

Environmental Characteristics of Fishermen's Settlements as a Form of Local Wisdom of Coastal Communities in Karang Sari Village, Tuban

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Abstract

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ment

Settlement is an area that functions as a residence and activity for its inhabitants. The characteristics of a settlement are influenced by the relationship between humans and humans, humans and nature, humans and the Creator. The purpose of this study was to identify the characteristics and factors that influence the formation of the fishermen's settlement of Karang Sari Village, Tuban. Settlements are formed not only because of physical strength, but also from social cultural factors and community activities. This study uses a qualitative method with a rationalistic approach. Methods of collecting data by interviewing several local communities and field observations. The results of this study show the characteristics of the settlement environment of Karang Sari Tuban fishermen, which is a combination of human mindset and culture that produces an environmental characteristic that is easily recognized through the physical structure of the environment, as well as community activities in the environment.

1. Introduction

Settlement is an area for residence used to carry out the activities of its inhabitants. Settlement characteristics related to environmental conditions and activities of its inhabitants. Settlements are formed because the domination of certain ethnic groups will be different from settlements that are formed because of the equality of livelihoods.

In addition to the results of physical strength, the formation of the environment in a settlement is also related to the socio-cultural factors that exist in these settlements. According to Rapoport (1969), the main factor in the process of the form of settlements is culture while other factors such as climate, geographic, political and economic conditions and conditions are modifying factors, Rapoport (1969). Then it can be concluded that environmental characteristics are strongly influenced by site conditions, the culture of the people, climate, location and geographical, political and settlement economic conditions.

Karangsari Village is one of the *fishermen's* villages located on the north coast of Tuban. In building its settlements, the *fishermen's* community of Karangsari Tuban Village still shows the local social and cultural system. Even so, the conditions of the coastal environment compel people to adapt to their environment, both the socio-cultural and physical environment. This adaptation process continues in accordance with environmental conditions and cultural transformation from time to time. The coastal environment conditions in Karangsari Village have their own characteristics related to the form of settlement.

The purpose of this study was to identify the characteristics and factors that influence the formation of the fishermen's settlement of Karangsari Village, Tuban.

2. Method

This study uses descriptive qualitative research methods because the problems studied are conditions that relate to socio-cultural communities related to places, activities that interact synergistically. The research location is in the fishermen's settlement of RT. 02 RW. 04 Karangsari Village Tuban. Sampling uses the field observation method with recording data of photo documentation, mapping, sketches and direct interviews with local communities and homeowners as well.

Data analysis is done by confirming data that has been sorted and grouped with references related to the focus of the study. The focus of the research is to identify the characteristics and factors that influence the formation of the fishermen's settlement in Karangsari Village, Tuban.

3. Theoretical basis

According to Norberg-Schulz (1984), fishermen's settlements are a place to live for fishermen who function as basic needs. Usually the location of fishermen's houses is very close to their livelihood, the rivers or beaches. While the form and atmosphere of the threat is not too much thought.

In general, settlement patterns will follow a socio-cultural system based on patterns of human activity. The pattern of fishermen's settlements will usually follow a coastline (linear) with conditions that tend to be homogeneous, closed and develop certain traditions so that they have characteristic settlements. Settlement patterns based on the nature of the community according to Kostof (1983)

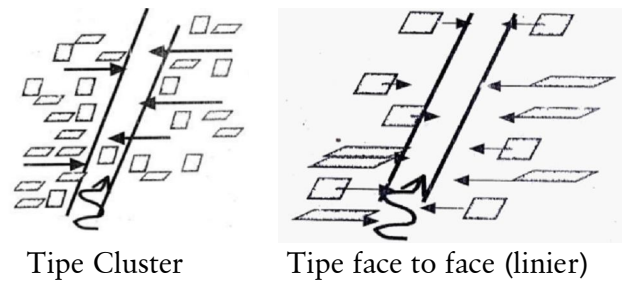


Figure 1. Settlement patterns according to Kostof (1983)

In related with the environment physical form, the interaction level is determined by the physical structure and arrangement of residence, symbolic aspects of residential units, homogeneity, and relative heterogeneity of each population, the nature of the control of information provided by each unit, the mobility of each population in where they live. (Rapoport, 1982).

Amos Rapoport (1969: 74-78), in his book, *House Form and Culture*, revealed the influence of topography as a determining factor for settlement construction. Rapoport states that there are 2 considerations for the community to choose their settlement, namely the local physical environment and socio-cultural choices.

