



Strategic Planning for Slum Settlement Management in Meranti Pandak Village

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ABSTRACT: This study aimed to assess the level of slum settlement conditions and formulate appropriate management strategies for the Meranti Pandak Urban Village, Pekanbaru, Indonesia. A quantitative approach was employed using field observations, questionnaires, interviews, and secondary data collected from August to December 2024. The study area covered 384 hectares with a population of 13,642 residents, 4,426 housing units, and 2,789 households. A total of 96 respondents were selected through purposive sampling. Slum conditions were evaluated using the criteria established in the Regulation of the Minister of Public Works and Housing Number 2 of 2018, while strategic recommendations were developed through SWOT analysis supported by Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices. The results identified 425 households distributed across ten RTs within seven RWs as slum settlement locations. The assessment produced a total slum score of 32, classifying the area as a light slum settlement. The highest contributing factors were inadequate solid waste management (score = 13), lack of fire protection facilities (score = 10), and poor wastewater management (score = 6), whereas building conditions and clean water provision showed relatively good performance. SWOT analysis generated an IFAS score of 1.98 and an EFAS score of 2.65, showing that external opportunities exerted a stronger influence than internal conditions. The strategic coordinates of (0.28, 0.87) suggested that settlement improvement efforts should prioritize infrastructure upgrading, environmental management enhancement, community empowerment, and inter-agency collaboration.

Keywords: Slum Settlement, SWOT Analysis, Settlement Management

Submitted: 20-05-2026; Revised: 22-06-026; Accepted: 25-07-2026

INTRODUCTION

Housing and settlement areas constitute an essential component of the living environment outside protected zones and function as places for residence and activities that support community livelihoods. According to the Indonesian Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, settlements represent residential environments equipped with infrastructure and facilities that support the daily lives of their inhabitants (Kementerian ATR/BPN, 2018). In urban, residential areas are generally classified into habitable settlements and uninhabitable settlements. Habitable settlements are typically occupied by middle-and upper-income groups, whereas uninhabitable settlements are commonly associated with lower-income communities and are often identified as slum settlements. In the concept of human settlement, settlements encompass not only physical housing but also social, cultural, and spiritual dimensions that shape community life (Dinata & Ulum, 2019). Settlement environments often perform dual functions as places of residence and locations for livelihood activities, particularly among low-income populations (Muta'ali, 2015). The existence of slum settlements therefore reflects broader socio-economic disparities and unequal urban development processes. As stated by Sukmaniar (2020), low-income households are more likely to reside in substandard residential environments due to limited economic capacity and restricted access to formal housing opportunities.

The legal framework governing housing and settlement development in Indonesia emphasizes the importance of maintaining adequate residential environments. According to Law Number 1 of 2011 concerning Housing and Settlement Areas, settlement development encompasses planning, implementation, maintenance, improvement of slum housing quality, land provision, and community participation. The law defines slum settlements as residential areas that are unfit for habitation due to irregular building arrangements, high building density, and inadequate infrastructure and public facilities. Similar characteristics are showed by Surtiani (2006), who describes slum settlements as densely populated environments with poor socio-economic conditions, overcrowded housing, and inadequate physical facilities. Likewise, UN-Habitat (2018) characterizes slums as degraded residential environments marked by poor housing quality, overcrowding, and insufficient access to clean water and sanitation services. Furthermore, Government Regulation Number 14 of 2018 mandates local governments to formulate comprehensive plans for slum housing and settlement management in order to support regional spatial planning policies.

Various factors contribute to the emergence and expansion of slum settlements in urban areas. Population migration from rural regions to cities, rapid urbanization, and socio-economic pressures have been identified as major drivers of slum formation. According to Ramadhana and Pigawatib (2014), urbanization and migration processes are among the primary factors influencing the development of slum areas, particularly in rapidly growing cities. Economic limitations also play a significant role, as low-income households often lack the

financial capacity to obtain adequate housing, forcing them to occupy informal and substandard settlements (Sutiyani, 2006). In addition, land scarcity, unequal land ownership, and limited access to urban land further contribute to the growth of slum settlements among disadvantaged populations (Zulkarnaini, Elfindri, & Sari, 2019). The social and cultural characteristics of communities also influence settlement conditions, as slum areas are shaped not only by physical deficiencies but also by socio-economic and cultural dynamics (Wardhana & Sulistyarto, 2015). Moreover, inadequate housing quality and deteriorating physical infrastructure have been identified as major factors accelerating settlement degradation (Wimardana, 2016).

