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A Preliminary Study of Livelihood Challenges in Water Settlement Area in Northern Sarawak, Malaysia

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Abstract

Water settlement area, also known as water village, is situated above the water and is frequently referred to as a fishing village due to the majority of the population's occupation as fishermen. It consists of a cluster of typical river-long stilt settlements, most of which are located near or outside the city. This paper is a preliminary study in identifying the difficulties of sustaining a living in a water settlement area. The significance of this paper lies in its examination of the obstacles related to the safety of villagers on the water. In this article, qualitative face-to-face interviews with respondents served as the research method, and the obtained data were analysed using thematic analysis. There are three identified challenges that can affect community safety in this geographical area. Water village communities are among the most vulnerable populations, more likely than others to require humanitarian aid or be excluded from financial and social services. Consequently, this article can also be used as a relevant resource for the development and improvement of strategies related to the same problem that occurs in other villages on water and can increase the level of safety for villagers.

Keywords: Challenges, Community Livelihood, Qualitative Study, Water Settlement Area, Social Studies

Introduction

Floating village is the used to describe a village on the water that is associated with fish farming. It consists of a collection of traditional villages built on stilts along the river. Some of the villages are located near or far away from the city. Due to their traditional existence, those who live on the water are disadvantaged in terms of education, communication, and social knowledge (Thi et al., 2017a). It has been a very long time since the inhabitants of a water village had a distinct culture. Kampong Ayer in Brunei Darussalam, for instance, is believed to be older than one thousand years. In 1521, Antonio Pigafetta referred to it as the "Venice of the East" (Ahmad, 2013). The floating villages of Ha Long Bay are both a cultural treasure and a popular tourist destination. Ha Long Bay contains over 1960 limestone islands, grottos, and caves (Thi et al., 2017a). It served as a suburb for harbor-dwelling fishing villages located hundreds of kilometres from the continent. In many parts of the world, floating villages and

boat communities are constructed on the surface of inland waterways for a variety of reasons, including ethnic and occupational ones.

Floating villages are also known as boat communities. For example, Ekowato and Hadi (2020) stated that in 1999, some Mamuju residents lived from Sulawesi to Bontang in Malahing, a landless floating city in the middle of the ocean. In addition, he describes the occupations of the Malahing residents as fishing net fishermen and algae producers. Due to their dependence on the sea, fishing communities' traditions include religious practises, river experiences, special wedding ceremonies, funerals, worship, and fisheries festivals, among others (Thi et al., 2017a). Vulnerability can be defined in the context of climate change, soil degradation, demographic change, and technological development as the capacity of individuals, groups of locations, and systems to withstand the pressures that will be exerted on them (Shaharudin et al., 2005). As a result of its proximity to the sea and the presence of homes built above the water's surface, the water village is particularly susceptible to natural disaster-related issues (Ahmad, 2013), and some of its residents lack even the most fundamental infrastructure.

As a result of environmental degradation, floods, flash floods, landslides, haze, dengue outbreaks, climate change, and other natural disasters occur. Communities are in a state of vulnerability as a result of this circumstance (Shaharudin et al., 2005). This paper is significant because it examines the challenges posed by factors that affect the safety of villagers on the water. This is due to the fact that communities residing in water villages are among the most susceptible to the threat of natural disaster. This can help in the execution of the plan or strategies, particularly the better development and improvement of safety strategies in terms of the quality of life and comfort of the population residing in the water settlement area.

