



INFRASTRUCTURE DEVELOPMENT IMPLEMENTATION STRATEGY FOR SLUM MANAGEMENT

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ABSTRACT

Based on the West Lombok Regency Decree 2020, Gerung District is not included in the list of slum housing and slum settlement locations for the Program of 2020 - 2025. In fact, the Gerung District area is facing several settlement problems with poor conditions of house building, environmental road, drinking water supply, environmental drainage and waste management problem. In addition, non-physical conditions of social and economic have also involved to the problems. The purpose of this study is to develop the best concept and program so that this area becomes a slum-free settlement in 2025. This research applies the concept of how best to handle this area so that it becomes a slum-free settlement. The research used quantitative and qualitative research methods. Primary data collection is carried out by direct observation to field locations to obtain information and field problems. Interviews were conducted by selecting respondents based on their position. The types of questions are determined based on the needs of the analysis. The secondary data needed is existing settlement data, BPS statistical data on the condition of the local population, and the RTRW map of West Lombok Regency. Slum settlement standards are set based on the Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 14/PRT/M/2018. The strategy for managing slum settlements are carried out using AHP (Analytical Hierarchy Process) and SWOT analysis methodology to get alternative strategic decisions. The results indicated that waste management condition has the highest score causing slums. The implementation strategy is divided into short-term (2023-2024), medium-term (2025-2029) and long-term (2030-2040) periods program. SOP (Standard Operational Procedure) is expected to be developed. Monitoring and coordination should be maintained periodically. The results are recommended for consideration of the West Lombok Regency Government and Stakeholders.

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1. INTRODUCTION

Based on the 2020 West Lombok Regent's Decree [1], Gerung District, West Lombok Regency, is not included in the list of Slum Housing and Slum Housing Locations in West Lombok Regency for 2020 - 2025. However, the Gerung District area, West Lombok Regency, is facing several settlement problems. Various problems in the Gerung District area such as building conditions, road conditions, drinking water supply conditions, environmental drainage conditions, waste management conditions, and solid waste management conditions. In addition to physical problems, non-physical problems such as social problems and community economic problems are not so high that they do not realize that it is difficult to meet the need for a decent place to live. Systematic, planned and sustainable settlement development must be considered and designed innovatively so that Gerung District is not included in the category of slum housing and slum settlements in Lombok Regency. The research location is in Kebon Ayu Village, Gerung District, West Lombok Regency. A planned, systematic and sustainable housing development plan is urgently needed. This is achieved by applying fast, consistent, effective and efficient planning principles in the development of settlement infrastructure.

The purpose of this study is to analyze the criteria for slum settlements and the factors that cause slum settlements in Kebon Ayu Village, Gerung Subdistrict, West Lombok Regency. Analyzing the steps for dealing with

slums was reviewed using the AHP method (*Analytical Hierarchy Process*). SWOT analysis has also formulated in order to obtain the best implementation concept for managing this area to become a settlement without slums. Implementation strategy is organized into short-term (2023-2024), medium-term (2025-2029), and long-term (2030-2040) periods program.

2. LITERATURE REVIEW

Research on slum management strategy for Kampung Bandar City of Pekanbaru concluded that the factors that caused of the slums are the deficiency of plans legitimacy of development, people's low purchasing power, inadequate payment infrastructure services, and lack enforcement of the rules. These things are influenced and related each other. The arrangement of the Kampung Bandar slum area was carried out with two strategies, namely strategy prevention and quality improvement strategies. The prevention strategy consists of capacity building, monitoring and control, as well as community empowerment. The quality improvement strategy consists of restoration (rehabilitation), rejuvenation (revitalization) and resettlement [2].

Strategy of the housing and settlement area office in handling the Singkil District of Manado City has been represented with case study in Kombos Timur Village [3]. Dealing with slum problems, the Manado City Housing and Settlements Office collaborates with the PUPR Ministry's program of KOTAKU (City without Slum) to map and analyze slum settlement problems. Utilization program has been developed to improve and advance existing infrastructure in the villages. Establishing a revitalization strategy aimed at improving the economy of the Eastern Combo. The Disperkim slum management strategy is very successful because settlements that were previously classified as slums are not becoming slums based on a simulation of reducing slums. The Disperkim and KOTAKU programs will stop working later as this remaining work will generate more funds.

Handling slums in the Metro DAS Area has been investigated based on the principles of sustainable development goals. The result indicates that DAS Metro is a river safeguard area in Malang City and has a complex structure problem [4].

Definition of slums

Slums are defined as settlements that are uninhabitable with high irregularities in buildings, high density of buildings, and high quality of buildings, facilities and infrastructure [5]. Slum housing is housing that has lost its quality as a place to live. The criteria for slum housing and slum settlements are based on Regulation of the Minister of PUPR of the Republic of Indonesia Number 14/PRT/M/2018 concerning Prevention and Quality Improvement of Slum Housing and Slums Article 18 Paragraph 2 [6].

