# Observation of the Saibatin Traditional House with Biological – Architecture Approach

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**Abstract.** Traditional house was one of the symbol of a previous culture that was inherited from generation to generation of each tribe, with a design adapted from the natural conditions of its time, which were built in such ways as to be used and utilized as needed at that time. The Saibatin traditional house is one of Lampung traditional house type, often called lamban or nuwo, also known as stilt houses, where full of symbol, philosophies, and cosmological content of Lampung culture. The objective of this research is to observe the Saibatin traditional houses located in Pekon Kenali, West Lampung Regency, with the biological–architecture approach. The research was conducted by observation methods and descriptive research to identify the object by comparing between data from literature and the results of documentation, as well as observations from research samples. The data from the object of research would be described and juxtaposed with the theories of biologic-architecture. The observations of The Saibatin Traditional House were executed on the whole part of the house inclusive of roof, wall, floor, columns, beam, stairs, foundation and basement. The results show that most parts of The Saibatin Traditional House are using natural materials which are part of biological architecture. The conclusion of observation research of The Saibatin Traditional House that biological architecture is not only suitable for the ancient building of old time, it also adaptable to nowadays situation, proven their existence can still adjust to the development of the era without leaving local wisdom.

## 1. Introduction

Spanning from Sabang to Merauke with total area of 1.905 million km$^2$, Indonesia is one of the largest archipelago countries in the world, with a variety of tribes and cultures. The wealth of ethnicity and culture that Indonesia has includes various local languages, traditional clothing, to traditional buildings (traditional houses).The existence of traditional houses in Indonesia is very diverse and has significance in the perspective of history, heritage, and the progress of society in civilization. Further explored, we could see the diversity of culture, especially traditional buildings with their respective characteristics [1]. Traditional architecture in Indonesia had been through a long journey and received outside influences related to trade and religion relations in the archipelago. One of the tribes in Indonesia is the Lampung tribe, which is in Lampung province, the southernmost part of the island of Sumatra.

Lampung traditional house is often called a stilt house which is full of symbols, philosophy, and cosmological content of Lampung culture. Most of them are made of wood like most of the houses in the tropical forest areas with sloping roofs that are typical of Asian architecture [2]

**Figure 1.** Lampung traditional house.

Pekon Kenali is the forerunner of the Saibatin Lampung community and belongs to a traditional or historic area in West Lampung Regency, Lampung Province, Indonesia. Pekon Kenali was feared to be extinct. Some of the buildings that can still be found in Pekon Kenali are inclusive of traditional houses of the local community known as Lamban, surau and walai or hall that function as rice barns. The Saibatin people in this region, in general are from the Lampung ethnicity, and commonly called 'Ulun Lampung' (Lampung people). Traditional – geographically are tribes that occupy the entire Lampung Province and partly in Southern part and Middle part of Southern Sumatera province, such as Martapura, Muaradua in Ogan Komering Ulu (Oku), Kayu Agung, Tanjung Raja, Ogan Komering Ilir, Merpas in southern part of Bengkulu, also Cikoneng in west coast of Banten. The philosophy of Lampung society is Sang Bumi Ruwa Jurai, which mean a household of two bloodlines, each of them delivered a pepadun and saibatin civil society.

**Figure 2.** Several types of Saibatin traditional house in Pekon Kenali

**Figure 3.** Several types of traditional houses in Muaradua.

Generally, they use organics building materials from their surroundings, such as wood, bamboo, palm fibres. All these materials were processed in a simple way. These inclusive of the building structure. The structure is the framework of the whole building structure that supports the building to allow the building to stand perfectly. There are many types of building structures in architecture, such as frame structures (poles and beams), bearer wall type structures, large span type structures, combined type structures, shell type structures, tent type structures, and others.

Biological architecture is the driving force of architectural activities. Biological architecture is very compatible with the climate of traditional buildings, where the location of the observations in this study exist. Biological architecture reflects a harmonious, original, rhythmic and dynamic way of life, which is intertwined between human life and the surrounding environment. Biological architecture will use natural technology to penetrate the critical state of nature that has begun to be threatened, to improve the quality of life, namely spirituality, and the quality of buildings with material parts. Building materials used in biological architecture are building materials from nature, such as wood, bamboo, thatch, reeds and palm fibres. Planning of biological architecture always pays attention to construction in accordance with where the building is located. The technology is simple, the shape of the building is also determined by the series of building materials and by functions according to the basic needs of residents by building them.

**Figure 4.** Biological architecture building.

Biological architecture as a supporting component of architectural buildings in this research area makes a more value in the study area. Where, the community around prioritizes building materials in their natural surroundings. Wood, bamboo and organic roof coatings. Wooden beams are used to support building structures, while processed wood in the form of boards is used as floor coverings and doors and windows. Whereas bamboo, in some buildings, is used as wallcoverings, ceiling coverings as well as supporting the roof construction. palm fibres are used as roof coatings for crop storage.

