

Prevention of Slum Area Development in Batu Bara Regency

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Abstract

The growth of slum areas represents one of the major challenges in urban development within Batu Bara Regency. This study aims to analyze the physical and socio-economic conditions of slum areas, identify the factors contributing to their development, and formulate effective prevention strategies. The research employs a qualitative approach using a descriptive method, involving in-depth interviews, participatory observation, and document analysis. The findings reveal that the physical condition of slum areas remains poor, characterized by high building density, limited access to basic infrastructure, and substandard housing quality. Socio-economically, residents living in slum areas tend to have low income, limited access to education and healthcare, and low awareness regarding the importance of a healthy environment. The main factors contributing to the expansion of slum areas include rapid population growth, limited economic capacity, inadequate infrastructure, and weak urban planning and supervision. The study proposes several preventive strategies, including effective spatial planning, improvement of basic infrastructure, community empowerment, relocation of settlements located in disaster-prone areas, as well as stronger monitoring and law enforcement. These findings are expected to serve as a basis for local governments and stakeholders in designing sustainable slum prevention policies and programs that promote livable and inclusive urban environments.

Keywords: Slum Areas, Prevention, Spatial Planning, Community Empowerment, Batu Bara Regency

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Introduction

Batu Bara Regency, as one of the rapidly developing regions in North Sumatra, faces significant challenges in settlement management, particularly concerning the emergence and expansion of slum areas. Slum settlements arise due to various interrelated factors such as rapid population growth, urbanization, limited spatial planning, and low economic capacity among residents. This phenomenon not only affects the environmental quality and aesthetics of the area but also creates serious social, health, and economic problems for the communities living within these environments [1].

Uncontrolled growth of slum areas poses severe environmental health risks, including poor sanitation, limited access to clean water, and increased vulnerability to infectious diseases. Furthermore, the existence of slum areas often reduces safety, comfort, and access to adequate public facilities. From a regional development perspective, the proliferation of slums can diminish investment attractiveness and hinder equitable infrastructure development [2].

Given these negative impacts, preventive efforts to control the emergence and expansion of slum areas are crucial. Such efforts must be carried out in an integrated manner through effective spatial planning, the improvement of basic infrastructure, and the enhancement of community welfare. Appropriate prevention strategies should not only aim to reduce the number of slum areas but also to improve residents' quality of life, create healthy, safe, and sustainable living environments, and support more equitable regional economic growth. Therefore, research on the prevention of slum area development in Batu Bara Regency is essential to provide concrete, effective, and implementable policy recommendations for local governments and stakeholders. This study is expected to contribute to better and more sustainable settlement planning, preventing the escalation of social and environmental problems in the future [3].

The phenomenon of slum areas in Batu Bara Regency has become a concerning and visible problem. Along with increasing population growth and urbanization, several regions in the regency have experienced high housing density without sufficient spatial planning or infrastructure development. This condition is reflected in the presence of densely populated and narrow settlements that fail to meet sanitation and environmental quality standards. Access to basic services such as clean water, electricity, waste disposal, and healthcare facilities remains limited. As a result, residents of slum areas face high health risks, including increased exposure to communicable diseases and poor sanitation. Other issues include the lack of green open spaces, inadequate drainage systems, and poor road infrastructure, making these areas vulnerable to flooding and further environmental degradation [4].

These conditions also have social and economic implications. High poverty rates, limited employment opportunities, and low levels of education perpetuate a cycle of poverty that hampers community well-being. This demonstrates that slum areas are not merely a physical problem but also a complex socio-economic issue. Without timely and comprehensive intervention, slum expansion could worsen and obstruct sustainable development in Batu Bara Regency. Therefore, an integrated approach involving spatial planning, infrastructure improvement, and community empowerment is urgently needed to prevent further slum proliferation and enhance residents' living conditions [5].

The urgency of this study lies in the complexity of the problems associated with slum areas. Slums not only present physical and environmental challenges such as inadequate sanitation, limited access to clean water, poor road infrastructure, and flood risk but also impact social and economic dimensions, including low living standards, restricted access to education, and insufficient employment opportunities. The uncontrolled growth of slum areas thus poses broad implications, affecting both local residents and regional development as a whole.