Quality of housing and settlements

In accordance with the Decree of the Minister of Settlements and Regional Infrastructure No. 217/KPTS/M/2002, healthy, harmonious, and quality settlements are environmentally friendly housing. Environmentally friendly means minimizing pollution and reducing water and electricity consumption (green environment [7]).

Criteria for housing and slums

There is an explanation of the criteria for slum housing and slum settlements in Government Regulation Number 12 of 2021. Several conditions that describe the condition of slum settlements are building conditions, road conditions, drinking water supply conditions, environmental drainage conditions, waste management conditions, and solid waste management conditions [8]. In Paragraph 2 of this regulation has also mentioned the typology of slum housing and slum settlements. The typology of slums and slums is a collection of slums and slums based on geographical location. The typology of slum housing and slum settlements consists of slum housing and slum settlements above the water, at the water's edge, in the lowlands, in the hills and in disaster-prone areas.

AHP and SWOT analyses.

AHP (*Analytical Hierarchy Process*) is a decision support method developed by a Professor Thomas L. Saaty, Professor of Mathematics at the University of Pittsburgh. AHP is a method for solving a complex unstructured situation into several components in a hierarchical arrangement, by giving subjective values about the relative importance of each variable, and determining which variable has the highest priority in order to influence the outcome in that situation. The most important of AHP is to have a functional hierarchy with the main input derived from human perception as an expert judgement. With a hierarchy, a complex and unstructured problem is broken down into groups and arranged into a hierarchical form.



The simple mindset of the SWOT strategy is to maintain of strengths (*S*) and release weaknesses (*W*) as an internal factor in order to take advantages of opportunities (*O*) and anticipating threats (*T*) that will arise which is an external factor. SWOT is a tool which can be used for qualitative analysis. SWOT is used to systematically identify and analyze various factors that are often used to formulate government strategies in managing their regions. This analysis is based on logic to maximize strengths and opportunities but simultaneously minimize weaknesses and threats that will arise.

SWOT analysis (*Strength - Weakness - Opportunity - Threat*) is basically a strategy analysis model by synthesizing internal aspects in the form of strengths and weaknesses as well as internal aspects in the form of opportunities and challenges in the form of a matrix. This analysis is used to determine potential and regional development constraints. SWOT analysis compares internal and external factors and divides them into four quadrants [9]. Figure 1 shows the quadrant of SWOT analysis.

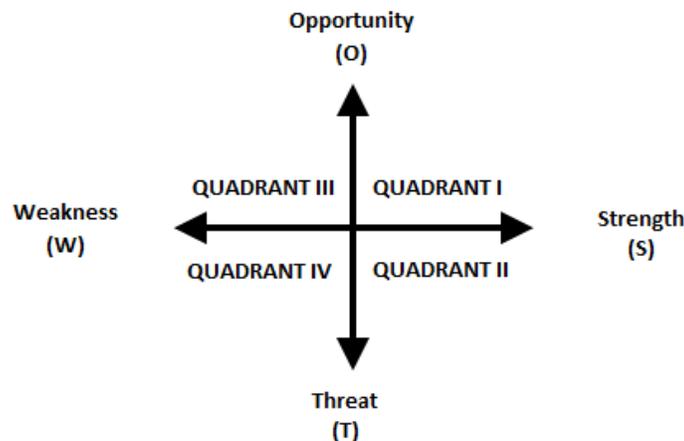


Figure 1. SWOT Analysis Quadrant

3. RESEARCH METHODS

Quantitative and qualitative research methods are used as research methods. Quantitative research is a research technique that produces data in the form of numbers and is usually analyzed using descriptive or inferential statistics. While, qualitative research method is a research method that is based on the philosophy of postpositivism (more specifically phenomenology) and is used to conduct research in scientific conditions where the researcher himself is an instrument, emphasizing more on data collection techniques and qualitative analysis with more emphasis on meaning. Qualitative research methodology aims to analyze and describe phenomena or research objects through social activities, attitudes and perceptions of people individually or in groups [10].

3.1. Primary data

Primary data is data collecting directly from the source collectors. Researcher collects data directly from the first source or the place where the object of research is carried out. Researcher used the results of interviews with informants regarding the research topic as basic information. The goal is whether the handling of slum areas in Kebon Ayu Village, Gerung District, West Lombok Regency has been effective. This survey collected several basic of information consist of:

- 1) Direct observation by visiting research locations to obtain information about problems in the field.
- 2) Documentation in the form of photographs of field conditions in a meaningful form.
- 3) Interview.

Interviews were conducted with respondents in the field. The format of the questionnaire and interviews as well as the number of respondents and the definition of the status of the respondents were based on the needs of the survey. List of questions and interview format in the form of:

a. Physical data in the form of:

- General information such as name of head of household, number of heads of family, address (RT/RW), household status (MBR/Non MBR) and number of household members.
- Residential building regularity.
- Eligibility of residential buildings.

