depth. This area is near the estuary of the lake's water discharge to the sea, because the other areas are already full of sedimentation. Actually, the area of fish farming can be seen from satellite map on google map. The Area covered approximately 104, 385 ha. It is only 4 percent of the size of Limboto Lake, but several villages already get much profit from using Limboto Lake for fish farming.

Chart 1. Simulation of Profit of Fish Farming on Limboto Lake

Net Type	5 x 5	7 x 10	8 x 30
Net Area (m2)	25	70	240
Capacity (Fish)	3,000	5,000	15,000
Weight (kg)	600	1,000	3,000
Gross Results (Rp/Year)	Rp 54,000,000.00	Rp 90,000,000.00	Rp 270,000,000.00
Seedings (Rp/Year)	Rp 2,250,000.00	Rp 3,750,000.00	Rp 11,250,000.00
Feed (Rp/Year)	Rp 2,920,000.00	Rp 8,176,000.00	Rp 28,032,000.00
Net Result (Rp/Year)	Rp 29,298,000.00	Rp 46,844,400.00	Rp 138,430,800.00
Net Result (Rp/Month)	Rp 2,441,500.00	Rp 3,903,700.00	Rp 11,535,900.00

Responden	Ben Hamzah	Coan R.Ima
Lots of nets	80	150
Harvest Production (Ton/Month)	8	15
Gross Results (Rp/Month)	Rp 240,000,000.00	Rp 450,000,000.00

Feed (Rp/Month)	Rp 192,000,000.00	Rp 288,000,000.00
Seeing (Rp/Month)	Rp 10,000,000.00	Rp 18,750,000.00
Worker's Wages (Rp/Month)	Rp 7,500,000	Rp 7,500,000
Profit (Rp/Month)	Rp 30,500,000.00	Rp 135,750,000.00

Picture 1. Simulation of the area of fish pond on Limboto Lake



4.3 The Regulation of Utilization and Management of Limboto Lake for Business

Based on the interviews in 17 villages around Lake Limboto, it can be seen that there are no detailed regulations from the provincial or local governments regarding the use of the lake for business. The lake is exploited for business, but there are no rules of use, such as: first, who has the right to own fish farming in the lake; secondly how many and how big fish farming business allowed on Limboto lake to be owned by an entrepreneur; third, which consequences can be obtained by an entrepreneur who owns many fish ponds, and generates a lot of profit for the welfare of his village and the maintenance of the lake.

The government only regulates the use of fishing gear in the lake, but it does not notice that there are many fish farms that take advantage of the lake's existence. In fact, in the middle of the lake can be established a restaurant. Actually, the condition of the lake is already very severe with its siltation. If the surrounding community is not given rules, especially in the business that utilizes the lake, then the condition of the lake will get worse because people only think about how the business runs without caring that this lake must be maintained.

One thing that is a complaint in all villages around the lake is the presence of water hyacinth which cannot be removed from the lake. The provincial and local governments only came to the call to clean up the water hyacinth, but how to deal with it, eliminate it, the government had not given a solution that had a big impact to the lake. On the other hand, there are businesses that run in the middle of the lake not much bothered by this water hyacinth. The government does not link the existence of this fish farming business and the existence of water hyacinth. Whereas, the government may make rules for these fish farming entrepreneurs. They must contribute from certain percentage of the profits to be used for lake maintenance by eliminating water hyacinth.

This happens because of the idea that owners of capital can withdraw profits as long as they have capital. However, it is not noticed that the owners of capital use nature which must be preserved. Consciously or unconsciously, this is actually colonial practices that exploit nature for profit. In the interviews with the owners of fish farming in some villages around the the lake, they stated that they are willing to contribute funds to the village which will be taken from the profits if there are regulations. But, as long as they run a business there is no regulation about it from the village government.

4.4 Position of Community and Capital Owner

From post-colonial perspective, it is very important to see how the community/indigenous people are positioned and position themselves. This is to see how colonial thought is unconsciously passed on. The people around Lake Limboto can be said to be indigenous. From the results of interviews in 17 villages around the lake, researchers can see from a social level, the people of Lake Limboto are divided into two parts, namely first, there are villages that accidentally get special privileges because they are close to the deepest lake area so that they are able to become aquaculture fishermen. Second, people who are far from deep lake areas have less privileges to become aquaculture fishermen. This is also reflected in the types of fishermen engaged in.

However, there are actually people who are not known to have the privilege of running fish farming business, but they are not recorded, because they probably come from outside Lake Limboto.

By getting a strategic place, people who have economic privileges become stronger because they have more "authority" to manage fish farming in lakes. People in this area have developed into owners of capital so they can hire people from other villages to work for them. The salary system implemented by the owners of capital is not regulated by the government so that the owners of capital are the ones who decide while the workers are the ones who are determined. Salary depends on the discussion between the owners of capital and workers. In the interview, the business owner stated that fish pond guard at the lake was paid, they have salary. There are workers who are only paid 1.5-2 million rupiah per month. They work to look after fish in the lake day and night. Even, according to the head of Dembe village, there are workers who have not returned to land for a year because they have to look after fish. Here, we can see how people was positioned economically.

With social and economic positioning like this, the position of boss and worker is formed. This is actually not a problem, the problem is that there is no regulation with this position, so the owners of capital can act arbitrarily. While workers will think that that is their position as workers in other words as slaves, the people who are being determined. If this condition continues, then the thought of the position of master and slave will be embedded in the culture of the people around the lake, so that the master only thinks how to make a profit, while the slave thinks how he looks for food, while the place that is exploited to get profit is not considered for its sustainability.

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