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# Planning of fishing residential in Kuta Village (supporting the Mandalika special economic zone) based on green concept

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**Abstract.** A Fishing housing in Kuta Village in Central Lombok Regency supports the Mandalika Special Economic Zone (SEZ). Housing with environmental issues and inadequate infrastructure in the fishing village of Kuta village is a fact. On the other hand, this area is a potential tourist destination in West Nusa Tenggara Indonesia. The aim is to produce a reference document for developing fisherman housing in Kuta Village based on a sustainable environment. This methodology uses a descriptive qualitative approach. The conclusion is that the planning of fishing settlement areas must be developed with a sustainable development model. Where in this development must adopt materials that are friendly and adaptive to the environment. The development of sustainable tourism may not be fully appreciated by stakeholders, but there is a responsibility to maintain regional development, especially in coastal areas. Sustainability should be considered by developers and policymakers to create a more desirable tourism future for coastal areas.

## 1. Introduction

Fishing residential is the one of the basic human needs concerning the feasibility and welfare of a fishing community in an area. The house not only functions as a place to live or shelter, more than that; the house also has a strategic function in its role as a center for family education, cultural conformity and quality improvement for future generations. As a part special economic zones of Mandalika, where the active development is the development of coastal tourism, the existence and plans for the settlement or fishing village of Kuta beach, especially in the west of the area, must be integrated with the plan to develop a tourist area in a broad manner and form an integral part that will be become one of the tourist destinations itself. Thus, the development of housing and fishermen residence for Kuta village is not based solely on physical development but must be linked to the social, economic and cultural dimensions that support community life in a sustainable manner.

## 2. Literature review

Sustainability is a part of tourism development because there are three aspects of sustainable tourism: environment, social, and economic [1,2]. The development of coastal areas must be designed carefully because it considers the future, especially environmental conditions using the past to inform the present in providing recreation [3]. Discussion about the relationships between land and sea, natural



and non-natural, human and ecosystem, need to be understood through economic perspective and landscape management through local cultural interactions. [4,5].

Ecotourism can be defined as any recreational activity that explicitly involves the viewing or extraction of other living beings in the wild [6]. The planning and development that can be used as a concept in the long term is ecotourism. As a specialization, nature-based tourism and community sustainability transformed into ecotourism, being an alternative that represents the discourse of sustainability. At this point, development does not only depend on the developers, but is also influenced by the community and policymakers.

The dynamics of coastal tourism cannot be separated from the economic factors and policy dimensions that affect the evolution of tourism in general in a socio-cultural framework [7]. Special Economic Zones (SEZs) are evidence of this dynamic, where they emerge from national policies aimed at increasing the economy on a local to international scale. The Mandalika area in Central Lombok is one of the areas designated as an SEZ based on Government Regulation 52/2014 on the Mandalika Special Economic Zone.

The awareness of sustainable tourism is necessary for stakeholders [8]. At this point, stakeholders must take notice to the basic needs of the community. Settlement is one of the most priority aspects. Quality of the settlement environment will increase the benefits for community [9], although the quantity of attraction is another one potential approach to develop tourism. Coastal destinations should be able to provide cultural attractions and events [10]. The community development factors of human resource development such as skill enhancement and the community readiness in development change are aspects of the development process [11].

In arranging the Kuta Fishing Village, it is very important to pay attention to the aspects that affect the sustainability of people's lives in the area. This is because fishing settlements have their own uniqueness, namely socio-economic problems (communities with high levels of density and number of family members as well as low levels of income, savings and education), and physical environmental problems (limited or unavailability of sanitation and solid waste infrastructure [12]. According to [13], the physical arrangement of fishermen settlements can be done by exploring (a) accessibility/achievement; (b) zoning; (c) the existence of public, supporting and social facilities; (d) design, house; and (e) residential utilities. Meanwhile, according to [14], the arrangement of fishermen's settlements must pay attention to infrastructure (in the form of roads, drainage, clean water and electricity), and facilities (in the form of open spaces, schools, places of worship, and fish auction centers).

A settlement can be said to be a quality settlement when it is able to accommodate the needs of its inhabitants. Strategies that can be carried out in achieving this goal include adjusting building dimensions, building structures, roof coverings, building walls, building floors, distances between buildings, and building orientation/direction [15]. According to [16], a strategy that can be applied is to pay attention to environmental adaptation, socio-economic dynamics, sanitation and the environment of sustainable development.

The arrangement of Kuta Fishermen Village can be viewed from two approaches, namely the regional approach (macro) and the architectural approach (micro). The main thing in area planning is road arrangement as the main key to area accessibility. Roads are the basic infrastructure needed to support access and networks in settlements [17]. Provision of area support facilities is also a further priority, in the form of drainage networks, sanitation and open spaces. The existence of Green Open Space (RTH) is one of the dominant preferences in residential areas [18], so that in the arrangement of the Kuta Fishermen Village, RTH must be provided in an appropriate proportion.