-
- Access to drinking water.
 - Sanitation management.
 - Household waste management.
- b. Non-physical data:
- Household income.
 - Social facility services.
 - Aspects of building and land tenure.

3.2. Secondary data

Secondary data is a data source that does not provide data directly to data collectors, for example through other people or documents. Some of the information needed to support this research can be explained as follows:

- 1) The subject of this research is the available information about the location area.
- 2) Information from the West Lombok Regency Central Bureau of Statistics (BPS) in the form of statistics on the situation and local population.
- 3) Map of the Spatial and Regional Planning (RTRW) of the West Lombok Regency Government.
- 4) Regional regulations regarding housing and settlements of the West Lombok Regency.

3.2. Data processing

Data processing was carried out after the data collection steps are considered sufficient. In this phase, the following steps are taken:

- 1) Read the data understand the data rules related to the purpose and use of this research.
- 2) Data processing, selection of data needed for research.
- 3) Classification and presentation of data based on data analysis needs.
- 4) Data analysis.

4. RESULTS AND DISCUSSION

4.1. Location

Kebon Ayu Village is one of the villages in Gerung District, West Lombok Regency, which has a geographical location of 116.095120 Longitude and -8.686308 Latitude. In this study, the data have been processed to identify slum areas using the scoring method which is then classified to produce slum levels.

4.2. Criteria for Housing and Slums

Identification of slum area assessment based on housing and slum settlement criteria in Kebon Ayu Village has a residential area of 45.11 Ha, 2,360.00 building units, 6,831.00 inhabitants and 2,360.00 households. From the scoring results it was found that in Kebon Ayu Village has the criterion for building conditions with an average value of 21.72%. The identified level of slums was found as mild slums, because at this location there were houses with irregular building conditions 1,538.00 units, building density 52.31/Ha and non-compliance with the technical requirements of the building 72.00 units.

Environmental road conditions have an average value of 15.08% with the identified slum level is not slum. Drinking water supply conditions with an average value of 18.20%, which identified the level of not slums. Environmental drainage conditions with an average value of 23.95% identified as mild slums. This location has inability to drain runoff of 240.38 Ha. The lengths of 45,635 m drainage are unavailable and 1,054 m drainages are not connected to the main city drainage.

The condition of wastewater supply with an average value of 35.25% is identified as the level of mild slums. This location there is wastewater management system that does not comply with technical standards affected 1,664 households. Infrastructure and waste water management facilities not in accordance with the technical requirements of 72 households. Solid waste management conditions with an average score of 84.29% is identified as heavy slums. In this location there are waste infrastructures and facilities do not in accordance with the technical requirements of 2,360 households and 1248 households do not comply with technical standards. Fire protection conditions is identified as medium slum level with with an average value of 67.99%. The fire protection infrastructure was unavailable for 2,360 households. Furthermore, 849 units of households were living without any fire protection facilities.

4.3. Typology of housing and slum settlements



The results of the classification of slum housing typologies and slum settlements based on geographical location can be explained in the following.

1) Penarukan Lauk Village

From the results of the typology of slums and slums, it was found that in Penarukan Lauk Village, slums and slums were identified in lowland areas with a slope of <10%.

2) Penarukan Daya Village

From the results of the typology of slums and slums, it was found that in Penarukan Daya Village identified slums and slums located in lowland areas with a slope of <10% and slums and slums located in areas prone to natural disasters, especially natural disasters such as flood.

3) Gubug Raden Village

From the results of the typology of slums and slums, it was found that in Gubug Raden Village identified slums and slums located in lowland areas with a slope of <10% and slums and slums located in areas prone to natural disasters, especially natural disasters such as flood.

4) Bakong Village

From the results of the typological classification of slums and slums, it was found that in Bakong Village slums and slums were identified in lowland areas with a slope of <10%.

5) Proa Village

From the results of the typology of slums and slums, it was found that in Proa Village identified slums and slums located in lowland areas with a slope of <10% and slums and slums located in areas prone to natural disasters, especially floods. .

6) Karang Kesume Village

From the results of the typological classification of slums and slums, it was found that in Karang Kesume Village identified slums and slums located in lowland areas with a slope of <10%.

7) Kelebut Village

From the results of the typological classification of slums and slums, it was found that in Kelebut Village identified slums and slums located in lowland areas with a slope of <10% and slums, slums and slums located in highland areas with a slope > 10% and < 40% and slums located in areas prone to natural disasters, particularly natural disasters such as floods.

8) Non-physical factors

From the non-physical factors, other considerations can be identified, it was found that in Kebon Ayu Village for the strategic value criteria the location lies in the district/city strategic function, the population criteria are medium cities and small towns with a population density of 151.42 people/Ha, and the criteria for social, economic and cultural conditions that the location has social, economic and cultural potential to be developed or maintained are identified by other considerations, namely other considerations in the high category.

