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ENVIRONMENTAL QUALITY STUDY OF PUSONG LAMA FISHERMAN SETTLEMENT, LHOKSEUMAWE CITY (CASE STUDY: DUSUN PASI)

Nanda Sofia, B O Y Marpaung and Dwira Nirfalini Aulia

Master of Architectural, Faculty of Engineering,
Universitas Sumatera Utara, Jalan Dr. T. Mansur No. 9, Padang Bulan Medan, 20155 Indonesia

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ABSTRACT

Uncontrolled population growth with limited land can affect a residential area's environmental quality. The emergence of slums (uninhabitable) with various fundamental problems such as building irregularities, building density, uninhabitable buildings, environmental road damage, and poor sanitation can complexly damage the surrounding environment. Based on the Decree of the Mayor of Lhokseumawe, Pusong Lama fishermen's settlement is one of the slum areas in Lhokseumawe City. This study aims to measure the level of environmental quality of fishermen's settlements so that a strategy/ handling plan can be identified to improve the quality of the settlement environment. This research was conducted using descriptive qualitative research methods. Determination of variables based on three aspects, namely aspects of residential buildings, aspects of environmental accessibility, and aspects of settlement utilities. Determination of the assessment weight in this study refers to the Regulation of Peraturan Menteri PUPR Number 14/PRT/M/2018. The results showed that the Dusun Pasi fishermen's settlement had a wastewater management system and a waste management system in the medium to poor category. While the aspect of residential buildings and aspects of environmental accessibility is in the moderate category. Strategies/Plans in efforts to deal with the quality of the settlement environment are based on the RP2KPKP Guidebook.

KEYWORDS: Environmental quality, settlements, utilities, slums, sanitation, and environment.

1. INTRODUCTION

A settlement is a place where humans live and live, which consists of two elements of settlements, namely content (people) and places (containers) including natural and man-made elements (Claudia et al., 2016). Meanwhile, fishermen are a group of people who depend on their activities in coastal areas. The formation of fishermen's settlement patterns is naturally due to the influence of community activities on work and social life in accordance with the potential of coastal areas (Kusnadi, 2000; Rusli, 2016). Basically, fishermen settlements arise from various factors such as the dependence on the community's economic activities as fishermen, settlements located in strategic areas, and relatively close distance between locations (Cut, 2013). These settlements, located right on the

shoreline, can potentially become slums, with the majority of the population being low-income people with limited education (Sonya and Nany, 2012).

Uncontrolled population growth can hinder the development of a residential area. Things such as land limitations, the condition of residential buildings, lack of fulfillment of clean water, accumulation of domestic waste to poor sanitation are fundamental problems in residential areas. The facilities and infrastructure built cannot accommodate the needs of a high population, resulting in various problems that have an impact on the decline in the quality of the residential environment. The quality of the residential environment is a combination of the condition of residential units in the workplace and social life which includes housing conditions, environmental sanitation, and basic residential life (Ucok and Sri, 2012). Environmental quality is reviewed from the condition of environmental roads, wastewater management in the form of sanitation and solid waste, and the physical condition of buildings and building density (Evi et al., 2010). In line with this, Mega and Mohtana (2022) environmental quality can be seen in the physical condition of buildings, namely building density and building construction, environmental conditions, the availability of clean water supply, environmental road conditions, sanitation conditions, and waste management conditions. The quality of the settlement environment.

Based on the RP2KPKP data of Lhokseumawe City (2017), the spatial planning of the Lhokseumawe City area is the embodiment of the expectations of the desired spatial conditions of Lhokseumawe City. So that plans for settlement development have targets of improving the quality and degree of public health and creating a more humane life and maintaining the basic principles for the protection and fulfillment of people's rights to housing. One of the priorities in the program of activities to improve the quality of the settlement environment is the Pusong Lama fishermen's settlement. Pusong Lama is a traditional coastal settlement that typologically is a model of slums along the coast of Lhokseumawe, the physical condition of the area's infrastructure is quite poor, especially drainage, family sanitation systems, and waste management systems. Road conditions have not been organized in a good transportation structure. So it is necessary to assess the level of quality of the settlement environment and determine the strategy/handling plan to improve the quality of Pusong Lama fishermen's settlements, especially Dusun Pasi.

