

Factors that Leads to Slum Condition in Fishing Settlement Area in Brondong District, Lamongan

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Abstract— Brondong district has a potential as residential area that will further be developed into a residential area in supporting industries, tourism and fisheries in order to attract investors in the region. High level of economic activity led to significant population increase. Overcrowding and poor building management leads to impression of fishing settlement as slum area. Therefore, it is necessary to conduct further study to determine factors that turned fishing settlement in Brondong district to become slum area so as to formulate appropriate actions for addressing the problem.

This study applied descriptive statistical analysis to identify the characteristics of the fishing settlement in Brondong District. Factors identified were then being analysed using theoretical descriptive analysis technique and then further being amplified using Delphi analysis technique. Both used Sustainable Coastal Development theory as an approach. The results in this study indicated that there were twelve (12) factors that caused slum condition in fishing settlement in Brondong District that require concerns from government and support to improve the quality of their environment.

Keywords: Fishing settlement, Slums

I. INTRODUCTION

In developing one particular region, settlement area is one of the concerns in addition to the economic growth and improvement in people's welfare, since settlement is the basic human needs where people live and interact socially. [1]

Furthermore, the life of coastal communities is dependent on coastal resources for their livelihood [2]. Because of this dependency on coastal resources, fishing communities prefer to live in coastal areas. Potential and natural resources in coastal areas attract diverse community in order to meet their needs, thus forming coastal settlements which is vary according to the level of subsistence [3]

The study was carried out in two villages; Brondong and Sedayulawas which are located in Brondong District in the north coast of Lamongan.

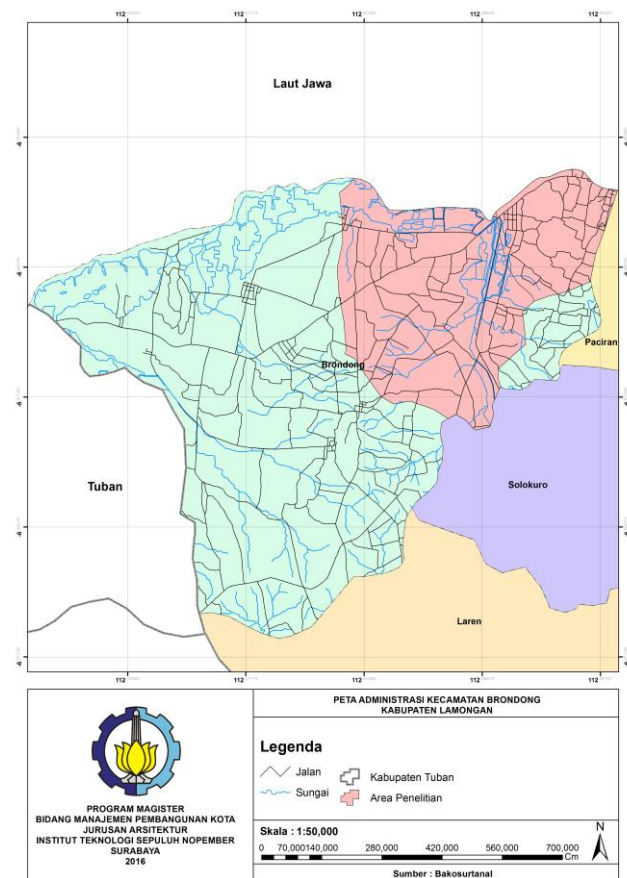


Fig.1 The Map of Study Area

Brondong District is a residential area that will further be developed into a residential area for supporting industries, tourism and fisheries in order to attract investors. High level of economic activity leads to high population growth hence the demand for better settlements [4].

In addition, there is high number of traditional fishermen with low income whose monthly revenue did not meet the need for food or other living expenses such as the cost of

electricity, school fees, taps, and others. The condition was caused by dependence on seasons for fishing leading uncertainty in income. To provide better access to the sea, fishermen usually build houses close to the coastal areas, but often with poor *building management* and poor environmental cleanliness. Amplified with overcrowding, this causes the impression the fishing settlement as a slum area. [5]

Therefore it is important to know factors that causing slum condition in fishing settlement so that to further determine proper solution to address the problem. Phases of analysis conducted: first, to identify the characteristics of fishing settlements in Brondong District, and later to analyze the factors that leads to slum in the settlement.