4.4. Handling strategy

The results of location identification and priority scale of treatment based on the Slum Condition aspect are explained in the following.

4.4.1. Criteria for housing and slum settlements

1) Buildings

Kebon Ayu Village belongs to the classification with legal land status and the Restoration treatment model, namely the activities carried out, namely activities to repair and/or rebuild Housing and Settlements to become Housing and Settlements that are livable.

Implementation of the Restoration, carried out by considering the following matters:

- a. The civil rights of the affected people.
- b. Ecological conditions of the place.
- c. Social, economic and cultural conditions of the affected communities.

In the restoration handling pattern, several steps were taken as follows:

a. Before construction

Identification of problems and assessment of restoration needs, outreach and community negotiations with affected communities, gathering information from affected communities, preparation of restoration plans and negotiations for agreements.

b. During construction

Construction process and construction supervision and evaluation.

c. After construction.

- Operation and maintenance and repair.
- 2) Neighborhood roads
 - **Handling Concept**
Control and supervision, improvement through rehabilitation/refurbishment.
 - **Strategy**
Road construction/repair and quality improvement as well as road quantity are carried out.
 - 3) Provision of drinking water
 - **Handling Concept**
Increased community influence on water conservation, increased coverage of clean water services (PDAM).
 - **Strategy**
Provision of clean water through the Drinking Water Supply System (SPAM).
 - 4) Environmental drainage
 - **Handling Concept**
Monitoring drainage services and community strengthening and improvement both qualitatively and quantitatively.
 - **Strategy**
Development of a sewer system for settlements, construction of a sewer network connected to the city.
 - 5) Waste water management
 - **Handling Concept**
Socialization on Clean and Healthy Lifestyle (PBHS), improving waste water facilities and infrastructure, reconstruction and restoration, and provision of waste management funds
 - **Strategy**
Provision of communal (IPAL) and centralized distribution systems, repair of MCK facilities and infrastructure, construction of waste storage and processing areas.
 - 6) Solid waste management
 - **Handling Concept**
Waste management with the TPS3R model.
 - **Strategy**

West Lombok District Government Strategy

In carrying out waste management, the West Lombok Regency Government has the authority to:

1. Formulate policies and strategies for waste management based on national and regional policies.
2. Regency/city scale waste management is carried out according to the norms, standards, procedures and criteria stipulated by the Government.
3. Carry out control and monitoring of waste management functions by other parties.
4. Determine the location of temporary storage facilities, integrated waste management facilities and/or permanent waste management facilities.
5. Carry out regular monitoring and evaluation every 6 (six) months for 20 (twenty) years of closed waste final processing sites with open disposal systems.
6. Develop and organize an urgent waste management system within the limits of their authority.

Kebon Ayu Village Government Strategy

The Government has authority to establish a forum/organization responsible for the maintenance and operation of the facilities. The concerned organization is KPP. The selection of KPP is carried out through community meetings, and is decided by the village head with a village head decision letter with the knowledge of the regional administrator. The main duties of KPP are as follows:

1. Compile reports on waste generation and composition with KSM and TFL.
2. The need for design and supporting equipment is planned for TPS3R activities.
3. Create customer data.
4. Plan the amount of the cost of using the facility.
5. Collect payments, plan expenses, record and routinely report operations and maintenance.
6. Use and maintain TPS3R facilities and infrastructure.
7. Use household waste collection points.
8. Development of service quality and number of facilities.
9. Carry out ongoing outreach regarding waste placement, waste segregation and the risk of cleanliness of waste that is not managed properly (thrown away/burned/landfilled), market compost and other



-
- recycled materials.
 - 10. Development of user screens for TPS 3R products.
 - 11. Increasing the scope of services.
- 7) Fire protection.
- **Handling Concept**
Implementation of fire protection systems, development of open water source authorization
 - **Strategy**
Development of a fire protection system strategy, provision of security system facilities and infrastructure, such as: Hydrants, APAR / Mini Damkar.

4.4.2. Typology of housing and slum settlements

Slum housing and slum settlement models are handled by considering the following typologies:

- 1) Places are included in the typology of slum housing and slum settlements in the lowlands. Handling must pay attention to the nature of the soil holding capacity, soil type and soil durability.
- 2) The place is included in the typology of slum housing and slum settlements are in hilly areas. During handling, attention must be paid to slope conditions, soil carrying capacity, soil type and soil resistance;
- 3) The place is included in the typology of slum housing and slum settlements located in disaster-prone areas. The handling must pay attention to the characteristics of the disaster, soil carrying capacity, soil type and soil sustainability.