2. Research Methods

The research method uses a qualitative descriptive method. This research method aims to systematically describe/paint phenomena or facts based on what is seen or as it is, then later descriptive data on data processing can be in the form of written or spoken words from people and observed behavior (Sudarto, 1997; Nurdyansyah et al, 2018). The data collected in this study are primary data and secondary data. Primary data consists of data from observations and in-depth interviews, while secondary data consists of literature data in the literature review as a research reference. The research location is in Dusun Pasi Pusong Lama. Variables were determined based on an assessment of the quality of the residential environment from previous research.

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Table 1: Research Variable Residential Environmental Quality

Variable	*Sub Variable*	*Indicator*	*Parameters*
Residential Buildings	- Building Density	Building Density (Keputusan Menteri PU No. 378/KPTS/1987; Awidano et, al,. 2017) < 10 units/ha = Very low 11 – 40 units/ha = Low 40 – 60 units/ha = Medium 61 – 80 units/ha = High > 81 units/ha = Very high	- The building has a density that is not in accordance with the provisions
	- Physical Building	Building Technical Requirements (Permen PUPR No. 02/PRT/M/2016) - Environmental impact control - Building typology - Safety - Health - Comfort - Ease	- Buildings on site do not meet technical requirements
Environmental Accessibility	- Neighborhood Road	Technical Requirements for Neighborhood Roads (Buku Saku Petunjuk Konstruksi Jalan, 2022) - Minimum pavement width of 1.5m - The road surface should be stable, strong, weather resistant, smooth textured but not slippery.	- Length of road with poor surface quality
Settlement Utilities	- Clean Water Supply System	Technical Requirements for Clean Water Supply (Clean Water Construction Manual, 2022) - Maximum and minimum water capacity in annual and 10-year periods - Clean water quality is based on turbidity, taste, color and odor. - Minimum connection capacity of 60 liters/person/day with a public tap connection of 30 liters/person/day	- Population unable to access safe drinking water
	- Wastewater Management System	Technical Requirements for Wastewater (Permen PUPR No. 04/PRT/M/2017) - SPALD at a population density of 150 people/ha - Using a gooseneck toilet connected to a septic. Tank	- Area has a wastewater system that does not meet technical standards
	- Waste Management System	Waste Management Requirements (Sanitation Handbook, 2022) - Implementation of the 3Rs (reuse, reduce, and recycle) - Segregation of organic and non-organic waste - Transportation 3 times a week	- Area has a solid waste system that does not meet technical standards

In determining the percentage weight for the assessment of the level of environmental quality, it refers to the Peraturan Menteri PUPR Nomor 14/PRT/M/2018. The higher the percentage weight on the parameters of each variable, the worse the condition of the environmental quality of the settlement.

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Table 2: Percentage of Residential Environmental Quality Assessment

Percentage	*Weight*	*Weight Classification*
76% - 100%	5	Bad
51% - 75%	3	Medium
25% - 50%	1	Good

Source: Permen PUPR No. 14/PRT/M/2018

After obtaining the weight of the assessment of the percentage of parameters, a strategy/plan is then determined in an effort to improve the environmental quality of the fishermen's settlements in Pasi Hamlet. The strategy/plan can be in the form of prevention or improvement. There are three improvement strategies based on Undang-undang No. 1 Year 2011, namely through the stages of restoration, rejuvenation, and redevelopment.

3. RESULT AND DISCUSSION

3.1 Residential Buildings

1. Building Density

Dusun Pasi fishermen's settlement has a total number of residential buildings is 405 building units and a settlement area ± 7.54 Ha. The calculation results show that this fishermen's settlement has a residential building density of 54 units/ha with a population of 1,841 people. So that the percentage of residential building density is categorized as moderate with a weight value of 3. In the existing conditions, the average residential building in this settlement does not have a Building Permit (IMB) and only has an SHM / HGM / Letter recognized by the local government. At some points, there are illegal buildings that are outside the coastal boundary line.

