



# Typology of Waterfront Settlement in The Sibolahotang Street Balige

Rizky Annisa Lestari<sup>1\*</sup>

<sup>1</sup>Independent Researcher, Medan, Indonesia

**Abstract.**Based on bathymetric measurements (Lukman 2010) the circumference of Lake Toba is 428.7 km. Toba Samosir regency coastline length is 115.8 km or 24.7% of the total length of Lake Toba's coastline. Balige district as the capital of Toba Samosir Regency has a density level of 49023 people/km<sup>2</sup>. With a large population and the highest density level in Toba Samosir regency, residential areas spread from the center to the outskirts of the Balige district. Along with technological advances in the current era of globalization, the potential for tourism in Indonesia is growing rapidly. Residents who live on the shores of Lake Toba compete in the tourism sector by establishing various types of inns, restaurants and various recreational areas along the shores of Lake Toba. Each waterfront settlement on Sibolahotang Street has different typology from one another waterfront settlement. By observing the waterfront settlement typology, this research is carried out so that an appropriate planning and designing towards the settlement can be done in the future.

**Keyword:**Balige, lake, settlement, typology, waterfront

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## 1 Introduction

Based on bathymetric measurements [1] the circumference of Lake Toba is 428.7 km. Toba Samosir regency has the second longest coastline after Samosir regency with a coastline length of 115.8 km or 24.7% of the total length of Lake Toba's coastline. Balige district as the capital of Toba Samosir Regency has a population of 44,365 with a density level of 49023 people/km<sup>2</sup> [2]. With a large population and the highest density level in Toba Samosir regency, residential areas spread from the center to the outskirts of the Balige district. Located on the shores of Lake Toba, Sibolahotang Street has a length of 3.2 km.

Residence for some people is not only a place to live, but also have a broad functions such as a place to work, study, gather, socialize and activities that support survival [3]. The classification of settlements is broadly divided into 4 classifications [4], namely: 1. Boundaries (a region or

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\*Corresponding author at:Flamboyan Raya Street No. 9, Tanjung Selamat, Medan, Sumatera Utara, Indonesia

E-mail address: risaannisa25@gmail.com

territory of a settlement that established by the community), 2. Facility (a settlement divided into two forms, public facilities and social facilities), 3. Zone (classification of activity area in a settlement that ruled based on beliefs structure, customary rules or habits in the community), and 4. Ornament (Varieties of ornament are main elements that found in many settlements, natural and craftsmanship).

Abdullah [5] identifies settlement pattern into two types : 1. Compact settlement (Radial, linear, and chessboard shape) and 2. Scattered (Multi centered and whole dispersed). According to Taylor [6], there are two pattern of settlement : 1. Cluster (consist several units or several group of dwellings that centered to prominent space.) and 2. Face to face (linear shaped, between the dwelling units along the settlement and linearly placed in the middle.).

Physical condition of the environment determined the shape of waterfront settlement. Hassan [7] explained that topographical aspects affect the layout and orientation : 1. Inland water village, 2. Outward water village, 3. Parallel water village, 4. Water village, 5. River mouth village. Settlement patterns are not formed without being influenced by several factors. There are several factors in the formation of settlement patterns [5], namely: 1. Safety conditions, 2. Dependency, 3. Group relations, 4. Politics, 5. Religion, 6. Ideology, 7. Culture, 8. Nature form, and 9. Availability of infrastructure.

Batak Toba ethnic are very influenced in everyday life that it affects all aspects of the life of the Batak Toba community as well as in forming settlements [8]. Batak people live in a village commonly called Huta. Myths about the ancestors of the Toba Batak ethnicity affect the orientation of settlements on the shores of Lake Toba.

There are several theories for the development of waterfront settlements in Indonesia [9]: 1. History of residential/settlement neighborhoods existence in riverside cities can be divided into two ; the development started by the arrival of a certain ethnic group in a location on the river bank, which then settled and developed from generation to generation to form a community and tend to be very homogeneous, closed and develop certain traditions and values and development as an alternative residential area, due to the increasing flow of urbanization, which resulted in a wild and urban slum area, 2. The stages of development of the riverside urban residential area are: the initial stage is marked by the dominance of the service of the water area as a source of water for the living needs of the urban community, which is still a group of settlements on the banks of the river and on the water, when the city needs communication with other locations (trade interests) then the water area is a transportation infrastructure and it can be assumed that the physical development of the city tends to extend along the river bank (linear), and the following growths are marked by the increasing complexity of functional activities so that the intensity of activities around the waters are getting higher.

People who live in the shores around Lake Toba generally work as fishermen and farming rice fields. The choice to live by the water is the right choice for some residents to facilitate irrigation paths from the lake for rice farmers or uniting fish ponds for fishermen. There are eight categories of waterfront settlement typology [10] ; 1. River divides the city, 2. City at the edge of the river, 3. City is divided by some rivers and creeks, 4. Swamp city, 5. Rivers divides coastal city area, 6. River divides mountain city, 7. River divides lake city, 8. Coastal city that is near to a river. There are two characteristics of waterfront settlement [11], physical that includes land-use, land-shape, slope, soil type, coast topography and social characteristics that consists of, age, gender, family dependents, population, education, marital status, ethnicity, language, religion, landownership, employment, income.