4.4.3. Non-Physical Handling

As a recommendation for related agencies in order to improve the quality of slum housing and slum settlements, a non-physical handling program is needed. The form of recommendations for non-physical actions is explained as follows:

- 1) Related to buildings and the environment
 - Adopt building and environmental regulations.
 - Controlling IMB.
 - Guidance on the maintenance and repair of buildings and the environment.
- 2) Related to environmental drainage
 - Preparation of environmental drainage regulations.
 - Development of exclusive infiltration provision.
 - Development of drainage maintenance and repair.
- 3) Related to the provision of drinking water
 - Elaboration of rules related to SPAM.
 - Development of drinking water facilities close to the community.
 - Development of standards for safe drinking water.
 - Development to reduce groundwater consumption.
 - Centralized control of drinking water use.
- 4) Related to waste water management
 - Preparation of sanitary regulations.
 - Development of individual, community and centralized sanitation systems.
 - Development of a healthy sanitation model.
 - Promotion of community-based sanitation management.
- 5) Related to waste management
 - Establish regulations related to waste.
 - 3R Program Development.
 - Improving clean living behavior.
 - Development of community waste management.
- 6) Related to local economic potential
 - Expansion of local economic potential.
 - Economic development program as part of Community Economic Empowerment.▪
Business capital assistance.
- 7) Related to land status
 - Contact residential areas.
 - Making land ownership certificates.

- Issuance of use permits for state/regional land properties.
- 8) Associated with handling participation
- Dissemination of space management programs and action plans.
 - Community participation in processing is encouraged.
 - Community self-reliance development.
- 9) Related to resettlement
- Development of temporary resettlement and resettlement programs.
 - Vertical lifestyle guide.
- 10) Related to management
- Facilitate the formation of non-governmental organizations.
 - Development maintenance and repair.
 - Compensation and reward program.

4.5. AHP analysis

Establishing a hierarchy is part of the AHP model, as it lays the foundation for providing respondents with easier evaluations/opinions. The use of hierarchy aims to make complex problems simpler and easier to understand. The AHP model used in this study, the hierarchy consists of three levels namely objectives, criteria and alternatives. This hierarchy aims to determine the level of slums, while the criteria are seven villages of Kebon Ayu which consist of Bakong, Proa, Penarukan Daya, Kelebut, Gubuk Raden, Penarukan, and Karang Kesume.

Present analysis employs nine alternative conditions. The nine model consist of: housing and building, village road, water supply, village drainages, sanitarries, waste management, fire protection, social, and economics. The complete structure chart of AHP model hierarchy is shown in Figure 2. Further results' concerning the comparison of criteria and comparison of alternatives is presented in Figure 3. And finally, the order of alternative priority is indicated in Figure 4.