The purpose of this research is to observe the Saibatin traditional house with biological – architecture approach by collecting data from several samples, identifying the objects, comparing the documentation data on the field with the literature, and observing the samples. The result of observation shows that even though there are some parts of the shape of the buildings have been changed, but the local community still retains the biological architecture in the building where they live.

## 2. Methodology

This research used direct and intensive field observation methods to collect and document data. Right after that, writers used descriptive research method to analyse data. According to Malgorzata [3], observation is one of the most important research methods, used in a range or research strategies. Then, Kothari [4] revealed that the major purpose of descriptive research is description of as it exists at present.

Data collection is done by observation, documentation and interviews. Observations were made on selected samples which were the object of research, in this case were the building of Saibatin traditional houses found in Pekon Kenali, West Lampung regency. All of elements of the houses were observed

and documented by writers. The elements observed were consist of roof, wall, floor, beam, pillars, stairs, foundation and basement. The source of the data was divided into two, the primary data and secondary data sources. The primary data was essential sources coming from Saibatin traditional houses. The secondary data was taken from literatures such as journals, books, that were relevant to Lampung traditional houses and biological architecture.

Based on the results of data collection, documentation and observation, writers analysed the data collected by describing and detailing the building elements of the existing Saibatin traditional houses. Furthermore, writers also comparing the collected data with the reference literatures of biological architecture. The methodology used was summarized at the Figure 5 below.

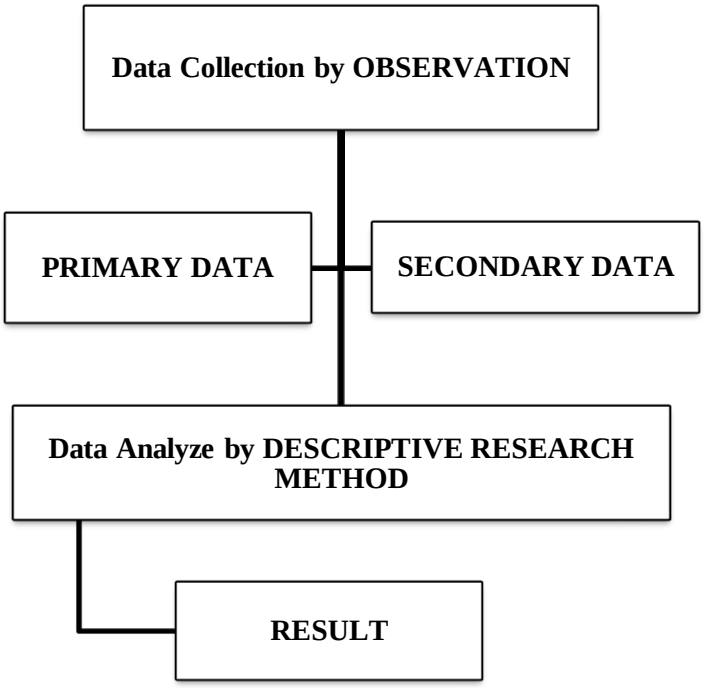


**Figure 5.** Methodology flow chart

## 3. Result and Discussion

Based on the results from the field observations, the data obtained is inventoried, identified and analysed, so that from the data and facts of field observations the following discussion results are obtained:

### *3.1 Saibatin Traditional House*

Just like most of traditional house in Indonesia, according to Ibrahim [5], Saibatin traditional house also had a philosophy of head, body and legs in its architectural form. Nevertheless, there were differentiated between Saibatin traditional house and another traditional house. The differentiation was at the column or leg of a Saibatin traditional house. They look like they seem separated from the body and head.

#### *3.1.1 Roof*

Generally, the roofs of Saibatin traditional houses have geometrical pyramid shaped. And there also could be found hat certain Saibatin traditional houses (typically 400 years old house) used the organic material such as palm fibres or thatch as the roof covering materials. The roof truss for the houses were

constructed entirely from the wood in the form of blocks while some of them did use bamboo. For the ceiling, it was found that the ceiling frames use the wooden blocks or wooden boards as the materials whereas some houses did use bamboo in substituting the wood. From the outside of the house, it could be observed that the canopy width is wide where the wide canopy with an average width of up to one meter or more made of wood and bamboo.

**Figure 5.** The pyramid shaped roof.

**Figure 7.** 400 years old Saibatin traditional house with palm fibres roof cover.

**Figure 8.** Ceiling frames use wooden blocks and bamboo as a substitute.

**Figure 9.** Wide canopy made of wood and bamboo.

*3.1.2 Wall*

The wall of the traditional houses was made up from the same materials as the roof which are the wood and bamboo. The wooden and bamboo framed walls in the form of round cylindrical shaped. The frames are then covered with coverings. The wall coverings are made of wooden board while in some houses, the wall frame was covered by bamboo in the form of bamboo stems that have been processed and assembled become the desired part for wall coverings.

There are also openings made at the walls in which it is for the doors and windows. The doorframes and window frames are generally made of wood. Door shutters and window shutters are generally made of wooden boards. The wooden frames on the doors and windows use a simple joint system, known as an angular connection.