To improve community welfare and reduce poverty, the Indonesian government has implemented several urban development programs aimed at enhancing living conditions in disadvantaged settlements. One of the most significant initiatives is the Kota Tanpa Kumuh (KOTAKU) Program, established by the Directorate General of Human Settlements under the Ministry of Public Works and Housing. The program seeks to improve urban infrastructure and public services within slum areas while promoting the creation of livable and sustainable settlements. Through infrastructure development, environmental upgrading, and community empowerment activities, the program contributes to improving social and economic conditions in urban neighborhoods. This approach aligns with the view of Edward Glaeser (2011), who argues that slums are part of broader urban economic dynamics involving social, economic, and physical dimensions. Furthermore, Dwiyanti (2019) emphasizes that residents of slum settlements are not passive actors but continuously adapt their physical, social, and economic resources to improve their living environments.

THEORETICAL REVIEW

One city experiencing significant urban growth and increasing housing demand is Pekanbaru. According to Statistics Indonesia of Pekanbaru City, the population increased from 994,585 inhabitants in 2021 to 1,123,348 inhabitants in 2023, showing rapid population growth within a relatively short period. This demographic expansion has intensified demand for residential land and housing facilities throughout the city. Rapid population growth without corresponding improvements in housing provision may accelerate the emergence of slum settlements, particularly in areas occupied by low-income communities. In response to these challenges, the Mayor of Pekanbaru issued Decree Number 519 of 2024 identifying eighteen slum settlement areas across the city, including Meranti Pandak, Sri Meranti, Limbungan, Okura, and Kota Lama. The designated slum areas cover approximately 267.76 hectares distributed across nineteen districts. Among these locations, Meranti Pandak Urban Village was selected as a priority area for intervention and designated as a pilot area for slum settlement improvement based on information provided by Mardiansyah (interview, March 20, 2023).

Meranti Pandak Urban Village, located within Rumbai District, has been identified as a priority area for slum settlement management under the 2023

Slum Housing and Settlement Prevention and Quality Improvement Plan. The area faces numerous challenges, including flood vulnerability due to its proximity to the Siak River, high-density and unplanned housing development, inadequate infrastructure, limited access to clean water, poor waste management systems, and insufficient sanitation facilities. These characteristics correspond closely with the slum settlement indicators established in Minister of Public Works and Housing Regulation Number 2 of 2018, which include deficiencies in housing conditions, road infrastructure, drainage systems, water supply, wastewater management, solid waste management, and fire protection facilities. In addition, the area exhibits characteristics commonly associated with moderate to severe slum settlements, including inadequate infrastructure provision, environmental degradation, and exposure to flood hazards (Fitria *et al.*, 2014). Many residential structures are also located near riverbanks in violation of Government Regulation Number 38 of 2011 regarding river setback requirements. According to Suparno and Marlina (2006), weak spatial planning enforcement and insufficient government supervision often contribute to the persistence of slum settlements. Therefore, it is necessary to assess the level of slum conditions in Meranti Pandak and formulate appropriate management strategies aligned with the Regional Spatial Plan. From a public policy perspective, such strategies should represent the systematic use of public resources and authority to achieve public welfare objectives (Mulgan, 2009). The resulting strategies may include rehabilitation, revitalization, or relocation approaches as prescribed in Minister of Public Works and Housing Regulation Number 2 of 2018, thereby supporting sustainable urban development and improving residents' quality of life.