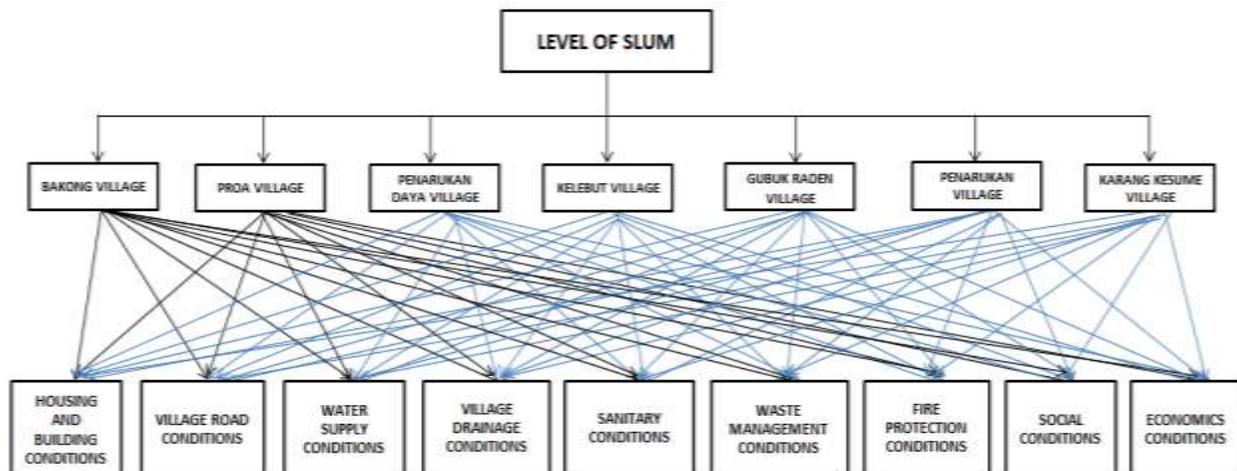


Figure 2. AHP structure chart

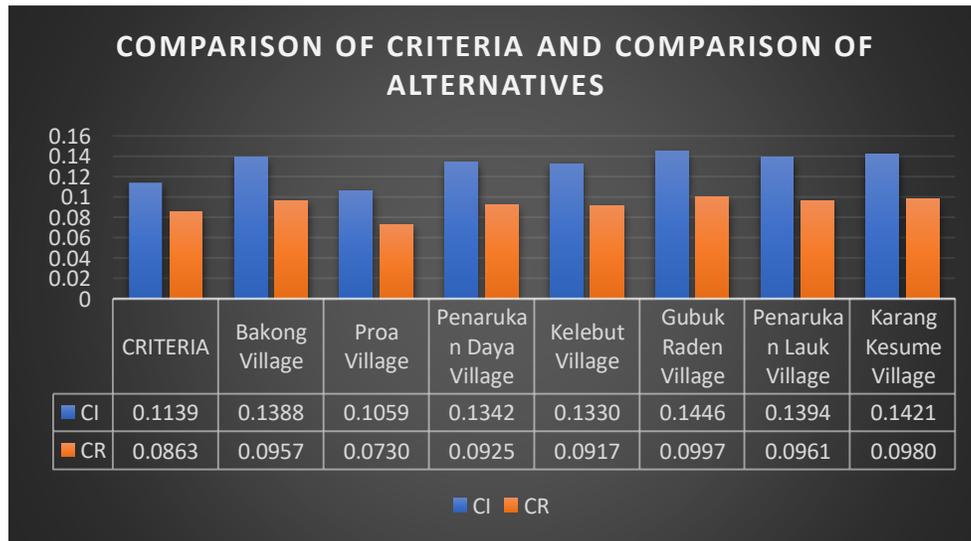


Figure 3. Comparison of Criteria and Comparison of Alternatives

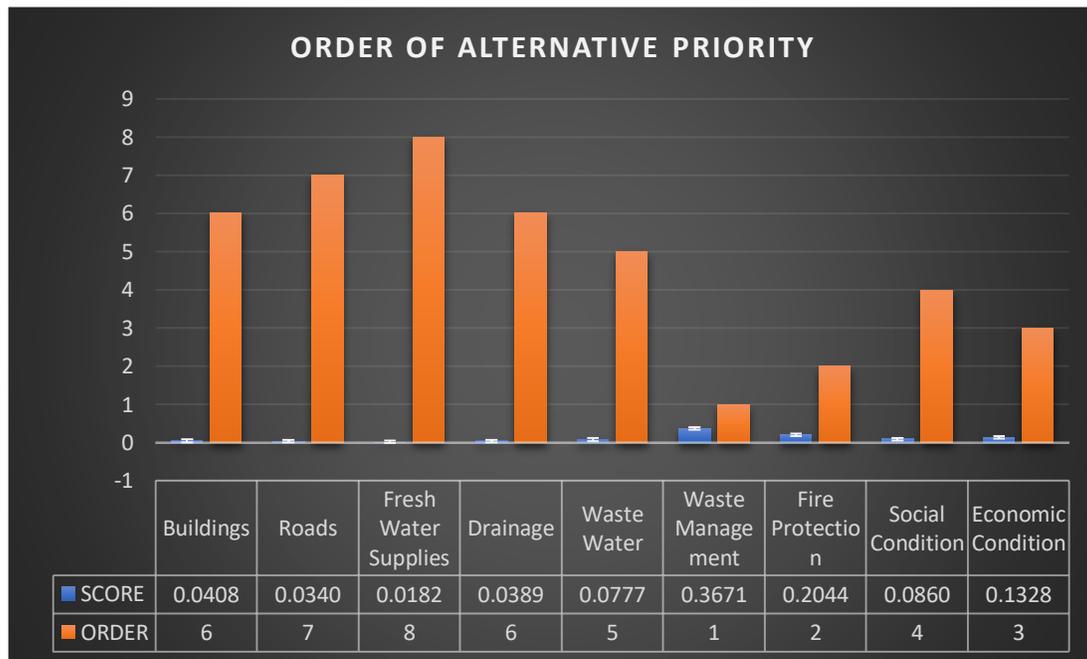


Figure 4. Alternative Priority Order

4.6. SWOT analysis

Analysis of the activities of the Kebon Ayu Village Environmental and Settlement Management Plan (RPLP) activities is based on information obtained from previously completed processes. From the previous discussion, the waste management has average score of 84.29% and identified as heavy slums. Therefore in this case, analysis process that will be carried out in the following discussion is focused on waste management.

The SWOT analysis of this study establishes 5 (five) criteria for each basic component. Each of the five criteria can be explained that the purpose of the SWOT analysis quadrant (Figure 5) is to determine the focus of the study on handling waste management in Kebon Ayu Village, Gerung District, West Lombok Regency. In the SWOT

analysis quadrant, the X-axis value is obtained from the sum of the average scores of internal factors i.e. strengths and weaknesses. Whilst, the Y-axis value is obtained from the sum of the average scores of external factors i.e. opportunities and threats obtained in the analysis space matrix.

