Typology of Bajo Tribe Settlement in North Maluku

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Abstract. This study aims to identify the typology of settlement and analyses spatial pattern, infrastructure and settlement conditions by literary review and field observation. The results show that the largest of Bajo Tribe Settlement in north Maluku is located in Kayou District of South Halmahera with the 2609 population in 2016 in Laluin and 1071 in Posi-posi Villages. Typology of settlements is almost similar in both villages; during the period of 1970-1990, the settlements was deployed on shallow and potential coastal area, but in period 1990 until now, several houses is deployed on mainland area due to change of living from a fisherman to civil servant, businessmen, dealer, etc. House condition consists of three categories: traditional or temporary dwelling, semi-permanent, and permanent house. The back and below of house is used for boat mooring and storing equipment because it is easy in maintenance. A house around the main road of settlement is generally developed to permanent house with wall made of brick or zinc made of concrete and roof. However, the pattern of settlements is different; linear in Posi-posi and circular in Laluin village because it is influenced by the condition of the shallow area.

Keywords: typology, Bajo Tribe settlement, traditional fisherman.

1. Introduction

Indonesia is the largest archipelago in the world covering around 17,504 islands and 5.8 million km² of sea; consists of 0.3 million km² sea territories and 2.95 million km archipelago territory [1]. Many people live in coastal areas in Indonesia, especially Bajo Tribe. They utilize marine and coastal resources as their main income. Generally they work as a boat owner, fishery labor and other marine organism farmers, fish traders, fish processors, and the equipment suppliers of fisheries production factory. Most of them live under the poverty line [2].

The number of population in Bajo Tribe is around 90,000–150,000 people [3]. They live in Riau (known as duano), North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, East Nusa Tenggara, Maluku, and North Maluku [4]. In North Maluku, they settle in coastal areas of South Halmahera, East Halmahera, Sula and Taliabu Islands. They used to live on waters, so that; they are very difficult to be relocated in mainland area. Therefore, the settlement arrangement strategy of Bajo Tribe needs to be adjusted to their characteristics and patterns of the original settlement. According to Silas [5]; settlement development is a process of comprehensive interaction between the occupants, the location and the environment as a result of social, cultural and economic activities. The basic design of fisherman settlement should consider the house, place, building, path and drainage design which include adequate houses free of flood, sustainable waste management, easily accessible fishing boat harbors and decent infrastructure [6].

The economic conditions of Bajo Tribe are solely rely on their earning as a fisherman, so that, their income is not yet able to sustain decent life, thus supporting business is needed to increase their
income. Fishing community activities must be supported by economic facilities in the form of production facilities in both housing and industrial scale [7]. The availability of economic, social and cultural facilities such as trade places and local culinary business can functionally support the coastal ecotourism-based fishermen settlement [8]. According to Holmberg [9], there are three aspects in sustainable development; (1) Sustainable economic development, supply goods from renewable natural resources, keep the balance of shopping and public debt, (2) Environmental sustainable; maintain natural resources, avoid the exploitation and utilization of natural resources un-renewable, maintain biodiversity, stability of atmosphere and ecosystem. (3) Sustainable social development: ensure social justice, provision of social and public facilities, gender equality and net political system.

2. Methods
This research is qualitative research that emphasizes on the typology identification of settlements, spatial pattern, and environmental infrastructure condition, and also analyzes the change of house characteristics and additional business. This study focuses in Kayoa district of South Halmahera covering Laluin and Posi-posi villages because the largest of settlement are located in both villages. They are the representation of Bajo Tribe settlement in North Maluku. Data collection consists of 3 steps: (1) Field observation to obtain primary data about the typology and the development of Bajo Tribe settlements. (2) Literary review: to complement secondary data about the development, economic and social conditions, and sustainable development strategy of coastal areas especially in Laluin and Posi-Posi villages. (3) Interviews: to obtain information related to primary and secondary data to support data obtained through field and literary studies. The data collected were analyzed by descriptive qualitative to describe its settlement condition and its development during last ten years.

3. Discussion
3.1. Bajo Tribes Lifestyle
The Bajo tribe is a traditional and skilled fisherman. His life entirely depends on the sea. They are often referred as sea nomads or "sea people" [10]. The term "Bajo", "Bajo Tribe", or "Bajo Man", is commonly used by eastern Indonesian to refer to these sea nomadic nomads, scattered in various regions [11].