The settlement environment formation is possible because of the existence of a residential formation process as a functional container based on patterns of human activity and the influence of settings (environmental hues) both physical and non-physical (socio-cultural) that directly affect the pattern of activities and processes. (Snyder, 1985)

The basic properties of the natural environment characteristics have affected humans from the earliest times in various ways.. The natural environment influences humans when setting up their settlements from choosing locations, using the right construction materials for adaptation to the climate, built the buildings with structures that are in accordance with the soil, and designing the shape of buildings that are in harmony with their surroundings. This element is a force that influences the form of human settlements from the beginning to contemporary cities. (Heryanto, 2011)

4. Result and Discussion

fishermen's Settlement RT.02 RW.04 Karangasari Village Tuban is located on the north coast of Tuban City, East Java Province. Geographically, the north is bordered by the Java Sea, south of Jl. Panglima Sudirman, on the east, borders the Mangunjoyo river which empties into the Java Sea, west bordered by RT.03 RW.04. The topography of the settlement is in the form of land with terraced contours. From the highway the elevation of the fishing village drops 1.5 meters, while from the Java Sea the elevation of the land rises 2.5 meters. Fisherman settlement map RT.02 RW.04 Karangasari Village, Tuban City can be seen in Figure 1.

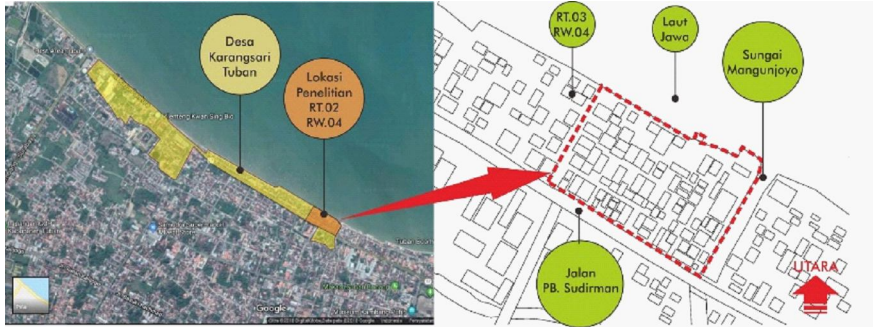


Figure 2. Map location

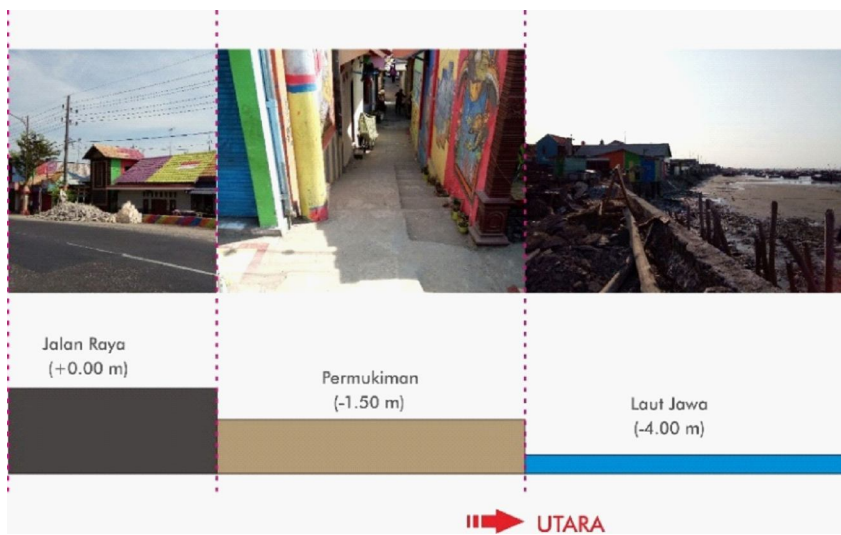


Figure 3. Location Contour

Based on the Tuban City General Spatial Plan for, fishermen's Settlements RT.02 RW.04 Karang Sari Village Tuban is a trading and settlement area.

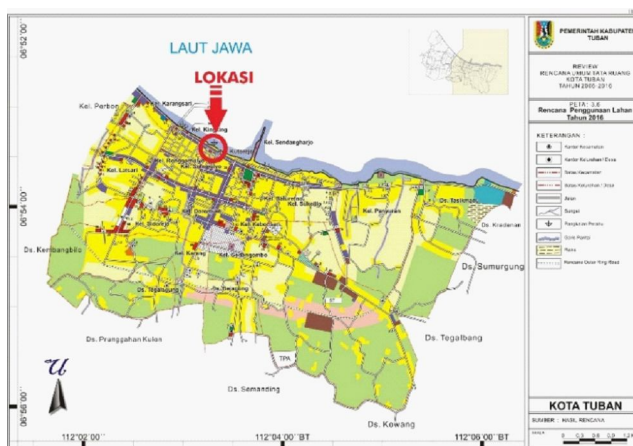


Figure 4. Tuban City RTRW Map

A. Community Socio-Cultural Activities

The fishermen activities in Karang Sari RT.02 RW.04 Village are catching fish in the Java Sea and then selling at the Fish Auction Place (TPI), but there are also fishermen who process their seafood first such as being dried and packaged then sold it.