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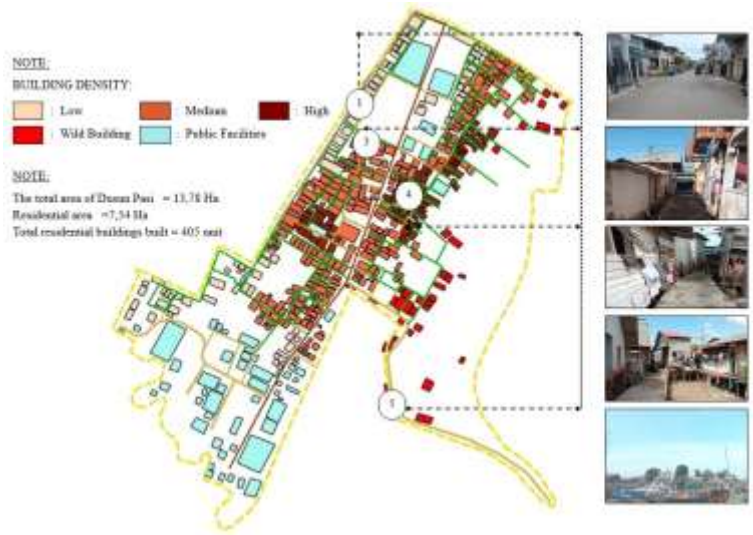

Figure 1: Condition of Residential Building Density in Dusun Pasi

2. Physical Building

The results showed that 50.37% of residential buildings in Dusun Pasi settlements did not meet the technical requirements, residential buildings consisted of non-permanent, semi-permanent, and permanent buildings. The building typology is above the water with a wooden pole foundation. Non-permanent residential buildings have leaking roofs and damaged walls. From a health perspective, the lack of air circulation and lighting in the building is also evident, as well as the large piles of garbage underneath the residential buildings. The percentage of the condition of residential buildings that do not comply with technical requirements is in the good to bad category with a weight value of 1.

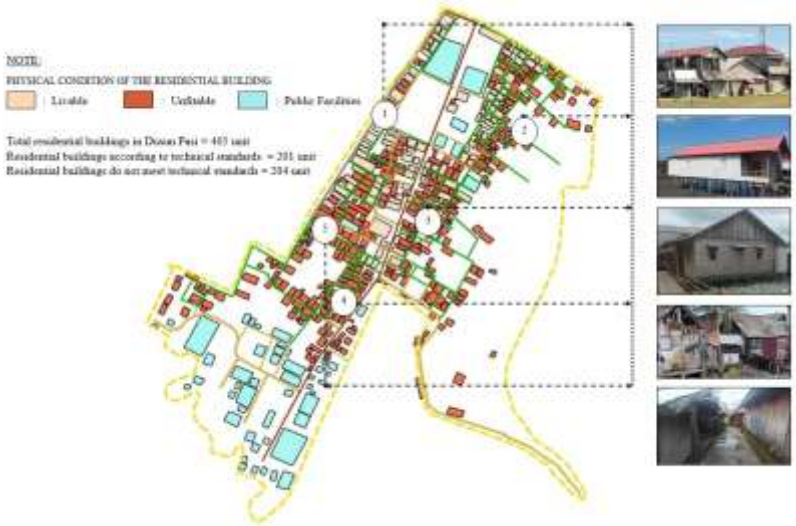

Figure 2: Physical Condition of Residential Buildings in Dusun Pasi

3.2 Environmental Accessibility

1. Neighborhood Road

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The total road network in the fishing settlement of Dusun Pasi is 2,022 m, with the length of the road that meets the technical requirements, namely the suitability of the road width and the absence of damage to the road surface, being 916 m. So that the length of the road that does not meet the technical requirements is 1,106 m, the length of this road consists of neighborhood roads that have not been paved and many roads that have damage to the road surface in the form of holes and subsidence of the road surface. This condition is caused by high rainfall in the settlement location. the percentage result of the length of the road that has a damaged surface is 54.7% and is included in the medium category with a weight value of 3.