METHODOLOGY

This study employed a quantitative research approach to analyze the level of slum settlement conditions and formulate appropriate management strategies for slum settlements in Meranti Pandak Urban Village, Pekanbaru City. A quantitative approach was selected because the study relied on numerical data obtained through field surveys, questionnaires, interviews, and supporting secondary data. Quantitative research is grounded in the positivist paradigm, which emphasizes objective measurement and statistical analysis to understand social phenomena (Sugiyono, 2018). Prior to data collection, relevant research variables and indicators were identified based on the criteria for slum settlement assessment established in the Regulation of the Minister of Public Works and Housing Number 2 of 2018. The research was conducted in the Meranti Pandak Slum Area, located in Meranti Pandak Urban Village, Rumbai District, Pekanbaru City, Riau Province. The study area covers approximately 384 hectares with a population of 13,642 residents distributed across 54 neighborhood units (RT) and 13 community units (RW). Data collection and analysis were conducted from August 2024 to December 2024.

The study utilized both qualitative and quantitative data obtained from primary and secondary sources. Qualitative data included information regarding

the physical characteristics of the study area, land-use patterns, settlement conditions, socio-economic characteristics, cultural conditions, land legality status, and conformity with the Regional Spatial Plan. Quantitative data consisted of demographic information, including population size, population density, household numbers, infrastructure availability, access to clean water, wastewater management systems, solid waste management facilities, and land ownership status. Primary data were collected through direct observation, structured questionnaires, and interviews with community members and relevant stakeholders. The questionnaire instruments were developed based on the slum settlement indicators stipulated in the Regulation of the Minister of Public Works and Housing Number 2 of 2018. Secondary data were obtained from government agencies, planning documents, statistical reports, books, scientific journals, and relevant regulations. The collection of both primary and secondary data ensured comprehensive coverage of the physical, social, economic, and environmental dimensions of slum settlement conditions. The secondary data requirements and sources are showed in Table 1.

Table 1. Secondary Data Requirements and Sources

No.	Data Required	Source Institution
1	Number of habitable and uninhabitable houses	Department of Housing and Settlement Areas
2	Road, drainage, water supply, sanitation, and infrastructure conditions	Department of Public Works and Spatial Planning (PUPR)
3	Village profile, demographic, social, and economic data	Meranti Pandak Urban Village Office
4	Waste collection fees and temporary waste disposal facilities (TPS)	Environmental Agency

Source: Research Identification Results (2025).

Field observation was conducted to directly assess housing conditions, road networks, drainage systems, clean water provision, wastewater management, solid waste management, and fire protection facilities. According to Sugiyono (2016), observation is a specific data collection technique involving direct examination of objects and phenomena in their natural settings. Structured questionnaires were distributed to residents to collect information regarding settlement conditions and community perceptions of slum management priorities. Questionnaire items were designed as closed-ended questions to facilitate quantitative analysis (Sugiyono, 2014). In addition, interviews were conducted with community representatives and government officials to obtain information regarding land ownership status, socio-economic conditions, and settlement management programs. Literature review and documentation techniques were also applied to collect supporting information from planning documents, policy reports, regulations, books, scientific articles, and

photographic records of existing settlement conditions (Martono, 2012). The operational variables used to assess slum settlement conditions and formulate management strategies are showed in Table 2.

Table 2. Operational Definition of Variables

Aspect	Variable	Data Collection Technique	Data Source	Classification
Ecological	Building condition	Observation, literature review	Primary, Secondary	Uninhabitable, Less habitable, Habitable
Ecological	Drainage condition	Observation, literature review	Primary, Secondary	Very poor, Poor, Good
Ecological	Clean water availability	Observation, literature review	Primary, Secondary	Unavailable, Available, Sustainable
Ecological	Sanitation condition	Observation, literature review	Primary, Secondary	Very poor, Poor, Good
Ecological	Environmental roads	Observation, literature review	Primary, Secondary	Severely damaged, Damaged, Good
Ecological	Waste management condition	Observation, literature review	Primary, Secondary	Very poor, Poor, Good
Ecological	Fire protection facilities	Observation, literature review	Primary, Secondary	Not available, Available but unsustainable, Available and sustainable
Ecological	Availability of habitable housing	Interview	Primary, Secondary	Not available, Available but unsustainable, Available
Ecological	River environmental degradation	Interview	Primary, Secondary	No, Yes
Social	Conformity with Regional Spatial Plan (RTRW)	Literature review, Interview	Primary, Secondary	Not suitable, Suitable, Highly suitable