Moreover, uncontrolled slum expansion can hinder sustainable development efforts, reduce investment appeal, and slow local economic growth. The local government therefore

requires comprehensive data and analysis to design effective policies for slum prevention and control. However, studies focusing on slum prevention in Batu Bara Regency remain limited and have yet to provide clear guidance for policy planning and implementation [6].

Through this research, it is expected that a deeper understanding of the driving factors behind slum development can be achieved, along with practical and effective prevention strategies. The findings will serve as a foundation for local governments, urban planners, and related stakeholders to take proactive steps in preventing slum expansion, improving environmental quality, and enhancing community welfare. Thus, this research carries strategic importance and contributes to the creation of better-organized, healthier, and more sustainable human settlements in Batu Bara Regency [7].

Problem Identification

Based on the observed phenomena, several key issues related to the growth and development of slum areas in Batu Bara Regency can be identified as follows:

1. High settlement density – Many areas experience overcrowded housing conditions, with tightly packed dwellings that fail to meet proper environmental and housing standards.
2. Limited basic infrastructure – Access to clean water, sanitation, electricity, roads, and drainage systems remains inadequate in several regions
3. Health and environmental risks – Poor sanitation and unhygienic living conditions increase the risks of infectious diseases and flooding.
4. Socio-economic challenges – High poverty rates, limited employment opportunities, and restricted access to education perpetuate the cycle of poverty among residents.
5. Lack of planning and slum area control – There is no integrated prevention strategy in place to effectively manage and control the expansion of slum areas in Batu Bara Regency.

These issues indicate that the growth of slum areas is not merely a physical problem but a complex interplay of social, economic, and environmental factors. Therefore, comprehensive research is needed to formulate effective strategies for preventing and managing slum development in Batu Bara Regency

Research Questions

Based on the problem identification above, the research questions of this study are formulated as follows:

1. What are the current physical and socio-economic conditions of slum areas in Batu Bara Regency?
2. What factors contribute to the growth and development of slum areas in Batu Bara Regency?
3. What preventive strategies can be implemented effectively to control and prevent the expansion of slum areas in Batu Bara Regency?

Literature Review

2.1. Definition of Slum Settlements

A slum settlement is a residential area that is considered uninhabitable due to the irregularity of buildings, high population density, and substandard quality of housing and infrastructure. According to the Regulation of the Minister of Public Works and Public Housing (PUPR) No. 2 of 2016, a slum settlement is defined as an area that is unfit for habitation due to disorganized buildings, excessive building density, and inadequate facilities and infrastructure [8].

In general, a settlement is categorized as a slum when it fails to meet the standards of adequate housing, including access to clean water, proper sanitation, waste management, and basic infrastructure. Slum settlements not only reflect physical deterioration but also indicate underlying social, economic, and spatial planning issues [9].

2.2. Factors Causing Slum Settlements

Several interrelated factors contribute to the emergence and expansion of slum settlements, including:

1. **Population Migration:**

The high rate of rural-to-urban migration increases the urban population without being balanced by adequate housing provision. This situation leads to overcrowding and the formation of unplanned settlements in urban areas.

2. **Economic Constraints:**

Limited economic capacity forces low-income communities to choose cheap and easily accessible housing locations, even though these areas may not meet proper environmental and health standards.

3. **Lack of Infrastructure:**

The absence or insufficiency of basic infrastructure such as roads, sanitation systems, and drainage results in environmental degradation and accelerates the formation of slum conditions.

2.3. Efforts to Prevent and Manage Slum Settlements

Efforts to prevent and manage slum settlements require a multidimensional approach involving physical, social, economic, and institutional aspects. Several strategies that can be implemented include:

1. **Integrated Spatial Planning:**

Developing a spatial plan that integrates social, economic, and environmental considerations to prevent the emergence and expansion of slum areas.

2. **Improvement of Infrastructure Quality:**

Constructing and rehabilitating basic infrastructure such as roads, sanitation systems, and drainage networks to improve the environmental quality of residential areas.

3. **Community Empowerment:**

Engaging local communities in the planning, implementation, and evaluation of slum prevention and management programs to enhance awareness, participation, and ownership.

4. **Collaboration Among Stakeholders:**

Strengthening cooperation between government agencies, communities, and the private sector to ensure the sustainability and effectiveness of slum management initiatives.