The Concept of Water Village

A water village is typically defined as a clustering of floating houses built on waterbodies. It can also be defined as the load on the structure that is equal to or less than the uplift force of the water, causing the house to float when submerged. In Ha Long Bay, there were floating villages, making it difficult to monitor and control the water population while also preserving the area's biodiversity (Thi et al., 2017a). It also includes a number of floating houses that can represent various nations whose identities or cultures are reflected in their water villages. It's also worth noting that the majority of the houses in the water village area are made of wood and are tightly packed together (Ahmad, 2013). The floating homes are frequently built close to one another, with each structure connected to form a unique, man-made island where a fire can quickly spread and consume the entire village. Because these structures are inhabited, they can frequently provide basic services such as electricity (Akmal, 2020). Fishermen make up a large portion of the water village's population. Their primary sources of income were fishing and aquaculture, such as fish and shellfish farming (Thi et al., 2017). 2017a depicts a water village in Cua Van, Vietnam.

"The house was built on a buoy foundation, which made it easy for them to move around without being stuck in one place. So, the Cua Van fishing village didn't have a lot of planning for its space. This made it easy to change the functions of the village. The floating homes, which had a simple structure of timber posts and beams, were mostly made of bamboo and wood. Usually, the floor was made of wood planks or plywood sheets.18."

There is no clean water available because the only thing in the ocean that can sustain life is salt water (Ekowato & Hadi, 2020). In Kalimantan, a water village is a structure that sits on a raft made of logs that rise and fall with the surface of the water. It is possible to relocate it (Susanto & Lubis, 2018). Furthermore, the floating house is made of local woods such as bentawang, Kayu Belian, and ulin. This wood is resistant to the elements (Susanto & Lubis, 2018). Traditional rural architecture is also used in floating communities and houses. People who live on the water have adapted their dwelling structures, materials, and spaces to the natural environment and a culture based on traditional architecture (Thi et al., 2016).

Characteristic of Livelihood in Water Village

Malay people inhabit the majority of the water settlement area in Sarawak's northern region (Limbang and Lawas). The water village, in addition to dwellings built on water or in a river, represents Malay culture and way of life. It was common practice in ancient times for those who lived near a source of income to settle in fishing-rich areas. Each dwelling in the water village is expected to house between two and five families. If the house is too limited, their family will start building a new house next to or in front of the existing one. Furthermore, the suitability of the vacant land is considered.

Water village is only accessible by boat. A number of small outboard-powered boats navigate the river, transporting people who want to cross from the mainland to the village or vice versa (Ahmad, 2013). Thi et al (2017) describes the village's impressive architecture, which included houses on moving floating platforms. He also mentions that the house has a buoyant foundation, allowing them to move around freely. The houses in Kampong Ayer, Brunei, are linked by 36 kilometres of 1-meter-wide wooden boardwalks. The concrete pillars that support them provide stability (Ahmad, 2013). Ahmad (2013) describes the quality and proximity of the village's dwellings, which are mostly made of wood. The fishing village lacked social amenities such as healthcare, a school, and entertainment due to its isolation from the mainland (Thi et al., 2017a). Water village is more than just a residential neighbourhood; it also houses a number of businesses, mosques, and educational institutions (Ahmad, 2013). Brick buildings, concrete bridges, and jetty construction are all viable options, as is the use of fire-resistant materials. Despite the fact that some of the other water villages have been provided with adequate facilities and basic utilities such as electricity, water pipes, and waste management systems, one water village has been left without even the most basic infrastructure.

Geographical Factor

These settlements on the surface of inland water bodies, known as floating villages or boat communities, have developed for a variety of reasons, including ethnic and occupational reasons, in various parts of the world. Water villages, unlike traditional villages or towns, have a community that lives entirely above the water's surface. Furthermore, because these settlements are so close to the sea, they are vulnerable to natural disasters like flooding, storms, and waves, as well as epidemics, pollution, and other diseases. High flooding can have a negative impact on livelihoods by altering rice cultivation timing and making fishing more difficult as the fishing area expands due to the increased amount of flooded land (Nuorteva et al., 2010).