Bajo Tribe has settled in North Maluku since 1900s. They deploy in coastal areas, especially around Sula Island, East Halmahera, West Halmahera, Taliabu, and South Halmahera. They are commonly known as marvelous sailors or wonderful fishermen. Their lifestyle is always connected to the water or sea and very difficult to be relocated in the mainland area because their livelihoods are fisherman. Therefore, they always live around of coastal areas which have potential marine resources.

Bajo tribe forefather in North Maluku is immigrant from Sulawesi. Initially, they lived in the boat (lepa) which is equipped with food and fishing equipment like a house on the mainland. Along with the change of mindset and the income increase, they began to build simple house as temporary dwellings by using wood materials for columns and beams and palm leaves as wall and roof. Furthermore, the temporary settlements continue to grow and develop to be permanent settlements due to the increase of Bajo Tribe population.

3.2. The Condition of Bajo Tribe Settlements
Settlement is a space or containers in which humans perform daily activity and a space can be defined as an area with a geographic limitation [12]. The limitation of a space affected not only by the surrounding physical condition but also by social and governmental system which occurred everywhere. The development of a space is required to support various human activities, to encourage benefits, environmental conservation, awareness of environmental values, and to imply the efforts of social, economic, and investment in the development of residential space environment as a container of human activity [13].

The largest Bajo Tribe settlements are located in Kayoa District, South Halmahera: Laluin and Posi-posi Villages. Bajo Tribe Settlements in Laluin village still traditionally grows and develops until now.
and its culture is still developed. Along with the increasing number of Bajo Tribe people, a new settlement is formed in Waidoba Island. Furthermore, the settlements development in this region continues to increase and becomes a definitive village.

Figure 1 portrays the settlements condition in Laluin and Posi-Posi Villages in 2006. The settlement condition is very simple with the roof material is generally made of palm leaves. Few of them use zinc roof. House wall uses wood and bamboo blades. The infrastructures are still limited. The footpaths are generally made of wood material and few parts of main road are made of concrete.

![Figure 1](image1.jpg)

Figure 1. The Condition of Bajo Tribe Settlements in 2006.

Figure 2 shows the housing conditions in 2017. Few houses are still simple with wall made of wood and bamboo blades and most houses uses zinc material for roof. Houses located around main road are generally developed to the permanent house with wall made of brick or concrete and roof made of zinc. This condition indicates that their income has increased because some people already have additional livelihood, such as: fish cages, making sago cake, street vendors, fish dealer, etc.

The condition of infrastructure has increased if compared to that in 2006. Most roads use concrete material (50-60%). Pure water plumbing has been installed. As the water supply is inadequate, so, to meet the need, people use rain water or take water from other island. Electrical installation is also available in settlements area but as the power supply is inadequate, so it is only supplied for night time and also for special day such as festival day.
3.3. The Typology of Bajo Tribe Settlements

Figure 3 portrays the typology and pattern of Bajo Tribe settlements in Laluin and Posi-posi villages, South Halmahera. It is the largest of Bajo Tribe settlements in North Maluku. Settlement of Bajo tribe in Laluin is located around shallow areas and has good fishery potential. Bajo Tribe settlements are floating settlements. They grow organically and spontaneously along the shallow areas with a linear and circular shape. This condition can be seen in Laluin and Posi-posi Villages; settlements develop without planning and develop naturally in potential coastal areas or tidal areas. They have lived in Laluin since 1900s and 1970s in Posi-posi, and then, they continue to grow until today. Populations in 2016 were 2609 in Laluin and 1071 in Posi-posi (see table 1). They settle in coastal areas to support their activities as a fisherman and their habit of living on the sea.

The settlements typology in Laluin and Posi-Posi are similar to those in other areas. They are oriented to sea, the back or below their house are used for boat mooring and storing equipment due to its easiness in maintenance. However, pattern of settlements is different; Posi-posi is linear due to its shallow area and Laluin is circular due to its potential coastal areas. Settlement facilities in Laluin consist of roads, offices, mosques, schools, docks / harbors, markets, cemeteries, security posts, sports fields / public spaces. Posi-posi has the similar facilities to those in Laluin, but the market does not yet exist.