2.4. National Policies on Slum Settlement Management

The Indonesian government has established several national policies and programs to address slum settlement issues, including:

1. City Without Slums Program (KOTAKU):
A national initiative aimed at reducing and eliminating slum areas through community-based approaches and infrastructure development, emphasizing cross-sectoral collaboration and community participation.
2. National Medium-Term Development Plan (RPJMN):
A strategic national planning document that identifies slum settlement management as one of the key development priorities to improve the quality of urban living and reduce spatial inequality.
3. Regulation of the Minister of PUPR No. 2 of 2016:
This regulation provides the legal framework for improving the quality of existing slum settlements and preventing the formation of new ones through environmentally based approaches and community participation.

Research Methodology

3.1. Research Approach

This study employs a descriptive qualitative approach. This approach was chosen to provide an in-depth understanding of the phenomenon of slum area growth and development in Batubara Regency, including its causal factors, socio-economic impacts, and potential prevention strategies. The qualitative approach allows the researcher to gain a holistic understanding of the social and cultural context through direct interaction with informants and field observations. It also enables the exploration of community perspectives and policy practices in a natural setting, which cannot be fully captured through quantitative methods [10].

3.2. Research Location and Duration

The research was conducted in several villages within Batubara Regency, focusing on areas identified as slum settlements. The study took place from June to October 2025, allowing the researcher to collect representative and contextually relevant data that reflect the current conditions of slum development. The selection of these sites was based on preliminary observations and local government data identifying high-density and substandard housing zones [11].

3.3. Research Informants

The informants in this study consist of four main groups:

1. Local Residents:
Community members living within slum areas who provide information about environmental, social, and economic conditions.
2. Policy Makers:
Officials from the Department of Housing and Settlement Affairs of Batubara Regency, who are responsible for planning and implementing policies related to slum area management.
3. Non-Governmental Organizations (NGOs):
Representatives of community-based organizations engaged in empowerment programs and slum settlement management.
4. Academics:
Researchers or lecturers specializing in urban and regional planning.

Informants were selected using purposive sampling, considering their knowledge, experience, and involvement in slum-related issues. This selection aimed to ensure that data were gathered from individuals directly relevant to the research objectives.

3.4. Data Collection Techniques

Data were collected using three primary methods:

1. In-depth Interviews:

Conducted with informants to explore their perceptions, experiences, and opinions regarding slum conditions and prevention efforts.

2. Participant Observation:

The researcher directly engaged with community activities to observe physical conditions and social interactions within the slum areas.

3. Document Study:

Collection of secondary data from relevant documents, including government reports, policy documents, and statistical records.

To ensure data validity, a triangulation technique was applied by cross-verifying data obtained from multiple sources and methods.

3.5. Data Analysis Technique

The data were analyzed using thematic analysis, which involved several stages:

1. Data Reduction:

Filtering relevant information and eliminating irrelevant or redundant data.

2. Categorization:

Grouping the data into key themes such as causes of slum development, socio-economic impacts, and prevention strategies.

3. Interpretation:

Interpreting the meaning of the categorized data to understand the patterns and implications within the context of slum areas in Batubara Regency.

4. Conclusion Drawing:

Synthesizing the findings to formulate conclusions and policy recommendations for sustainable slum prevention strategies.

3.6. Validity and Reliability

To ensure the validity and reliability of the data, this study applied source and methodological triangulation. The researcher also employed member checking, whereby preliminary findings were verified by the informants to confirm the accuracy and credibility of the interpretations. This process strengthens the trustworthiness of the study by aligning the researcher's analysis with the participants' perspectives.

Results

Physical Condition of Slum Areas

The slum areas in Batubara Regency, particularly in Bandar Rahmat Village, Tanjung Tiram District, exhibit physical conditions that reflect a moderate level of slum severity. Based on assessment indicators, the total slum index score of 46 indicates that the area faces considerable challenges related to housing quality, infrastructure access, and environmental management.

The high density of housing with irregular and closely packed structures demonstrates the limited availability of livable space. Many houses are constructed using non-durable materials such as wood and tin, which are highly vulnerable to environmental damage. Furthermore, road infrastructure in the area is in poor condition, largely due to coastal abrasion and inadequate maintenance, which hinders mobility and economic activity.