Economic of Water Village

Globally, fishing is an important economic activity that creates a considerable number of employments, contributes to food security, and provides nutritional advantages (Baby, 2020). Their major source of revenue was fishing and aquaculture, or the production of fish and shellfish (Thi et al., 2017a). People who live in and around Tonle Sap Lake, the biggest freshwater body in the Mekong River Basin and the country's largest freshwater body, rely largely on water and natural resources for a living. To flourish, water dwellers have to adapt to and interact with their natural environment. They learned a lot about the weather, hydrology, fish behaviour, and capture tactics via trial and error (Thi et al., 2017a). Some water villages rely on fishing and marine aquaculture as a sustainable source of income, which provides residents with a consistent source of income and helps to the expansion of the local economy. For decades, the water village fishermen and aqua culturists have provided food, nourishment, revenue, and livelihood to hundreds of millions of people worldwide, including the Water Village community (Ismail et al., 2018). Furthermore, as previously stated, the fisheries in floating village communities are highly vulnerable to environmental changes (Althor et al., 2018).

Methodology and Study Area

The qualitative method was used in this study. Data from an unstructured interview question was collected through face-to-face interviews. In addition, six respondents took part in the interview phase for this article to gather data on the challenges of livelihood in a water village. Thematic analysis will be used by researchers to analyse and extract information from the interviews of the respondents in this study. The location of this study was chosen as Kampung Limpaku Pinang, Sarawak. Kampung Limpaku Pinang is one of the water settlement areas in Limbang District. This village is also located near the Brunei Darussalam border. The only way to get into the village area is by boat, as there is no road access.



Source: Google Earth (2021)
Figure 1 Location of the study

Results and Discussion

Challenges of livelihood in water village

Several issues frequently arise in Kampung Limpaku Pinang. By using thematic analysis, there are 3 challenges were identified for this study. Figure 2 depicts a challenge of livelihood in water village.



Figure 2 Challenges of livelihood in water village

Environmental Threats

In 2019, the people of Kampung Limpaku Pinang have been affected by a dry season. Every home in this water village has a water tank that is used to store water for use during the dry season. The water tank, on the other hand, can only store enough water for 3 to 4 months. The long-term viability of this water supply is also dependent on the number of people who live in each of this community's households. R1 also stated that each villager receives two bottles of mineral water, which they can use to quench their thirst. The community also received water aid from *Jabatan Bekalan Air Luar Bandar* (JBALB), Limbang district. The water intake point, however, is too far away from the village.

The rainy season is also associated with the issue of strong winds in the Kampung Limpaku Pinang area. Rain, according to the majority of respondents, occurs frequently and creates a sense of insecurity. R3 also claimed that the rainy season is common and that water levels rise. Rising water levels in the village region also inundated sidewalks and destroyed several wooden bridges. R3 and R4 also described the river as wavy as a result of the heavy rain and strong winds. Residents reported shaking in their homes as a result of the strong waves. Each house is built with a unique material, such as wooden poles or concrete. This will also have an impact on the residents' safety during the windy and rainy season.

Wind is a major issue that frequently occurs in their villages, according to R2. This is due to the proximity of the water village to the open sea or river. They expressed concerns about their living conditions. It also causes damage to the house's roof as well as to their property. High winds have caused plants, such as flowerpots, fall into the river. R6 mentions a leak in the kitchen section of the house's roof. As a result, they will have to spend more money in order to repair the damage.



Figure 3 Location of water village

Wildlife Threats

Wildlife threats is a source of concern for communities, particularly those on the water. A boat with a capacity of four to eight people is the primary mode of transportation for the residents. They also had an encounter with a crocodile, which approached the house area in search of a discarded fish body floating in the river. Furthermore, R5 claims that four to five crocodiles approached the walkway area. When the water level rose, crocodiles ate the villagers' pets, according to R3. Because of the timber-framed footpaths are damaged and could endanger the villagers' safety, they must be repaired or renovated.