In the settlements of Karang Sari Village RT.02 RW.04, there are still activities of community cooperation (gotong royong) when one of the residents renovates or builds his house. If one of the residents renovates or builds a house, the other residents will help each other during the build foundation and roof. In addition, if there is one person who has rights such as marriage, circumcision, then the women will help in the kitchen area to prepare food, while the men will help prepare the venue in the Fish Auction Place (TPI) area. The event was held in the TPI area because the residents' houses were in narrow alleys so they could not accommodate guests.

The socio-cultural activities in the fishermen's settlements of the other Karang Sari RT.02 RW.04 villages are Bari'an and Sedekah Laut or Larung Sesaji. Bari'an is carried out if there is a riot or a sign that a disaster will occur with the aim to keep the disaster away. a long time ago the bari'an tradition was carried out by making porridge of three to four colors, then partially floated in the sea and some were placed in front of the door of the residents' house then the next day they were thrown away. At this time the bari'an tradition is carried out in residential areas, by making three to four colors of porridge, then residents throw the porridge to each other residents.



Figure 5. The Bari'an event was held on the village road

While the *Sedekah laut* event or the *larung sesaji* are performed as a form of gratitude to the Almighty God. This event is held once a year depending on the availability of funds from residents to carry out the event. Previously the *Sedekah laut* tradition was carried out by slaughtering cows in one of the residents' houses, then decorating the heads and making *bekakak* or miniature boats containing flower and stuffed food, then paraded around the village along narrow alleys and ended at the beach. Then the cow's head was set above the coconut wood pillar on the beach. While *bekakak* / miniature boats containing food are paraded again using colorful flagged boats to the middle of the sea. At a certain distance that has been given a boundary mark, the miniature of the ship is floated into the sea until the waves take it away as a symbol of the offerings of the fishermen so that the sea gives abundant fish yields. *Bekakak* is a miniature boat as a symbol of boats, in which there are offerings of a pair of dolls that are symbols of the King and Queen of the north coast.

The *melarung* tradition has not been carried out since two years but was replaced by carrying a cone on the boat and then doing the carnival at sea, along with the crew and family. After doing the carnival at sea, then the cone is eaten together. This tradition is a symbol that by respecting food, and not throwing food at sea, then the catch will be abundant. The ritual that begins with decorating the ship with a variety of flags, as well as other knick-knacks is a form of gratitude for the blessings and fortune received by fishermen. In addition, it is also to pray for the predecessors, namely the fishermen who died in the sea, as well as for the safety of the fishermen who are still at sea. In addition to praying for the predecessors, the fishermen who died in the sea, as well as for the safety of the fishermen who are still at sea, this event also aims to foster a high sense of togetherness and mutual cooperation. Spatial Patterns Settlements of Karang Sari Village Fisherman and their Affecting Factors.



Figure 6. Sesaji Kepala Sapi

Source: (Helena, Nugroho, and Ernawati 2014)



Figure 7. Bekakak or Boat Miniature

Source: (Helena, Nugroho, and Ernawati 2014)

B. Layout

a. Macro Layout

Settlement of RT.02 RW.04 Karangsari village consists of natural and artificial environments. The natural environment is the Java Sea and the Mangunjoyo River. While the artificial environment includes: roads, houses, fish processing areas, wells, drainage, communal WWTPs. Natural potential in RT.02 RW.04 Karangsari Village is the Java Sea, where fishermen catch fish. The type of vegetation found on the edge of the main road / settlement is the Angsana tree. Vegetation in the road network in the settlements has shrub plants such as, Lidah Mertua, Kuping Gajah and Gelombang Cinta. While on the beach side there is a Sea Pine tree.



Figure 8. Jenis Vegetasi

Based on Minister of Public Works Regulation No. 06-2007 concerning the Building and Environmental Arrangement Guidelines, the Regional Planning Component is divided into 8 aspects, namely: 1. Land use Structure, 2. Land Use Intensity, 3. Building Layout, 4. Circulation Systems and Connecting Lines, 5. Open Space Systems and the Green System, 6. Environmental Quality Management, 7. Environmental Utilities and Infrastructure Systems, 8. Preservation of Buildings and the Environment.