Social	Local government regulations	Literature review, Interview	Primary, Secondary	Not available, Available
Social	Community empowerment programs	Interview	Primary, Secondary	None, Limited, Continuous
Social	Population growth	Interview	Primary, Secondary	Low influence, Influential, Highly influential
Social	Educational level	Interview	Primary, Secondary	Elementary, Junior High, Senior High, Higher Education
Social	Community awareness	Interview	Primary, Secondary	Low, Moderate, High
Social	Community outreach activities	Interview	Primary, Secondary	None, Available but unsustainable, Continuous
Social	Inter-agency cooperation	Interview	Primary, Secondary	No, Yes
Social	Waste collection schedule	Interview	Primary, Secondary	Available, Not available
Economic	Economic growth	Interview	Primary, Secondary	Low, Medium, High
Economic	Land ownership status	Interview	Primary, Secondary	Private, Government, Rental
Economic	Unemployment level	Interview	Primary, Secondary	Low, Medium, High
Economic	Community income	Interview	Primary, Secondary	Low, Medium, High
Economic	Government budget support	Interview	Primary, Secondary	Not available, Available

Source: Researcher Identification Results (2026).

The population of this study consisted of 2,789 households located within the Meranti Pandak slum settlement area. Respondents were selected using purposive sampling, whereby participants were chosen based on specific criteria related to their knowledge and experience regarding settlement conditions. According to Sugiyono (2016), purposive sampling is appropriate when only particular members of a population possess the characteristics required for the

research objectives. The sample size was determined using the Slovin formula with a margin of error of 10% (Sugiyono, 2023). Based on a population of 2,789 households, the calculation produced a minimum sample size of 96 respondents. These respondents consisted of representatives from government institutions and local residents who directly experience settlement conditions in the study area. The distribution of respondents is showed in Table 3.

Table 3. Distribution of Research Respondents

No.	Respondent Category	Number
1	Department of Housing and Settlement Areas	1
2	Environmental Agency	1
3	Department of Public Works and Spatial Planning (PUPR)	1
4	Meranti Pandak Urban Village Office	1
5	Community Residents	92
	Total	96

Source: Research Identification Results (2026).

Data analysis was conducted using two complementary analytical techniques. First, descriptive quantitative analysis with a scoring method was employed to determine the level of slum conditions in Meranti Pandak Urban Village. The assessment followed the criteria established in the Regulation of the Minister of Public Works and Housing Number 2 of 2018, which evaluates building conditions, environmental roads, drainage systems, water supply, wastewater management, solid waste management, and fire protection facilities. Each indicator was assigned a score according to the percentage of deficiency observed in the field, namely 5 points (76-100%), 3 points (51-75%), 1 point (25-50%), and 0 points (0-24%). The total score was then used to classify settlement conditions into four categories: non-slum (0-18), light slum (19-44), moderate slum (45-70), and severe slum (71-95). To formulate management strategies, SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was applied because it enables the identification of internal and external factors influencing settlement improvement and supports the development of strategic alternatives (Fatimah, 2020). The weighting and scoring process was conducted through Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices as proposed by Marimin (2004). The structure of the IFE and EFE matrices is showed in Table 4.

Table 4. Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE)

No.	IFAS and EFAS Factors	Weight	Rating	Score
A. Internal Factors				
1	Strengths Identified strengths based on field observations			

B. External Factors	2	Total Strength Score		A
		Weaknesses		
		Identified weaknesses based on field observations		
		Total Weakness Score		B
		Total Internal Score	1.00	A - B
	1	Opportunities		
		Identified opportunities based on field observations		
		Total Opportunity Score		C
	2	Threats		
		Identified threats based on field observations		
		Total Threat Score		D
		Total External Score	1.00	C - D

Source: Adapted from Marimin (2004).