4.7. Interaction between factors of SWOT matrix

4.7.1. SO strategy

SO strategy is a strategy that focuses to optimize strengths in order to take advantage of opportunities. Several SO strategies that can be developed include:

- 1) Increasing cooperation between the village and the private sector and Bumdes in relation to Corporate Social Responsibility (CSR).
- 2) Increase village potential to support household waste disposal through BUMDES.
- 3) Increase secular economic potential in waste management by introducing waste industrialization.
- 4) Support the NTB Province Zero Waste Program by encouraging waste sorting and recycling at the source.
- 5) Optimizing APBN financing for the waste sector through BPPW NTB (TPST, TPS3R and TPA).
- 6) Optimizing Village Funds for Garbage
- 7) Optimization of Funds from the Provincial DLHK through the Zero Waste Program.
- 8) Encouraging the use of village funds to improve community sanitation.
- 9) Collaboration with various local media and NTB arts on the importance of household waste disposal.
- 10) Strengthen the role of KSM/KPP as waste management institutions at the community level (TPS3R/Waste Bank).
- 11) Support for regional TPST development plans.
- 12) Involvement of environmental non-governmental organizations that may be involved in waste management.
- 13) Optimizing the development of tourist areas.
- 14) Support the development of small woven cloth businesses.

4.7.2. WO strategy

WO strategy is a strategy that aims to minimize weaknesses in order to take advantage of opportunities. Some of the WO strategies that can be formulated are:

- 1) Optimizing partnerships between the government, private sector and the community in the waste sector
- 2) Optimizing the institutional functions of the community users and maintainers of waste reduction infrastructure (Waste Bank/TPSR)
- 3) Optimizing the village's role in waste management.
- 4) Optimizing waste management financing support from various sources.
- 5) Minimizing the operational costs of waste management so that the government receives more payments for the results of waste management.
- 6) Optimizing support programs for advocacy, awareness raising and community capacity.
- 7) Raising public awareness about waste management so that people no longer burn waste or dispose of it in vacant land/gardens and canals.
- 8) Collaboration between the village and the private sector and Bumdes regarding Corporate Social Responsibility (CSR) in waste management.
- 9) Optimization of Waste Reduction Facilities and Infrastructure.
- 10) Organize waste collection and transportation services.
- 11) Provision of waste collection facilities (garbage motorbikes).
- 12) BUMDES can help to market compost from processed organic waste at TPS3R.
- 13) Expanding the reach of services to Kebon Ayu Village, West Lombok Regency.
- 14) More promotion/campaign/education on waste management sources.
- 15) Increase the capacity of waste management officers.
- 16) Improving the competence and welfare of human resource management.

4.7.3. ST strategy

ST strategy is a strategy that is focused on how to minimize weaknesses to avoid threats. Several ST strategies that can be established as follows:

- 1) Optimizing waste management institutions so that they run optimally according to SOP.
- 2) Convince the private sector to direct CSR funding for waste management.



- 3) Involve local media in implementing waste campaigns
- 4) Support the availability of land for the construction of TPST/TPS 3R.
- 5) Increase the number of waste transportation facilities in West Lombok Regency to meet the existing needs for waste transportation services.
- 6) Provide understanding that there are no more mountains of waste around processing plants.
- 7) Continue to increase public awareness of good and correct models of waste reduction, especially in the 3R program.
- 8) Increasing community participation in covering the operational costs of waste transportation which causes problems in its operation.
- 9) Changing people's lifestyles to completely reduce the use of plastic and the tendency to use single-use products.
- 10) Controlling population growth in West Lombok Regency causes an increase in the amount of waste.

4.7.4. WT strategy

WT strategy is a strategy that is focused on how to minimize weaknesses and avoid threats. Several WT strategies that can be obtained include:

- 1) Optimizing the institutional functions of user communities and waste infrastructure managers (TPS3R/Waste Bank).
- 2) Convince private entrepreneurs and private waste management organizations to direct CSR funding for waste management.
- 3) Improving campaigns/education/promotion on waste management resources by involving local media.
- 4) Increase the number of waste transportation facilities such as dump trucks and armroll trucks).