II. METHODOLOGY

A. Population

Population is a generalized region consisted of the objects/ subjects that possess certain qualities and characteristics defined by the researchers for further being studied and being drawn for conclusions [6]. To determine the condition of the residential area in fishing settlement in Brondong district overall population was included in the study. The population under study was communities in fishing settlements in Brondong district and potential stakeholders who hold authority in determining the success in the application of the regional development for fishing settlement.

B. Sample

Samples is a part of the population from which the data in a study represents a particular population. [7]. In order to obtain a sample that truly represents the population, the sampling techniques applied should be appropriate. This study applied simple random sampling technique.

Simple Random Sampling is a method of withdrawal of a population in a way that every member of the population should have the same chance of being selected or fetched [8]. The method was applied to determine samples in fishing communities in Brondong district. Slovin formula below was chosen in determining the number of samples:

$$n = \frac{N}{N(d^2) + 1}$$

n = number of samples
N = the number of population (headcounts)
d = degree of confidence of 10%

$$n = \frac{8485}{8485(0.1^2) + 1} = \frac{8485}{8485(0.01) + 1} = 99$$

With the number of households of 8485 in fishing settlement (Source: Figures of Brondong District in, 2015) with a degree of confidence of 10%, the result indicated a number of 99 samples needed.

TABLE 1. Distribution of Respondents

Village	Number of Households	Distribution of Respondents
Brondong	4604	54
Sedayulawas	3881	45
Total	8485	99

Source: Author, 2015

Simple random sampling is applied to adjust study areas where the population is relatively homogeneous.

C. Stakeholder Analysis

Stakeholder analysis was performed to obtain samples to be used in Delphi analysis to determine the factors.

To determine the stakeholders who will be sampled, stakeholders involved should be first being determined for then selecting respondents with most influence to represent the population. Stakeholders are people or groups who possess the power to directly affect an organization.

Stages in determining stakeholders:

1. Identifying relevant stakeholders
2. Analyzing the interests and the potential impact of the existing problems of the respective stakeholders
3. Assessing the influence and significance of the respective stakeholders by weighting ranging from no effect to the highly influential/ important with a scale of 1 to 5.

From the analysis, five stakeholders deemed important and related to the study was selected.

- Regional Planning Agency of Lamongan Regency
- Department of Public Works and Human Settlement of Lamongan Regency
- Family and Community Empowerment Board Lamongan Regency
- Fishing groups in Brondong district
- Village heads in area under study

D. Stages of Analysis

TABLE 2. Stage of Analysis

No	The Stage of Analysis	Data Input	Analysis Tools	Output
1.	Identifying characteristics of fishing settlements in Brondong district	Variables were obtained from literature review	descriptive statistics	Knowing the characteristics of fishing settlement in Brondong District
2.	Analysing factors that lead to slum condition in fishing settlement in Brondong district	Result from the 1 st analysis	Theoretical Descriptive (Delphi)	Knowing factors that lead to slum condition in fishing settlement in Brondong district

E. Identifying the characteristics of fishing settlement in Brondong District

The main purpose was to obtain results from distributed questionnaires to the community in fishing settlement. Then the data obtained was being analysis using descriptive statistical analysis technique. Descriptive statistics is methods related to the collection and presentation of a range of data, to assess the quality of data in form of variables, summary statistics (mean, median, mode, standard deviation, etc), distribution and pictorial representation (graph), without any probabilistic formulation.

This step was used to calculate the percentage of distribution of frequency as well as the mean, mode, median. This analysis is often utilized to provide an overview regarding characteristics of the object under study and to present the distribution of frequency for each variable provided in graph or table, with calculations then done to determine the characteristics.

F. Analyzing the causes of slum condition in the fishing settlement

This analysis was done by analyzing the causes of slum condition in fishing settlement based on the variables that had previously been formulated using study of literatures. The causative factors obtained using descriptive analysis with the inputs included all variables that had been determined based on combination of study of literatures. Process in descriptive analysis included collaboration between existing conditions and study of literature supporting the determining causes of slum condition in fishing settlement.