Following the IFE and EFE analysis, a strategic position assessment was performed using a SWOT space matrix. The X-axis was obtained by subtracting the total weakness score from the total strength score, while the Y-axis was obtained by subtracting the total threat score from the total opportunity score (Marimin, 2004). The resulting coordinates determined the strategic position of slum settlement management within one of four quadrants: aggressive strategy, diversification strategy, turnaround strategy, or defensive strategy. Subsequently, a SWOT matrix was developed to formulate alternative strategies by matching internal and external factors. According to Rangkuti (2005), SWOT analysis generates four categories of strategic alternatives, namely Strength-Opportunity (SO), Weakness-Opportunity (WO), Strength-Threat (ST), and Weakness-Threat (WT) strategies. The SWOT matrix used in this study is showed in Table 5. This analytical framework enabled the study to identify the level of slum settlement conditions and formulate appropriate strategic recommendations for improving settlement quality in Meranti Pandak Urban Village.

Table 5. SWOT Matrix

EFAS / IFAS	Strengths (S)	Weaknesses (W)
Opportunities (O)	SO Strategy: Utilize strengths to maximize opportunities	WO Strategy: Minimize weaknesses by utilizing opportunities
Threats (T)	ST Strategy: Utilize strengths to overcome threats	WT Strategy: Minimize weaknesses and avoid threats

Source: Adapted from Rangkuti (2005).

RESULTS AND DISCUSSION

The assessment of slum settlement conditions in Meranti Pandak Urban Village was conducted by identifying neighborhood units (RT/RW) that exhibited characteristics of slum settlements based on the criteria stipulated in Law Number 1 of 2011 concerning Housing and Settlement Areas and the Regulation of the Minister of Public Works and Housing Number 2 of 2018. Not all areas within Meranti Pandak were classified as slum settlements; therefore, a preliminary identification process was undertaken to determine priority locations for assessment. The selection of the study area was also based on the Decree of the Mayor of Pekanbaru Number 703 of 2021 concerning the Designation of Slum Housing and Settlement Areas. The assessment considered several indicators, including building conditions, environmental roads, clean water supply, drainage systems, wastewater management, solid waste management, fire protection facilities, land legality, strategic area conditions, population characteristics, and socio-cultural aspects. The identified slum settlement area covers approximately 384 hectares with a population of 13,642 inhabitants, comprising 4,426 housing units and 2,789 households. The land status within the study area is predominantly privately owned by local residents, showing that settlement improvement programs should emphasize environmental upgrading rather than land acquisition measures.

Table 6. Characteristics of the Meranti Pandak Slum Settlement Area

Area	Size (Ha)	Population	Housing Units	Households	Land Legality
Meranti Pandak Slum Area	384	13,642	4,426	2,789	Community-owned land

Source: Analysis Results (2026).

The identification process revealed that slum settlement conditions were concentrated in specific neighborhood units rather than throughout the entire urban village. A total of 425 households located in nine RTs across seven RWs were identified as residing within slum settlement areas. These neighborhoods exhibited varying degrees of infrastructure deficiencies and environmental degradation. The concentration of slum conditions in selected locations suggests that urban development within Meranti Pandak has occurred unevenly, resulting in disparities in access to infrastructure and public services. Such spatial concentration also indicates the need for targeted interventions rather than uniform settlement improvement programs across the entire urban village. The identified locations serve as the primary focus for evaluating slum severity and formulating appropriate management strategies. Detailed information regarding the identified slum settlement locations is showed in Table 7.

Table 7. Identified Slum Settlement Locations in Meranti Pandak Urban Village

RW	RT	Households (HH)
02	02	38
02	03	42
02	04	42
03	03	48
03	05	41
04	05	52
05	05	44
06	02	43
08	06	32
12	04	43
Total		425

Source: Analysis Results (2026).

The slum level assessment conducted in RW 02 showed that the area falls within the category of light slum settlements with a total score of 32. Building conditions generally complied with technical standards, as indicated by low percentages of building irregularity, overcrowding, and structural inadequacy. Likewise, access to environmental roads and clean water services was relatively satisfactory and contributed minimally to overall slum conditions. However, substantial deficiencies were observed in wastewater management, solid waste management, and fire protection facilities. Waste management emerged as the most critical issue, with extremely high percentages of inadequate waste facilities and poor waste handling systems. Similarly, the absence of fire protection infrastructure and equipment significantly increased environmental vulnerability. These findings show that although housing structures and road accessibility are relatively adequate, environmental management remains the principal factor contributing to slum conditions in Meranti Pandak.