Figure 3: Condition of Neighborhood Roads in Dusun Pasi

3.3 Settlement Utilities

1. Water Supply System

From the results of the calculation of the population that has not been served with safe clean water access in the settlement of Dusun Pasi, there are 273 households where the percentage obtained is 55%, this value is included in the medium category with a weight value of 3. In the existing condition, physically the piping system has been spread throughout the settlement area but the community has not received clean water according to technical standards, namely not cloudy, tasteless, colorless, and odorless. So, people prefer to buy clean water for consumption in retail. There are 14 borehole wells built with 4 water towers, but there are 5 points that are not active so people have difficulty getting clean water for their daily needs. This settlement does not yet have a drinking water management system from the PDAM.

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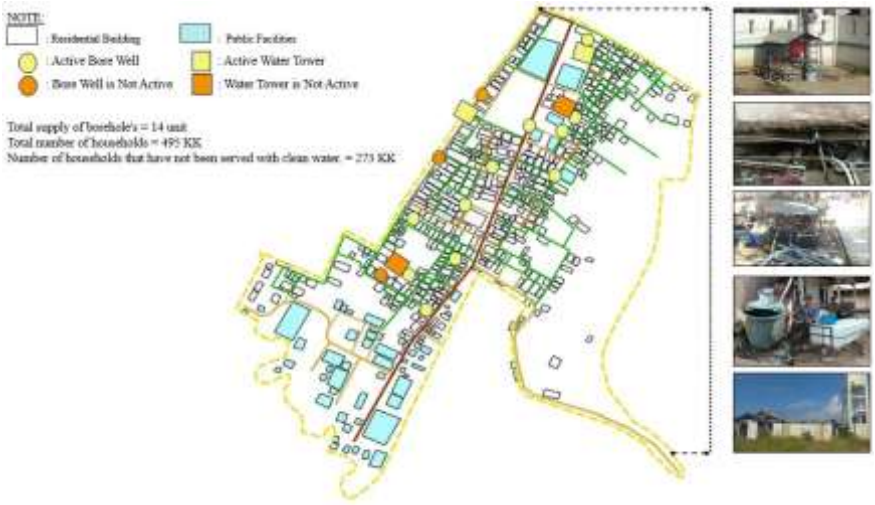

Figure 4: Kondisi Sistem Penyediaan Air Bersih Dusun Pasi

2. Wastewater Management System

From the results of the calculation of the population area that does not have a wastewater management system according to technical requirements in the settlement of Pasi Hamlet, there are 323 households where the percentage obtained is 65%, this value is in the medium to poor category with a weight value of 3. In the existing condition, the average residential building uses a type of toilet cemplung/cubluk with a wastewater disposal system on-site system, namely direct disposal under the residential building. There is no local or centralized SPALD, only 1 communal septic tank that was built in 2014 and is not functioning.

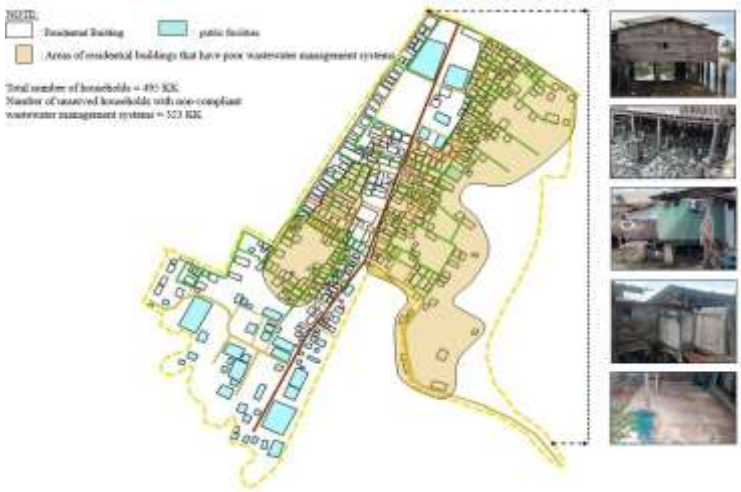

Figure 5: Condition of Wastewater Management System in Dusun Pasi

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3. Waste Management System

From the results of the calculation of the population area that does not have a waste management system according to technical requirements in the settlement of Dusun Pasi, there are 323 households where the percentage obtained is 65%, this value is in the medium category approaching bad with a weight value of 3. In the existing condition, of this fishermen's settlement there is no Waste Disposal Site (TPS) either locally or centrally. The average community disposes of waste directly under residential buildings, so that household waste is mixed with wastewater. This pile of garbage causes blockages in existing drainage channels.