Land Allocation Structure & Land Use Intensity

The land use structure in settlements RT.02 RW.04 Karang Sari Village consists of settlements, trade & services, fish processing sites, open areas for drying fish, green open spaces and public facilities, namely toilets and laundry places. While the land use intensity dominated by settlements.



Figure 9. Land Use Structure

Building Layout

The building layout for residential RT.02 RW.04 Karang Sari Village dominated by a floor buildings with facing north and south orientation. From the observations found 6 ethnic Chinese heritage houses facing north and south, and traditional Javanese type house which face to south. People believe that houses facing north or south will bring fortune.

Circulation system and connecting lines

The circulation system and connecting lines in the RT.02 RW.04 settlement of Karang Sari Village have 2 road divisions, are:

- **External Road:** Connect roads with outside settlement areas. It is a national route with width is + 20 m, coated with asphalt which is passed by 2 lanes of 4 or more wheeled vehicles
- **Internal Road:** Connecting roads within settlements units, + 2.5 m road width, made of concrete rebates that only passed by 2-wheeled vehicles and pedestrians.



Figure 10. Road Networking

Open Space Systems and the Green System

Open space and green system in the settlements RT.02 RW.04 Karang Sari Village consists of an open area which is currently used for drying fish and green open areas planted with several sea pine trees. The fish drying area is 2 places located on the edge of sea and used by residents to hang fish alternately. In this area there are public toilets and guard posts as a place to keep an eye on boats, but also as a place of interaction between them. While the green open space located next to the fish drying area that is used as a communal WWTP. The communal facilities in the settlement are also as children's play areas. From the observations, the trees in the settlements RT.02 RW.04 Karang Sari Village Tuban were very minimal.

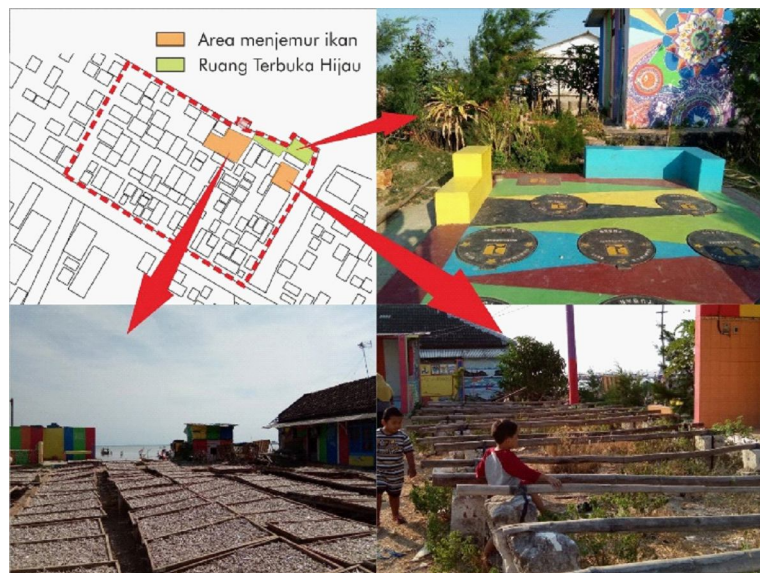


Figure 11. Open Space

Environmental Quality Management

There is garbage in the Mangunjoyo river which is the eastern boundary of the settlement. From the results of observations, more garbage is located on the eastern which is an area outside the settlement RT.02 RW.04 Karangasari Village, Tuban. In addition to the Mangunjoyo river, plastic waste is also seen on the coast of the Java Sea. According to resident's information, the garbage comes from Mangunjoyo river which is carried by the water flow into the sea, then piled up on the beach which is the estuary of the Mangunjoyo river.



Figure 12. Environmental conditions on the Mangunjoyo River & Beach

Environmental Utilities and Infrastructure Systems

The Environmental Utilities and Infrastructure Systems found in the fishing settlements of RT.02 RW.04 Karangasari Village designated as drainage and communal WWTP. The existing drainage connects the sanitation system from residents' houses to the communal WWTP. The communal drainage and IPAL in the fishing settlement RT.02 RW.04 in Karangasari Village was built by the Tuban district government of the.



Figure 13. Drainage Control Tubes and WWTPs

Preservation of Buildings and the Environment

Preservation of Buildings and the Environment settlements of RT.02 RW.04 Karangsari Village Tuban, there are Chinese ethnic buildings that need to be preserved on how to adapt their architecture. According to resident, this building hundreds of years were built by ethnic Chinese using local materials. In addition to Chinese heritage buildings, the shoreline in these settlements also needs attention in terms of coastal conservation because of environmental degradation. From the results of observations on the shoreline there is a lot of plastic waste originating from the Mangunjoyo river. This is very different from the shoreline condition in 2010 which still looks clean.