Another significant issue is the limited access to clean water and the lack of proper sanitation facilities, leading to environmental pollution and health risks among residents. Drainage systems are insufficient to handle rainwater runoff, often resulting in localized flooding and water stagnation. Collectively, these factors indicate that the physical condition of slum areas in Batubara Regency requires urgent improvement through infrastructure rehabilitation, environmental protection measures, and sustainable housing development programs.



Figure 1. Physical and Socio-Economic Conditions of Slum Areas in Batubara Regency

Physical Condition of Slum Areas

The findings indicate that the physical condition of slum areas in Batubara Regency requires serious attention. Most settlements exhibit high building density, damaged access roads, inadequate drainage systems, and limited access to clean water and sanitation facilities. Field observations show that houses are built closely together, resulting in poor air circulation and increased fire risk. This phenomenon aligns with Wijaya (2019), who argues that poor infrastructure quality and unplanned settlement development accelerate the degradation of urban areas into slums.

Factors Contributing to the Growth of Slum Areas

Data analysis reveals that the development and expansion of slum areas in Batubara Regency result from multiple interrelated factors:

1. Population Growth and Migration:

Rapid rural-to-urban migration has increased the demand for housing, while the supply of affordable and adequate housing remains limited.

2. Economic Constraints:

Low income levels compel residents to live in substandard housing areas that lack basic facilities.

3. Infrastructure and Spatial Planning Limitations:

Insufficient infrastructure development such as roads, drainage, and sanitation has worsened living conditions.

4. Low Environmental Awareness:

Limited environmental education and community participation exacerbate poor living conditions and hinder improvement efforts

Overall, the interaction of demographic, economic, infrastructural, and socio-cultural factors contribute to the persistence and growth of slum areas in Batubara Regency.

Slum Prevention Strategies

Based on interviews and field observations, several effective strategies can be implemented to prevent the growth of slum areas in Batubara Regency:

1. **Strict Spatial Planning:** Establishing appropriate housing zones and restricting development in areas prone to slum formation.
2. **Infrastructure Improvement:** Upgrading essential infrastructure such as roads, drainage, clean water systems, and sanitation facilities.
3. **Community Empowerment:** Providing environmental education, entrepreneurship training, and microcredit programs for home improvement and income generation.
4. **Relocation of Vulnerable Areas:** Moving residents from disaster-prone or uninhabitable zones to safer, more suitable housing areas.
5. **Regulatory Enforcement:** Strengthening monitoring and ensuring new constructions comply with planning and licensing regulations.

These strategies emphasize that slum prevention requires not only physical interventions but also social, economic, and cultural approaches to achieve sustainable outcomes.

Novelty

The study confirms that slum areas in Batubara Regency represent a multidimensional problem involving physical, social, and economic aspects. The growth of these areas is influenced not only by internal community factors but also by the government's limitations in planning and management. Effective prevention strategies must integrate spatial policy, infrastructure development, community empowerment, and regulatory enforcement. These findings are in line with Syamsudin (2023) and Wijaya (2019), who highlight the importance of a holistic and collaborative approach in addressing slum settlement issues.

Conclusion

Based on the qualitative analysis, this study concludes several key findings:

1. **Physical Condition of Slum Areas:**

The physical condition of slum settlements in Batubara Regency requires serious attention. The findings reveal high building density, limited access to basic infrastructure, and poor housing quality, all of which contribute to the degradation of the living environment.

2. **Socioeconomic Condition of the Community:**

Residents in these areas generally have low income levels, limited access to education and healthcare, and a lack of environmental awareness. These socioeconomic constraints hinder efforts to improve living standards and maintain environmental sustainability.

3. **Factors Contributing to the Growth of Slum Areas:**

The expansion of slum settlements is influenced by several interrelated factors, including rapid population growth, limited economic capacity, inadequate infrastructure and spatial planning, and low environmental awareness among residents.

4. **Effective Prevention Strategies:**

Effective prevention of slum area development requires an integrated approach. This includes implementing strict spatial planning, improving basic infrastructure, empowering communities through education and economic programs, relocating

residents from disaster-prone areas, and ensuring consistent monitoring and law enforcement.

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