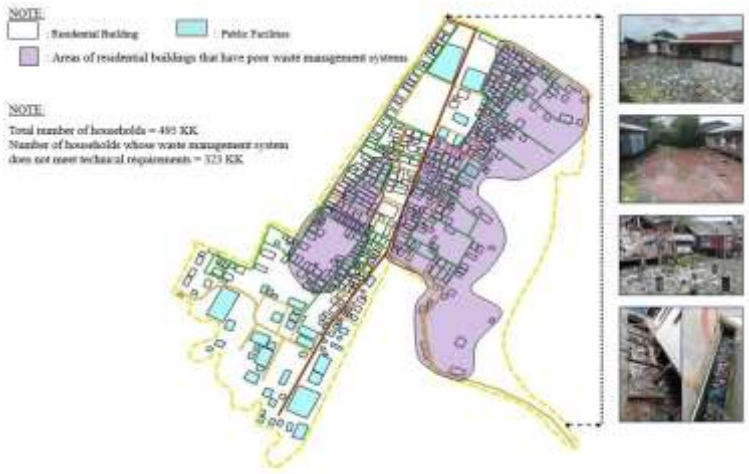

Figure 6: Condition of Waste Management System in Dusun Pasi

3.4 Strategy/Plan for Handling Settlement Environment Quality

Strategies/plans in efforts to improve the environmental quality of Pasi Hamlet fishermen settlements are in the form of prevention and improvement. There are three improvement strategies based on Undang-undang No. 1 Tahun 2011 through the stages of restoration, rejuvenation, and redevelopment. The handling strategy/plan is as follows.

Table 3: Strategy/Plan for Handling Settlement Environment Quality

Variable	*Sub Variable*	*Parameters*	*Weight*	*Strategy/Plan*	
				Prevention	*Upgrade*
Residential Buildings	- Building Density	- The building hasa density that is not in accordance with the provisions	3	Supervision, controland community empowerment	Rejuvenation andstructuring of residential areas

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	- Physical Building	- Building on site does not meet technical requirements	1	Supervision, control and community empowerment	Rejuvenation and structuring of residential areas
Environmental Accessibility	- Neighborhood Road	- Length of road with poor surface quality	3	Monitoring and supervision	Road rejuvenation/ rehabilitation
Settlement Utilities	- Clean Water Supply System	- Population unable to access safe drinking water	3	Supervision and quality control of boreholes	Resettlement by building new SPAM PDAM units
	- Waste water Management System	- Area has a wastewater system that does not meet technical standards	3	Community empowerment/increased awareness of healthy and clean-living behaviors	Rejuvenation/ provision of local and centralized sanitation systems
	- Waste Management System	- Area has a solid waste system that does not meet technical standards	3	Community empowerment/socialization and training on 3R waste management	TPS and TPST rejuvenation/ procurement

Source: Analysis based on RP2KPKP guidebook

4. CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that the Dusun Pasi fishermen's settlement has a moderate level of slum near bad, this can be seen in the percentage results of the average assessor weight in the moderate category. The thing that shows the decline in environmental quality in Dusun Pasi fishermen's settlements that has the most influence is the wastewater management system and waste management. With the results of the assessment in the moderate category approaching bad, the wastewater management system and waste management are carried out in an on-site system where garbage and wastewater are disposed of directly under residential buildings whose average building typology is a house on stilts above the water. The community believes that waste and garbage will be transported by themselves when the tide rises. In fact, in this settlement, there are many building hoards that make it difficult for seawater to pass through.

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