In addition, coastal residential areas can also adopt the concept of ecological and environmentally friendly architecture with proper zoning [19]. Buildings that are categorized as public facilities must be placed in a location that is affordable and easily accessible. As an area where almost all of the people work as fishermen, the existence of the fish market is the main economic support. It should be emphasized here that the existence of a fish auction center (TPI) is very important because market

imbalances which are the cause of the low economy of the fishing community are weakening the fish marketing network due to the malfunctioning of the TPI [20].

### **3. Research method**

This research approach uses a descriptive-qualitative approach. So, what is produced from the survey in the field as primary data about how the existing condition is, will be narrated in writing so that it is easy to understand. Then for secondary data obtained from related agencies supported by direct observations in the field to obtain internal and external data on the tourist area of the fishing village of Kuta.

Further analysis, related to how to find out the tourism potential, can be done by planning and rearranging the fishing settlement area of Kuta. This is done to create a fishing village that is environmentally friendly and sustainable.

### **4. Result and discussion**

Based on Law Number 1 of 2011 concerning Housing and Settlement Areas, a residential area is part of the environment outside a protected area, either urban or rural, which functions as a residential or residential environment and a place for activities that support life and livelihoods. Referring to the same law, Housing and Settlement Areas are spatial entities that cannot be separated from the community as residents. Figure 1 shows the area of fishing village in Kuta (Mandalika).

Settlements are composed of housing, environment, and infrastructure. The smallest unit in the context of a residential area is a house. A house is a building that functions as a place to live that is suitable for habitation, a means of fostering a family, a reflection of the dignity of its inhabitants, as well as an asset for its owner. There are several types of houses, including a) Independent houses; b) Public houses; c) Special homes; d) Country Houses. Each type of house has its own characteristics and specifics.

Settlements in the Kuta Village area consist of self-help houses. Housing development in this area has been going on for decades. Since the 1970s, the community has been occupying the land in this area for generations. They moved their house several times, both in Kuta 2 sub village and to the area around Kuta 2 sub village. Some of the people who started living in this area have also sold their land and moved out of Kuta Village. In a period of decades, the residents of Kuta 2 sub village tend to be homogeneous, there has been no significant change in the composition of the community in the last 50 years. Figure 2 shows the building and environment condition of fishing residential in Kuta (Mandalika).

#### *4.1. Building condition*

From the regularity of the buildings, the houses in the kuta fishing village area are very crowded and disorganized. The distance between buildings is very tight, which is an average of 1.5 meters. There is no clear building mass pattern. This is because the community builds without paying attention to the land lots and the orientation of the buildings on it. Due to the irregularity of the buildings in this area, the face of the area tends to be messy.

The condition of housing units in this area is not very feasible. From the physical aspect of the building, some houses still use non-permanent materials. Some who use permanent materials still have not applied the correct structural and architectural rules. Due to the condition of the housing units, this area has become slum and unfit for habitation.

#### *4.2. Waste management*

One of the most crucial problems in the Kuta Fishing Village area is the problem of solid waste. In Kuta village, the area around the fishing village is the area with the least waste facilities. Waste management in this area is also the least feasible compared to other areas in Kuta village.

Due to the absence of trash can facilities, residents tend to dispose of garbage in places where it is not supposed to be. One of the places where garbage is dumped is on the shoreline around the fishing

boat parking area. As a result of the garbage in this area, the view becomes unattractive, and the smell of garbage disturbs the comfort of people who are active around. This condition also damaged the image of the tourism area around Kuta Fishing Village

The Kuta fishing village area requires solid waste management that can accommodate the volume of residents' waste while being designed with a neat design so that it looks clean. Garbage collection by managers must also consider special access so as not to interfere with activities or damage the comfort of residents.



**Figure 1.** Order of building



**Figure 2.** House building and waste conditions

#### 4.3. Discussion

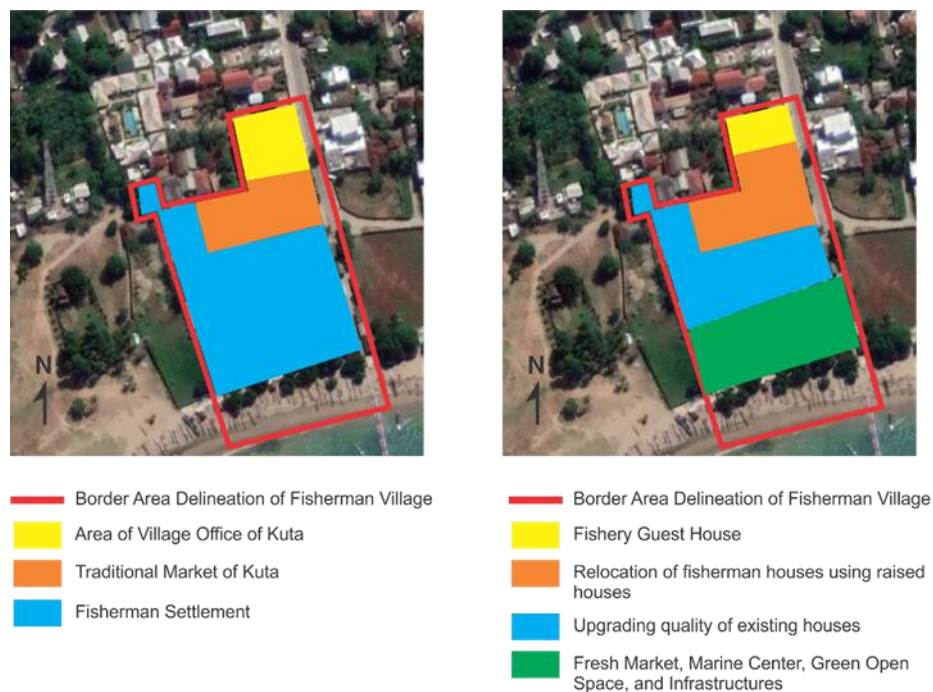
With a profession as a fisherman, most residents in the Kuta fishing village area own a boat. This is an advantage because these boats can support tourism activities. By boat, residents can offer services between tourists and for exploration of the surrounding sea. This potential if managed properly will attract both local and foreign tourists.