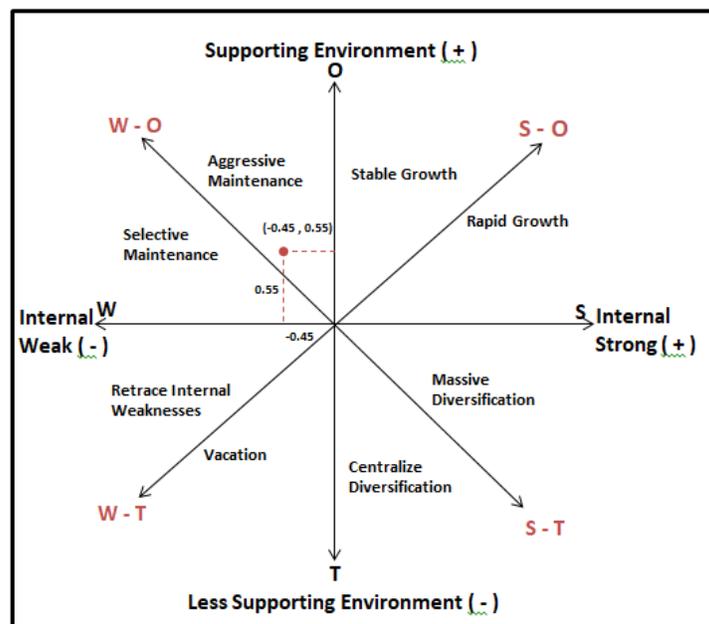


Figure 5. SWOT Analysis Quadrant

$$\text{X-axis value} = S + (-W) = 3.42 + (-3.87) = -0.45$$

$$\text{Y-axis value} = O + (-T) = 2.98 + (-2.43) = 0.55$$

Figure 5 shows that the value of the X and Y axes is located in W-O quadrant. This condition indicates that the aggressive treatment of maintenance is required.

5. CONCLUSIONS

The following conclusions can be drawn from the entire research series as well as the results and discussion:

- 1) The physical factors that influence to the area of slum settlements have the following values:
 - Waste management condition with score of 0.37 identified as heavy slum
 - Fire protection with score of 0.20 identified as heavy slum
 - Economics condition with score of 0.13 identified as medium slum
 - Social condition with score of 0.09 identified as mild slum
 - Waste water conditions with score of 0.08 identified as mild slum
 - Housing and building conditions with score of 0.04 identified as mild slum
 - Environmental drainage conditions with score of 0.04 identified as mild slum
 - Environmental road conditions with score of 0.03 identified as mild slum
 - Drinking water supply conditions with score of 0.02 identified as mild slum.

- 2) Handling Waste Management using the AHP method (*Analytical Hierarchy Process*) and SWOT analysis:
 - AHP method (*Analytical Hierarchy Process*) whose goal is to get waste management condition has the highest score causing slums of 0.37.
 - SWOT analysis shows that the value of the $X = -0.45$ and $Y = 0.55$ located in W-O quadrant. This condition indicates that the aggressive treatment of maintenance is required.

- 3) The strategic planning for managing this area toward slum-free settlements can be implemented as follows:
 - **Short term program (2023-2024)**
 Making village regulations on waste management, forming waste management groups, collaborating with various local media and NTB arts to socialize the NTB Province zero waste program by encouraging waste sorting and recycling starting from the source, optimizing the village's role in waste management, optimizing funds for solid waste , optimizing waste reduction facilities and infrastructure, optimizing support programs for advocacy, awareness and community capacity building, providing understanding to the community and cooperation between the village and the private sector and Bumdes related to Corporate Social Responsibility (CSR) for waste management.
 - **Mid-term program (2025-2029)**
 Optimizing partnerships between the community, government and private sector in the waste sector and institutional functions of the community users and maintainers of waste reduction infrastructure (TPS 3R), minimizing operational costs for waste management so that more fees can be obtained, involving local media in conducting waste campaigns, increasing the role of KSM/KPP, involving NGOs in the environmental sector, optimizing the development of tourist areas, increasing human resource capacity and increasing village potential in supporting domestic waste management through BUMDES.
 - **Long term program (2030-2040)**
 Optimizing waste management institutions so that they run optimally according to SOPs and optimizing the institutional functions of users and maintainers of waste reduction infrastructure (Waste Bank/TPS3R), optimizing funding support from various sources in waste management, increasing waste transportation facilities (dump trucks, armroll trucks), continue to strive to increase public awareness in good and correct waste reduction patterns, especially in the 3R program and controlling population growth in West Lombok Regency causing an increasing volume of waste generation.

SUGGESTIONS

This research raises several implementation proposals or implementation of optimal strategies to overcome slum areas in Kebon Ayu Village, Gerung District, West Lombok Regency. Some suggestions can be given in the following:

- 1) West Lombok Regency Government to re-evaluate West Lombok Regent's Decree Number: 649.A/42/04-Bappeda/2020 concerning the determination of the location of slum housing and slum settlements in West Lombok Regency for 2020-2025.
- 2) The Office of Housing and Settlement Areas of West Lombok Regency as the executor in handling slum areas, to make SOPs, carry out regular monitoring, add competent human resources, activate the website as a media for socialization and outreach as well as a more community approach regarding programs program for handling slum areas that will be implemented, as well as carrying out good coordination with related agencies and other parties in West Lombok Regency.
- 3) The West Lombok Regency Environmental Service to carry out outreach and a more community approach related to the implemented waste management program. The aim is to increase public awareness of the



implementation of the NTB Province Zero Waste program by encouraging waste sorting and recycling at the source.

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