The descriptive analysis results was being strengthened using Delphi analysis by distributing questionnaires to selected stakeholders in the study area. For details, step-by-step in Delphi analysis explained as follows:

1. Interviewing stakeholders that had previously been determined through an analysis of stakeholders.
2. Reducing and displaying data from obtained from interviews
3. Iterating and drawing conclusion

III. DISCUSSION

A. Characteristics of the Fishing Settlement in Brondong District

Characteristics of fishing settlement are specific to residential area of fishermen in the coastal areas. Descriptive statistical analysis was used to identify the characteristics of fishing settlement in Brondong district to describe or provide an overview of the object under study through data sample or population and to provide conclusions applicable to the public [9]

In this particular analysis, inputs used were the result of interviews using questionnaires conducted to the fishing communities and was being analyzed using descriptive statistics. Further discussion which included the Theory of Sustainable Coastal Development produced the characteristic of fishing settlement in Brondong District.

The result of identification of characteristics was as follows:

- Network of waste disposal. The community in the fishing settlement tended to burn or to dispose household waste along the coast.
- Community in the fishing settlement tended to park their boats in random location close to the neighborhood where they settle, no longer in boat mooring provided.

- Facilities and infrastructure in the fishing settlement was in poor condition and mostly due to the tendency of community who provide less concern to the environment.
- Around 56% utilized non-permanent and semi-permanent materials
- Illegal settlements was in existence
- The settlement was an area is an area prone to floods and sea breezes.
- Job characteristics; fishermen in majority.
- Relatively low-income
- People with lower level of education, over 50% of residents were of elementary school graduates.
- Social characteristics; tendency to occupy one (1) houses with more than one households.
- Characteristics of public participation: low participation in the social activities and did not meet the goals of sustainable coastal development.
- Religious and traditional rituals performed continuously as a group in general.



Fig.1 Existing Condition Of Fishing Settlement

B. Factors Contributing to Slum Condition in Fishing Settlement, Brondong District Lamongan

In carrying out analysis of causes of slum condition in the fishing settlement, descriptive theoretical analysis techniques was first being conducted using while factors and variables was discussed according to the existing conditions and theory of sustainable coastal development. On the first phase, it was obtained 13 (thirteen) factors that lead to slum condition in the fishing settlement.

Furthermore, on the second stage i.e Delphi analysis, factors obtained from the first stage could be used for interviews to selected stakeholders. Fixation of factors based on descriptive analysis was also being done on this stage. The results of stakeholder interviews as follows:

Table 3 Compilation of the results of Delphi the analysis

NO.	FACTOR	1	2	3	4	5
1.	Unavailability of sustainable waste disposal	V	V	V	V	V
2.	Difficulty of access to a boat mooring due to lack of proper location (coral existed)	V	V	V	V	V
3.	Poor state of infrastructure	V	V	V	V	V
4.	Poor condition of residential buildings	V	V	V	V	V
5.	Some illegal settlements in existence	V	V	V	V	V
6.	Frequent flooding and sea breeze	X	X	X	X	X
7.	Uncertainty of income	V	V	V	V	V
8.	Lower education levels in the community	V	V	V	V	V
9.	Low level of public participation	V	V	V	V	V
10.	Lack of public awareness of environmental cleanliness	V	V	V	V	V
11.	The absence of nature conservation activities	V	V	V	V	V
12.	The absence of a wastewater treatment system from fishery activities for sustainable fishery	V	V	V	V	V
13.	The absence of measures for the identification and reduction of vulnerability to disasters	V	V	V	V	V

Source: Results of Delphi interviews, 2016

According to compilation of the tables above, it can be viewed that in the first iteration, one factor was excluded because all stakeholders agreed that these factors could not be blamed as the cause of slum condition in the fishing settlement. It was agreed that there were 12 factors that lead to slum condition;

- 1) Unavailability of sustainable waste disposal
- 2) Difficulty of access to a boat mooring due to lack of proper location (coral existed).
- 3) Poor state of infrastructure
- 4) Poor condition of residential buildings
- 5) Some illegal settlements in existence
- 6) Uncertainty of income
- 7) Lower education levels in the community
- 8) Low level of public participation
- 9) Lack of public awareness of environmental cleanliness
- 10) The absence of nature conservation activities

- 11) The absence of a wastewater treatment system from fishery activities for sustainable fishery
- 12) The absence of measures for the identification and reduction of vulnerability to disasters

IV. CONCLUSION

The increase in economic activity in the fishing settlement led to increased number of population hence the needs of better and improved infrastructure. Physical factors that lead to slum condition in the fishing settlement were inadequate infrastructure and less decent residential buildings. In addition, there were non-physical factors namely lower education levels, less awareness towards the environment, and the lack of participation in development. Hence, more concern and support from the government is needed in order to improve the physical and non-physical quality of environment in the fishing settlement.

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