Figure 4 Footpath of the water village

Challenges Transportation and Communication Problems

This village is only accessible by water. R1 and R2 agree that the only main way to get to the village from Limbang is by boat. It takes about 30 minutes by boat to get there. Residents of Kampung Limpaku Pinang can only get there by boat if the Limbang River's tide is at the appropriate level. The high tide is extremely dangerous for the residents of the village. Many people in the village only have a boat for daily use.

Kampung Limpaku Pinang is a water village with a small number of communities that only travel by water to town for necessities such as medicine and food. Because of its location, this village has a high potential for population growth. It could also become a tourist attraction. The village was also used to host a water festival, which is popular in Brunei. People who fish in the area make a living as well. As a result, each person requires at least two or three boats to get to work or Limbang town.

R6 mentions that while the area has a good supply of electricity, they still need to build some basic infrastructure, such as a communication tower near the village. R4 describes how the people in the village continue to struggle with communication. This village is near the Brunei Darussalam border, where communication lines from Brunei disrupt communication lines from Sarawak. Because of the village's location, it is also critical that the community be able to access information and communicate in an emergency.



Figure 4 Transportation to Kampung Limpaku Pinang

Discussion

The preliminary study's findings demonstrate how the main issues that occur in Kampung Limpaku Pinang can have an impact on community life. This village, based on observations, also lacks the amenities that should be available to the residents. Some jetties and footpaths must also be made safer for the entire community. The wooden footpath in this village needs to be changed or made safer for elderly people and families with children. This is because some of the footpaths have been repaired or replaced with new wood. Because of the high tide, several of the footpaths were damaged. This village also requires some basic

infrastructure for their safety, businesses, and communities to function properly, and a healthy economy is dependent on new businesses starting, access to venture capital, and making existing businesses more efficient (Cavaye, 2015). The nearest available facilities are located outside of the village. Limbang town and Kampung Limpaku Pinang are 14.15 kilometres apart and take 30 minutes to travel. Even for distances of less than one kilometre, the elderly, people with disabilities, or those carrying heavy loads may face significant barriers to access, particularly in extreme terrain or climates (Soseco, 2017). Furthermore, the most difficult aspect for the community of Kampung Limpaku Pinang is that the village lacks roads and is only accessible by water. Infrastructure development is nothing more than a method of raising a society's living standards, and it can also have an impact on employment rates, productivity, and income, as well as add value to the economy. Furthermore, it has the potential to improve political integration and bridge societal geographical divides (Manggat et al., 2018). The term "basic infrastructure" refers to the basic installations and services that support a government's or municipality's activities, such as roads, schools, telephone lines, water, and power plants, among other things.

Aside from that, the residents of Kampung Limpaku Pinang lack access to public health and safety services. It is believed that improving accessibility is necessary to promote development, increase uptake of human development services such as education and health, facilitate the inclusion of different ethnic and other groups, improve employment opportunities, and stimulate growth in order to alleviate poverty (Soseco, 2016). There is no clinic in this water village. The nearest location to the local health service clinic is in Limbang town. Accessibility is also an important consideration for residents of water villages. At health facilities located in this water settlement region, the population can easily receive care and speak with an expert about their health. In the water village, health services are critical for pregnant women, the elderly, and children. Without road access, they rely on the nearest community facilities in the village area. However, safety services like the fire department and police station are not available in Kampung Limpaku Pinang. These amenities are critical for the care and protection of the water village community. Furthermore, due to the poor condition of the households, which are mostly made of wood, and their close proximity to one another, Water Village is one of the settlement areas that is constantly involved in fire accidents (Ahmad, 2013). Safety and health facilities are critical for the well-being of residents of waterside villages.

Some residents who lack access to transportation to the town area may be impacted due to geographic factors and the state of the village area. To improve accessibility in water villages, nearby facilities are needed to save money and time, especially for the elderly. This will also include mental health, physical behaviour, and access to community health services. improved connectivity to areas for better transportation, greater accessibility, and cost and time savings (Soseco, 2017). This town is dealing with transportation issues in addition to infrastructure issues. Individuals and communities benefit from transportation because it allows goods to be moved from one location to another while also allowing for the production of welfare. Transportation is an essential component of any economy because it allows goods to be moved from one location to another as well as the production of welfare.