Vent, not all houses have ventilation holes. However, there are also those who use vents with the same material as walls in general, namely wooden boards and wooden beams.

**Figure 10.** Framed walls, wallcoverings, window frames, window shutters, those are made of wooden board.

*3.1.3 Floor and Floor Beam*

The framework on the wooden floor was entirely processed timber in the form of blocks while the floor cover using wooden boards with variety sizes. The size of the wooden boards is approximately found 30 cm x 400 cm with a thickness of 3 cm. In some houses, it could be found that bamboo was used as midrib for the floor coating.Most of the Saibatain traditional houses use timber as floor beams. This is because of the wooden natural resources are still abundant. From the beginning until now timber is still used to build houses.

Installation of floor beams done by supporting each other beams and without joint to one another. The connection system is carved into the connection area and with the pen. At the end of the beam pillar there is a distinctive ornamentation of the Lampung tribe called 'paguk'[6], which signifying the philosophy of the boat community.

**Figure 11.** Processed timber in the form of blocks for framework on the wooden floor.

**Figure 12.** Framework and 'paguk' of the wooden floor and the floor cover using wooden boards

*3.1.4 Building Structures/ Building Pillars*

The main frame or the main structure were in the form of a pole, with an approximate size of 20 cm x 20 cm. Specifically, the building support poles in the form of foundations, measuring of 30 cm x 30 cm.

The height of the foundation pile varies. Some of them have 200 cm - 220 cm height whereas some are 80 cm - 100 cm height. As a matter of fact, the height of the foundation pillars is adjustable to the needs. This foundation pillar affects the laying or position of the stairs and the number of steps which amounts to an odd number.

**Figure 13.** Building support poles in the form of foundations.

**Figure 14.** The main structure in the form of a pole, with a size of 20 cm x 20 cm.

*3.1.5 Stairs*

The function of stairs is an intermediary room between the lower floor to the upper floor. The location of the stairs for each house is on the side facing forward and side facing. While in 'lamban adat' building, the stairs are at the back position of the houses. This is in accordance with philosophical and culture of Pekon Kenali. This also is like the philosophy found at OKU [7].

As had been stated before, the height of the pole is adjusted to the height of the walls of the house up to the beam (ring balk) measuring 275 cm to 300 cm without a wooden connection. The ladder material is generally timber, both on the frame and on the footsteps area. Ornamentation were also found used in the area of the stairs, especially at the edge of the fence.

**Figure 15.** The location of the stairs for each house is on the side facing forward and side facing

**Figure 16.** Ornamentation used in the area of the stairs

*3.1.6 Foundation*

Foundation piles of the houses were made from the timber with larger dimension from house poles. The size of the foundation was around 30 cm x 30 cm, and it made from an intact timber. The size and height of the foundation piles are varying, from 80 cm to 200 cm, according to the function of the room [8].

**Figure 17.** Foundation piles made of an intact timber with larger dimension from house poles.

*3.1.7 Basement*

The space under the floor (literally the basement) is a compartment or area that is not fully utilized by the occupant of the house. Previously, Saibatin traditional house were built on stilts to anticipate the disturbance of wild creatures. Nowadays, the lower floor space has changed its function into a space that can be used for various activities, such as a crops barn, or to store building materials and many more. In some buildings, the basement area is no longer exposed. It had already covered by wooden wall; therefore, the house looks like a two-storey building.

**Figure 18.** The existing traditional Saibatin houses still retain the concept of houses on stilts

**Figure 19.** The Saibatin traditional house with wall covered at the lower ground.

*3.2 Biological – Architecture*

The term of biological architecture appears to show the close relationship between humans and the environment or the natural surroundings. Biological – Architecture is a science that connect humans and the environment. It also a knowledge about the integral relationship between humans and the environment according to Sopa [9]. A residence can be considered as an organic arrangement, which functions as a protector for humans.

The basic concept of this biological architecture already applied by our ancestor through the buildings of traditional houses. These traditional houses were using materials taken from nature so as not to pollute the environment and consider a design that can withstand all kinds of natural threats, such as wild animals and disasters such as floods, landslides, earthquakes, and many others. Traditional houses in the form of houses on stilts are the examples of the biological architecture of ancient Indonesian society.

**4.0 Conclusion**

Based on the results of research with field observations, inventory, documentation and data collection of Saibatin Traditional House, we can make conclusion that almost all parts of the Saibatin traditional house in Pekon Kenali including the structure of the building still using local materials that can be found

in their surrounding such as timber, bamboo, palm fibres and natural stones. These materials are known as organic materials and are included in the concept of biological architecture.

Nowadays, the preservation of houses on stilts concepts can be found in some houses, where the lower ground space remains open. While some others have been covered with walls, but still utilize the organic materials found around them. The use of a wide canopy building still can be found on the Saibatin traditional house in Pekon Kenali. To sum up, the existence of buildings with biological architecture must be maintained and preserved. Their existence proven can still adjust to the changing of times without leaving local wisdom.

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