Table 8. Slum Level Assessment of RW 02, Meranti Pandak Urban Village

Aspect	Score
Building Conditions	0
Environmental Roads	1
Clean Water Supply	0
Environmental Drainage	2
Wastewater Management	6
Solid Waste Management	13
Fire Protection Facilities	10
Total Score	32
Slum Category	Light Slum

Source: Analysis Results (2026).

The results suggest that environmental infrastructure deficiencies contribute more significantly to slum formation than physical housing conditions. The highest score was recorded for solid waste management,

showing the absence of adequate waste collection facilities and the persistence of inappropriate waste disposal practices. In addition, wastewater management systems did not comply with technical standards, as many households continued to dispose of wastewater into open drains and nearby waterways. Drainage infrastructure was also found to be inadequately maintained, reducing its effectiveness in managing surface runoff and increasing the risk of flooding. The complete absence of fire protection infrastructure represents another major concern, particularly considering the high density of residential buildings within the area. These conditions collectively demonstrate that environmental services and infrastructure require greater attention in future settlement upgrading programs. Improving these aspects would significantly reduce environmental risks and enhance the overall quality of life for residents.

To formulate strategic interventions for slum settlement management, an Internal Factor Analysis Summary (IFAS) was conducted to identify strengths and weaknesses affecting settlement improvement efforts. The analysis revealed that the availability of clean water, building conditions, road infrastructure, and sanitation facilities constituted the principal strengths of the area. Among these factors, clean water availability received the highest score, emphasizing its importance in supporting public health and environmental quality. According to Hatuina (2015), access to clean water is a fundamental determinant of community health and welfare and therefore represents a critical asset for settlement development. Nevertheless, several internal weaknesses were identified, including low household income levels, limited educational attainment, inadequate environmental awareness, unemployment, poor waste management practices, insufficient drainage systems, and the absence of fire protection facilities. The total IFAS score was 1.98, showing that internal weaknesses remain more dominant than strengths, consistent with the classification proposed by David (2009), where scores below 2.5 reflect relatively weak internal conditions.

Table 9. Internal Factor Analysis Summary (IFAS)

Internal Factors	Score
Total Strength Score	1.13
Total Weakness Score	0.85
Total IFAS Score	1.98

Source: Analysis Results (2026).

An External Factor Analysis Summary (EFAS) was subsequently performed to evaluate opportunities and threats influencing settlement improvement efforts. The results indicate that the availability of habitable housing assistance programs, economic growth, community empowerment initiatives, inter-agency collaboration, and community outreach programs represent significant opportunities for slum settlement management. The availability of government-supported housing assistance received the highest score among opportunity factors, reflecting its potential to accelerate settlement upgrading. Conversely, several threats were identified, including population growth, river environmental degradation, unclear land status, inconsistencies with spatial

planning regulations, limited government budgets, and inadequate local regulations. Population growth emerged as the most influential threat because increasing demand for housing often exceeds the capacity of urban infrastructure and services. The overall EFAS score of 2.65 exceeded the IFAS score, showing that external factors exert a stronger influence on settlement management outcomes than internal factors. This finding highlights the importance of leveraging external opportunities while simultaneously mitigating emerging threats.

Table 10. External Factor Analysis Summary (EFAS)

External Factors	Score
Total Opportunity Score	1.76
Total Threat Score	0.89
Total EFAS Score	2.65

Source: Analysis Results (2026).

The strategic position of slum settlement management was further evaluated using SWOT Cartesian analysis. The internal coordinate (X-axis) was obtained by subtracting the total weakness score from the total strength score, yielding a value of 0.28. Similarly, the external coordinate (Y-axis) was obtained by subtracting the total threat score from the total opportunity score, resulting in a value of 0.87. These coordinates indicate that the strategic position lies at point (0.28, 0.87), demonstrating that opportunities exceed threats while strengths slightly exceed weaknesses. Although the original assessment categorized the position as Quadrant IV, the calculated coordinates are both positive, which mathematically places the strategy within Quadrant I. This position reflects a favorable situation in which available opportunities can be utilized to strengthen settlement improvement efforts. Therefore, an aggressive growth-oriented strategy emphasizing the optimization of existing strengths and opportunities is considered appropriate for the study area.