The current condition of the area is not suitable for a tourism area. The settlement is slum, and the infrastructure is inadequate. This is a challenge for the development of this area to increase tourism. In terms of their livelihoods as fishermen, the income of residents in fishing village is far from sufficient.

Regarding the rules and regulations stating that permanent buildings cannot be located in the Coastal Line Area, residents can understand this and are willing to be relocated to a place that does not violate the rules. The availability of them to be relocated is an important factor in the arrangement of the area because it requires a design that does not conflict with the prevailing regulations. In addition, moving residents will facilitate the design of housing that is more feasible for them, so that it will provide benefits for them.

The area of the Kuta fishing village has received enough attention from the government, from the central level to the regional level. Various programs in physical form have been carried out in this area. One of the newest programs in 2017 is the arrangement of the Directorate General of Human Settlements of the Ministry of Public Work and Spatial Planning and the Transportation Service of Central Lombok Regency. These programs are an indication that this area can attract programs from stakeholders in its development.

Likewise, ITDC (International Tourism Development Cooperative) as a state-owned company that has a strong interest in the development of the SEZs Mandalika, also pays attention to the management and arrangement of the Kuta Fishermen Village area. With the role of ITDC, structuring opportunities in order to increase tourism can be boosted more optimally. This will benefit ITDC as well as benefit citizens in terms of their welfare.



**Figure 3.** Sustainable development concept of Kuta Village (Mandalika)

The causes of slum, among others, are the improper aspects of the settlement as mentioned in the settlement analysis section. In overcoming this problem, associated with tourism, architecture is the solution. The fact that the people living in the fishing village area are willing to be reorganized and relocated has become an entry point for the role of architecture. This is an opportunity to design more feasible residential units and supporting facilities to support tourism activities

With the relocation and construction of new houses for residents of the Kuta Fishing Village area, local wisdom can be embedded in the arrangement. Especially if it is related to the condition of the



location which is on the coast, local wisdom will emerge as a solution to the challenge of how the fishermen's house takes shape. The next challenge is the use of building materials, structural considerations, which in the end are all packaged in aesthetics to give birth to a typical fisherman housing concept that is worthy of its residents as well as being a magnet for tourists.

The condition of Kuta fishing village currently does not have a proper green open space. Residents still gather in sporadic places and children play in places that do not guarantee their comfort. In fact, a settlement really needs open space to improve the quality of the area. The absence of adequate green open space in Kuta fishing Village has made this area degraded from an environmental point of view.

The density of buildings in the Kuta fishing village area is the cause of the lack of quality open spaces. This density needs to be broken down so that the solid-void area becomes better. In this open space, facilities for supporting community activities can be built. Thus, the livelihoods of the people living in this area will be of higher quality. In addition, the existence of green open space will be able to support the potential that exists in the area, for example tourism potential.



**Figure 4.** Iconic fonts area of Kuta (Mandalika)



**Figure 5.** Planning of fishermen's settlements in Kuta (Mandalika)

Based on facts above, the planning of fishing village in Kuta beach (Mandalika) is proposed as Figure 3 until Figure 5. Figure 5 illustrates that a healthy environment can be planned by designing environmentally friendly infrastructure. For example: for fishermen's settlements, houses are designed on stilts so that if sea water rises, water will not enter the house. The building materials are also

earthquake-friendly, both from the walls and the roof. while the drainage system uses an environmentally friendly drainage system in the sense that every 20 m distance is infiltrated so that not all the water that flows is wasted into the sea but some seeps into the ground. This is done so that the quality of soil is maintained.

## 5. Conclusion

Fishermen's residential areas must be preserved and developed with a sustainable development model – which in this development must be adopted materials that are friendly and adaptive to the environment. It is done so the impact of this development to improving the quality of the environment will also increase the community's economy and continue towards a healthy and prosperous housing environment. The development of sustainability tourism may not be fully appreciated by stakeholders [21], but there is a responsibility to maintain regional development, especially in coastal areas. Sustainability must be considered by developers and policymakers to create a more desirable tourism future for coastal areas [22].

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