Along with technological advances in the current era of globalization, the potential for tourism in Indonesia is growing rapidly. One of the impacts of the globalization process that occurs is changes in urban products, namely changes in the urban system at the local, regional, national and global levels [12]. Residents who live on the shores of Lake Toba compete in the tourism sector by establishing various types of inns, restaurants and various recreational areas along the shores of Lake Toba.

Divided by the function, there are seven type of waterfront settlement [13]: cultural waterfront (type of waterfront covering cultural activity, education, science and knowledge), environment waterfront (waterfront type improve the environment quality), historical waterfront (historical waterfront is developed to conserve the historical buildings), mixed-use waterfront (mixed-used waterfront is a mix of housing, offices, business, and culture), recreational waterfront (type of waterfront that provides recreational facility), residential waterfront (waterfront settlement), and working waterfront (heavy-duty industries and port).

Each waterfront settlement on Sibolahotang Street has different typology from one another waterfront settlement. By observing the waterfront settlement typology, this research is carried out so that an appropriate planning and designing towards the settlement can be done in the future.

## **2 Methodology**

This research is using qualitative method. Qualitative method is a research procedure that resulted in descriptive data in words, written or verbal or observation [14]. This research is focused in observing different typology of waterfront settlement. The research held in Sibolahotang Street, Balige district, Toba Samosir regency. Located on the edge of Lake Toba, as we can see in figure 1, Sibolahotang Street is 3,2 km long and about 1,8 km right next to the coastal area.



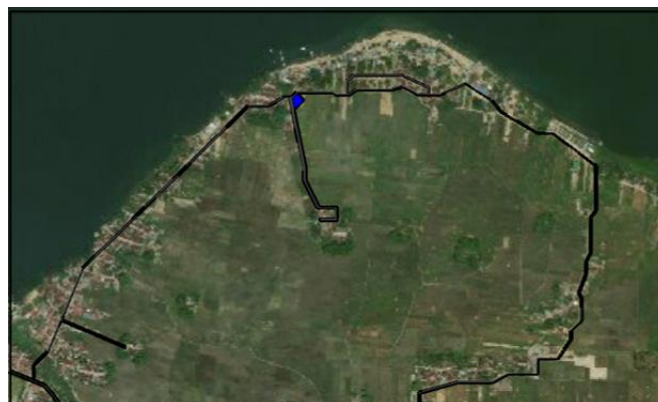
**Figure 1.** Sibolaho Street

### 3 Result and Discussion

There are several type of waterfront settlement typology based on function, characteristics, and settlement patterns. In this research, the typology of waterfront settlement in Sibolaho Street based on the function as the parameter. According to the observation, from seven typology waterfront settlement, only four that can be found in the Sibolaho Street, cultural waterfront, mixed-used waterfront, recreational waterfront, and residential waterfront.

#### 3.1 Cultural waterfront

Tomb of Raja Hizkia Simangunsong is a sacred site to the community in the settlement. Was Chief of The Village, Raja Hizkia Simangunsong was a big figure to the community. His tomb is a cultural mark. The Batak Toba tribe treatment to their ancestors are very highly. They erected big tomb as a memorial in the middle of the settlement that shown in figure 2, for their ancestors like Raja Hizkia Simangunsong's tomb.



**Figure 2.** The cultural waterfront area

#### 3.2 Recreational Waterfront

Several beautiful beaches can be found at Sibolaho Street. The community in the waterfront settlement did not waste the potential these beaches have. The community developed the beaches so it will attract tourists to come. There are two beaches, Sibolaho beach and Bulbul beach (Figure 3). Both beaches offer beautiful view of Lake Toba landscape for tourists

to enjoy. Other than beach, there is also a waterpark on Sibolahotang Street. Maranatha Waterpark Lumban Bulbul is a waterpark on the edge of Lake Toba. The tourists can swim and enjoy the pool in the waterpark with a view to the lake.



**Figure 3.** The recreational area

### 3.3 Mixed-use Waterfront

As one of Indonesia's most important tourism destination, Lake Toba become a spotlight in tourism. The tourism development in Lake Toba grow rapidly to provide good facilities for the tourists. Residents who live in the shores of Lake Toba established various type of inns, restaurant, coffe shop, and souvenir shop. Commonly, the residents open the shops or the inns in their own home. Most of the residents, shown in figure 4, in the community gain their income this way.



**Figure 4.** Mixed-use waterfront

### 3.4 Residential Waterfront

Many residential in Sibolahotang Street located not at the shore of Lake Toba (Figure 5). The residential that located in the shore mostly used for another function as business and office. The residential located in the middle or in the inside part of Sibolahotang Street.



**Figure 5.** Residential waterfront settlement

#### 4 Conclusions

Based on the function, there are seven typology of waterfront settlement. In Sibolahotang Street, only four type can be found, cultural waterfront, recreational waterfront, residential waterfront and mixed-used waterfront. The growth of tourism that happen rapidly in Lake Toba area change the waterfront settlement community lives. Commonly, the waterfront settlement community residents that lives on the shore of Lake Toba used to be a fisherman or farmer. Now, most of the residents open inns, homestay, restaurants, coffee shop, and souvenir shop from their house. The tourists enjoy this experiment more because of the authenticity and the closeness to the local community. Beside the experiment, the tourists also enjoy the beautiful view of Lake Toba landscape from the shore.

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