Table 11. SWOT Cartesian Coordinates

Variable	Score
Strengths (S)	1.13
Weaknesses (W)	0.85
Opportunities (O)	1.76
Threats (T)	0.89
X Coordinate (S-W)	0.28
Y Coordinate (O-T)	0.87

Source: Analysis Results (2026).

The SWOT matrix generated several alternative strategies for addressing slum settlement conditions in Meranti Pandak. Strength-Opportunity (SO) strategies focused on enhancing economic growth and maximizing inter-agency cooperation to improve settlement infrastructure. Weakness-Opportunity (WO) strategies emphasized community empowerment, educational improvement, and environmental awareness programs to overcome internal limitations.

Strength-Threat (ST) strategies sought to optimize clean water and sanitation infrastructure while promoting compliance with land-use regulations and environmental protection measures. Meanwhile, Weakness-Threat (WT) strategies concentrated on reducing unemployment, strengthening environmental management, improving waste disposal systems, and increasing government investment in settlement infrastructure. Among these alternatives, WT strategies were considered the most relevant because they directly address the dominant weaknesses and threats identified in the analysis. These strategies aim to reduce environmental degradation while strengthening the socio-economic resilience of local communities.

Table 12. Priority SWOT Strategies for Slum Settlement Management

Strategy	Recommended Strategy
SO	Enhance local economic growth and strengthen inter-agency cooperation for infrastructure development
WO	Increase community awareness, education, and participation through empowerment programs
ST	Improve clean water and sanitation services while enforcing land-use regulations
WT	Reduce unemployment, strengthen environmental management, improve waste facilities, and increase government support

Source: SWOT Analysis Results (2026).

Based on the SWOT analysis, two strategic priorities were identified for the management of slum settlements in Meranti Pandak Urban Village. First, local governments should improve human development quality by reducing unemployment, enhancing education levels, and increasing community participation in environmental management activities. This objective can be achieved through collaboration among government agencies, community organizations, and development programs such as KOTAKU and housing improvement initiatives. Second, waste management systems should be strengthened through the provision of adequate waste collection facilities, stricter environmental regulations, and continuous public awareness campaigns. Community education regarding environmental conservation is particularly important because behavioral factors significantly influence settlement quality. The integration of infrastructure development, environmental management, and community empowerment is therefore essential for achieving sustainable settlement improvement.

CONCLUSIONS AND RECOMMENDATIONS

The slum settlement area in Meranti Pandak Urban Village is classified as a light slum settlement, with a total score of 32 based on the assessment criteria established in the Regulation of the Minister of Public Works and Housing Number 2 of 2018. The main factors contributing to slum conditions include

inadequate solid waste management, insufficient wastewater management facilities, poor drainage maintenance, and the absence of fire protection infrastructure, while building conditions, environmental roads, and clean water provision generally meet acceptable standards. The SWOT analysis showed that settlement management is influenced by both internal and external factors, with opportunities such as government housing assistance programs, community empowerment initiatives, economic growth, and inter-agency cooperation offering significant potential for improvement. Based on these findings, the recommended strategy emphasizes the upgrading and rehabilitation of settlement infrastructure through improvements to housing conditions, environmental roads, clean water supply systems, drainage networks, wastewater management facilities, solid waste management systems, and fire protection infrastructure in accordance with spatial planning regulations. To support the sustainability of these interventions, the Pekanbaru City Government should implement consistent and integrated policies, strengthen collaboration among government agencies and local communities, enforce regulations regarding settlement development in riverbank areas, provide adequate budget allocations for infrastructure improvement, and conduct continuous environmental education programs to increase public awareness and participation in maintaining settlement quality. Through the integration of physical infrastructure development, environmental protection, and community empowerment, sustainable and inclusive slum settlement management can be achieved in Meranti Pandak Urban Village.

FURTHER STUDY

Future studies should integrate multi-criteria decision-making approaches, such as the Analytic Hierarchy Process (AHP) or GIS-based spatial analysis, with SWOT analysis to provide more objective and comprehensive strategic prioritization. In addition, longitudinal research is needed to evaluate the effectiveness and sustainability of slum settlement upgrading programs over time and to identify the key factors influencing their long-term success.

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