Initially, public facilities, using wood construction, were built on the sea areas. Now, they, such as schools, offices, and health centers, have been built on mainland area with permanent construction. Only the mosques are still built on the sea area, but they also use permanent construction or concrete material. In Posi-posi, generally public facilities are built on the sea, except for educational facilities or schools. They are built on mainland area with the permanent construction. It indicates that the facilities have been improved compared to those in 2006.
Table 2 shows that the house conditions consist of 3 main categories; (1) Traditional house including simple and temporary dwelling made of wood and bamboo, roof made of palm leaves. (2) Semi-permanent houses using wood and bamboo construction and roof made of palm leave or zinc. (3). Permanent houses using brick and concrete material, roof from zinc material. Generally, permanent houses are located around the main road. During the period of 1970-1990 the settlements are deployed along the shallow area and potential coastal area, but from 1990 to now, several houses are deployed on the mainland area. It is due to the change of livelihood from a fisherman to civil servant, businessman, dealer, etc.

The facilities have been improved since 2006. Pure water plumbing has been installed in Laluin Village science 2013, but the supply is still inadequate. Government (PDAM) has supplied water since 2013. But, Posi-positi gets no pure water plumbing from PDAM, so that they take pure water from another island; spring water of Tiga Lalu Island and from rain. Electrical installation is also available in Laluin and Posi-positi villages since 2015, but the supply is only for night time and for special day because the power is still limited. Therefore, it is necessary to improve environment infrastructure by sustainable development concept.

In order to improve the environment quality and the income of Bajo Tribe, the sustainable arrangement of Bajo Tribe settlement in Kayoa District consists of 3 categories: (1) Sustainable economic: development of household business; drying fish and bloater (ikan fufu), making crackers from fish and shrimp, fish sprouts, and cultivation of seaweed. (2) Sustainable Environment: clean system of waste disposal, sustainable fishing system: banning of fish bombs or alike, preservation and reforestation of mangrove, (3) Sustainable social development: preservation of local culture, improvement of infrastructure, utilization of rainwater and solar energy as the solution of the limitations of water and electric energy resources. On the other hand, additional business can be developed for improving their income, such as: home industry for fish canning and making sago cake, fish dealer, and street vendors. Moreover, Kayoa District is potential to develop coastal ecotourism, trade places and local culinary business.
Table 1. Description of settlement condition in Kayoa District from 1900-2017.

| Year      | House condition       | House Function                                      | Description of settlements                                      |
|-----------|-----------------------|-----------------------------------------------------|-----------------------------------------------------------------|
| 1900s     | Simple                | moorings boat, storage of catch & equipment         | Lived in boat (lepa)                                            |
| 1970-1980 | Temporary             | dwelling, moorings boat, storage of catch & equipment | Began to settle in temporary dwelling, deploy to Posi-Posi village. Facilities: mosque and school |
| 1980-1990 | Traditional           | dwelling, moorings boat, storage of catch & equipment | spread to shallow area Facilities: mosque, school, footpath from wood & stone expanse |
| 1990-2000 | Traditional and semi-permanent | dwelling, moorings boat, storage of catch & equipment, business (several) | develop to mainland area Facilities: mosque and school, footpath from wood, road from coral reef |
| 2000-2017 | Semi-permanent and permanent | dwelling, moorings boat, storage of catch & equipment, business (several) | Several houses are located in mainland Facilities: mosque, school, health, footpath from wood, road from concrete, electricity, water installation (PAM only in Laluin) |

Source: analyzed 2018.

4. Conclusion
Bajo Tribe has settled in North Maluku since 1900s. They are deployed in coastal areas, especially around East Halmahera, South Halmahera, Sula and Taliabu Islands. The largest settlement is located in Kayou District, South Halmahera with the number of population in 2016 was 2609 in Laluin and 1071 in Posi-posi Villages.

The typology of settlements is almost similar in both villages; during 1970-1990 the settlements are deployed along their shallow and potential coastal area, but from 1990 until now, several houses are deployed to mainland area due to the change of their livelihood from fishermen to civil servant, businessmen, dealer, etc. their house condition consists of three categories: (1). Traditional house uses combination of bamboo and wood construction, (2) semi-permanent house uses combination of wood and concrete, (3) Permanent house uses brick and concrete materials. The back or below the house is used for boat mooring and storing equipment due to its easiness in maintenance. However, the pattern of settlements is different; Posi-posi has linear pattern while Laluin has circular pattern. It is due to their shallow area and potential of coastal areas.

In 2017, few houses are still simple with wall made of wood and bamboo blades, and most of them use zinc for roof. Houses located around main road of settlement is generally developed into permanent house with wall made of brick or concrete and roof from zinc. Most roads use concrete material (50-60%). Pure water plumbing has been installed in Laluin, but the supply is inadequate. Electrical installation is also available in Laluin and Posi-posi villages but the supply is only for night time and special day because the power is still limited.

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