Furthermore, the villagers require a boat to travel to town and sell the fish, which serves as a source of income. In response to the difficulty of individuals who do not have access to water transportation, residents have established small stores selling necessities as well as boat oil. This community is experiencing a communication line outage, with only certain areas able to

receive phone calls, send text messages, and access the internet. There is a scarcity of internet access in this part of the village. This is due to Kampung Limpaku Pinang's proximity to the Brunei Darussalam border. Brunei Darussalam's telecommunications connection is significantly stronger than Sarawak's, making it more reliable. Villagers in an emergency who require assistance from the authorities would face difficulties.

The majority of the issues, according to the survey results, have been linked to unusual flooding and droughts, as well as the consequences of these events on infrastructure, livelihoods, and food safety. Flooding also had an impact on the lives of people living in water villages, such as shifting the timing of fishing due to flooding in the surrounding area. Some informants stated that recent flooding had depleted fishing resources in their area, and that this had continued.

A variety of factors contribute to fishing villages being in worse condition than their counterparts located closer to national roads; residents have fewer livelihood options and less access to markets, and they rely heavily on common property resources (Nuorteva, Keskinen, & Varis, 2010). The environmental threats that a water village faces, on the other hand, can serve as a precursor to the development of other water communities. Furthermore, the villager observes that heavy rain and high winds are linked and occur frequently. For example, heavy rain can cause floods, which endanger human life, as well as structural damage to buildings. Water village issues are also less common in rural areas. Drought, strong winds, and heavy rains, for example, can make fishing difficult for locals and have a negative impact on the village area, causing earthquakes on house poles and property damage. It causes anxiety and fear in individuals and groups who live in waterside communities.

Furthermore, this will limit their ability to improve their standard of living in terms of income, food security, and housing. The primary occupation of the water village is fishing. The difficulties that arise in their village may have an impact on the community's source of income. The water village community developed extensive knowledge of weathering, hydrology, fish habits, and collection strategies in their struggle to live and operate in the natural world in order to survive on the sea, and people who were used as blood or a profession fished alongside their vessels offshore on a regular basis (Thi et al., 2017b). All year long, fish is the main source of protein for the people who live in the area, and many villages make money by selling fish (Heinonen, 2006). Flooding, silting, and commercial fishing, he adds, all contribute to the difficulty of fishing. The village's floating communities are especially vulnerable to environmental changes that affect fishery resources (Althor et al., 2018).

Conclusion

In conclusion, this preliminary study spells out three (3) challenges face by residents in water village. It includes environmental threats, wildlife threats and challenges in term of transportation and communication problems. The significance of this study lies in its investigation of the challenges posed by factors that affect the safety of communities on the water settlement area. The environmental and wildlife threats are the threats that cannot be controlled by human due to its nature. Drought, high winds, and heavy rains, for example, make fishing difficult for locals and have a negative impact on the village area. This can contribute to the implementation of strategies or activities, notably the better creation and enhancement of safety methods in terms of the quality of life and comfort of the water settlement's community. Apart from the community responsibility itself, it is also the authorities' responsibility to ensure the well-being and safety of the people living in water village. This can be achieved in several ways, including by working with regulatory authorities

such as the Sarawak Rivers Authority and Sarawak Forestry Corporation. The authorities can also disclose safety measures and explain more the information related to the crocodile habitat population to the villager in water village. The community must be aware of pertinent information regarding crocodiles in the Limbang River in order to make people feel less fearful and more at peace. Also, communication is essential, particularly in the outlying settlement of water village. A functional communication network sensor and nearby accessibility for the villager are essential for the people in water settlement area, particularly the elderly, pregnant women, and children. This will also contribute to the improvement of the community's wellbeing in the water settlement area.

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