Figure 14. Chinese ethnic heritage house

Keterangan	Bibir Pantai	Sungai Mangunjoyo
Kondisi Tahun 2010		
Kondisi Tahun 2018		

Figure 15. Shoreline and Mangunjoyo River condition

b. Micro Layout

In the fisherman’s settlement RT.02 RW.04, Karangsari Village, Tuban, there are three types of residential architectural styles, are: 1. Architectural style of the ethnic Chinese heritage, 2. Traditional Javanese architecture, 3. Vernacular architectural style.

From the observations found 6 houses with Architectural style of the ethnic Chinese heritage orientations facing north and south. The main types of material used in the foundation the wall use

limestone mountain, while the column structure, ring beams and roof truss use teak wood. On the sills, doors and windows also use teak wood. On the roof, using tile from clay and some of it replaced with asbestos.

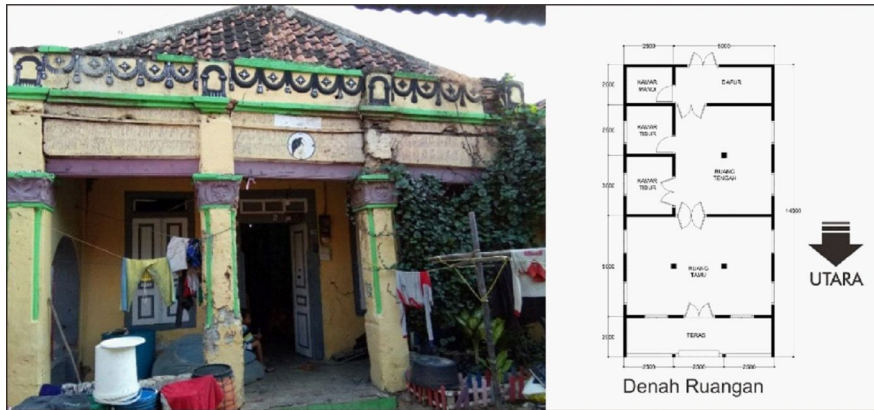


Figure 16. Architectural style of the ethnic Chinese heritage

Whereas houses with Traditional Javanese architecture of the village type are found in 5 orientated houses all facing south. The main types of material used on the foundation use limestone mountain, on the walls using teak wood boards, while the column structure, beam rings and roof truss use teak wood as well. On the sills, doors and windows also use teak wood. On the roof of this traditional Javanese house using tile from clay and some of it has been replaced with asbestos.



Figure 17. Traditional Javanese architecture

The majority of these settlements are vernacular architecture. (Mentayani, 2012), concluded that the characteristics of vernacular architecture include: 1. Created a community without help of professional experts / architects but with local / local experts, 2. Believed to be able adapt to local physical, social, cultural and environmental conditions, 3. Built by utilizing physical, social, cultural, religious, technological and material resources locally, 4. Having initial building typologies in the form of housing and others that develop in traditional societies, 5. Built to accommodate special needs, accommodate cultural values community, economy and the way of life of the local community, 6. Function, meaning and appearance of vernacular architecture is strongly influenced by aspects of social structure, belief systems and people behavior patterns.

For houses with vernacular architectural styles, the main types of material used on the foundation are limestone mountains, on the walls also use limestone mountain stones called kumpang stones by the community which are plastered and installed ceramics to be resistant to coastal climate conditions, while sloof structures, column and ring beam using reinforced concrete. On the roof frame uses reinforced concrete and bengkirai wood. On the sills, doors and windows use teak wood. Roof cover uses asbestos.



Figure 18. Vernacular architectural style

5. Conclusion

The settlements characteristics strongly influenced by the condition of the site, the people culture, climate, location and geographical conditions, resulting in characteristics that can be identified through the physical structure of the settlement environment. The physical conditions of the fishermen's settlements in Karang Sari Village, Tuban City are linear in shape, face to face following the coastline oriented north and south. The orientation of the building facing north south is a form of response to site conditions. But there are some people who believe the orientation of buildings facing north and south will bring fortune.

The community in the fishermen's settlement RT.02 RW.04 Karang Sari Tuban Village considers three aspects in choosing the type of material, namely: Material resistance to coastal environmental conditions, The price of affordable materials, Availability around the location. On the wall there is no red brick in the ethnic Chinese heritage house, traditional Javanese houses, and relatively new homes, this is a form of adaptation of coastal communities in Karang Sari Village because red bricks will easily be destroyed if used for buildings on the beach.

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