

## GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES THE EVALUATION OF SLUM MANAGEMENT PROGRAM IN KEMUNING REGION, BANJARBARU CITY

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### ABSTRACT

The main obstacle currently faced in Indonesia urban settlements is the existence of slums area, as happened in Banjarbaru City. This is triggered by the high rate of urbanization which becomes the a strong pull factor for rural communities to move out to urban areas. They live in illegal land in the city and giving rise to slums. Urban settlements on legal land also have slum houses. This is mainly due to the fact that Minimum Service Standards (SPM) has not been implemented in the region. Looking at the social and cultural order in the environment, the communities that live in economically slum areas are generally low-income groups which are often the cause of moral degradation and politeness norms in various social structures. This study aim to understanding the characteristic of slums in Kemuning Region, evaluate the benefits of activities that have been built, find out if there are obstacles and how technical recommendations for handling slums next so that it can become a best practice. The method of research uses a quantitative approach and is a descriptive study that affects the slum environment in the Kemuning Area. This study is using primary data and secondary data. Primary data is obtained from interviews, questionnaires to the community and field observations related to the handling of slums in the Human Settlements field that had been built in the Kemuning Area. While secondary data is obtained from documentation that serve as supporting data and complement research support. This study suggested that Kemuning area has a typology of slums located on the edge of the water and lowlands, the evaluation of the utilization of slum area handling activities in Kemuning is deemed successful and beneficial as it is able to change the slums condition through handling contributions of 77.27% and technical recommendations for handling sustainability.

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### I. INTRODUCTION

As the population in Banjarbaru City grows, especially in urban areas, the disorganized area becomes increasingly out of control. This has a direct impact on declining economic productivity, environmental degradation due to inadequate infrastructure services and settlement facilities, some of the city's cultural heritage has been damaged, and location values of some areas been have declined. There are also areas with unclear land ownership and low physical density. The condition will worsen if local governments are less committed to managing the region. The growth of slum area is due to the poverty of the rural migrants entering the central city for job opportunities, so needed the identifying of slum area to decrease the social problems (Shekhar, 2020). The ability of living space can support the quality of life in urban areas (Sarkar and Bardhan, 2020). The urbanization has become a common threat to the sustainability of urban areas (Uddin, 2018). The slum management is involved by community participation (Patel, 2013).

The sustainable indicator based built-environment recommendations, which if implemented in the forthcoming slum rehab housing planning, would enhance well-being and liveability among the low-income sector in future

In its implementation, the development of settlement areas is carried out in a decentralized manner by the central and regional government by involving the role of the community. The government (both central and regional) will have more role as coaches, directors and regulators, so as to always create a conducive atmosphere. Between the central and regional governments, there is also a division of roles in the regulation, guidance, implementation and control that refers to the applicable laws and regulations. The Directorate General of Human Settlements from 2016 to 2018 implemented the handling of slums in the Kemuning River Area, located in Guntung Paikat Village, in the form of regional arrangement, road construction, drainage construction and WWTP area of the city. From the community survey and observations that will be carried out it can be seen the obstacles to the success of the integrated slum

handling activities. Based on this, the importance of this research is to be able to evaluate the benefits of activities that have been built, find out if there are obstacles and how technical recommendations for handling slums next so that it can become a best practice.

## II. RESEARCH METHODS

This research used a quantitative approach and is a descriptive study to evaluate the slum management program in the Kemuning area.

The steps taken in the study are as follows:

- Preliminary assessment using the baseline calculation based on Regulation of the Ministry of PUPR No. 14/PRT/M/2018 on the Criteria Housing and Settlement Slum. The results obtained from the initial slum value of the Kemuning Area were 27 points.
- Evaluate the final slum value using the same calculation of the human settlement infrastructure that has been built.
- Benefit Evaluation is carried out to get the community's response to the continued use of infrastructure that has been built through a questionnaire method based on indicators of aspects of slums. A number of research samples were conducted by using the Slovin formula to determine the sample at the study site. However, the validation test was conducted using the Guttman Scale and the reliability test used Cronbach's Alfa. The results of the instruments obtained by the questionnaire are valid and reliable.
- Technical recommendations are obtained through the results of questionnaires and field observations. It gave the slum management model of Kemuning Region.

## III. RESULTS AND DISCUSSION

### 1. Early Characteristics of Slum Areas in the Banjarbaru City

#### *Delineation and Typology of the Kemuning Region*

In accordance with Decree of Mayor of Banjarbaru Number: 188.45/210/KUM/2017, the delineation of the Kemuning area cluster includes South Loktabat Village, Kemuning Village, Guntung Paikat Village and Sungai Besar Village. Kemuning area is a strategic location in the City of Banjarbaru, thus making the enthusiasm of the Banjarbaru City Government and the community in the Kemuning area become high in the development of the arrangement of slum areas into habitable settlements. Kemuning area is categorized as Mild Slum with slum typology is water edge and lowland settlements (in accordance with Permen PUPR No. 2 of 2016).

#### *Preliminary Assessment of Slums Condition Kemuning Region*

The assessment was performed on each RT (Neighborhood Unit) in 4 Village of Kemuning Region, by categorizing according to seven indicators rundown. In Table 1 shows the calculation of the average for the Kemuning Region.

*Table 1. Calculation of Initial Slum*

Aspec	Criteria	Baseline			
		Numeric	Piece	Percent (%)	Value
1. Building Conditions	Building Irregularity	256,00	unit	61,69%	3
	Building Density	0,18	ha	0,42%	0
	Incompatibility With Persy. Technical Building	63,00	unit	15,18%	0
Average Condition of Buildings				20,56%	

Aspec	Criteria	Baseline			
		Numeric	Piece	Percent (%)	Value
2. Environmental Road Conditions	Environmental Road Service Coverage	3.418,50	meter	34,18%	1
	Quality of Road Surface Environment	2.562,68	meter	25,62%	1
Average Road Condition Conditions				29,90%	
3. Conditions for Provision of Drinking Water	Availability of Safe Access to Drinking Water	180,00	kk	40,27%	1
	Non-fulfillment of Drinking Water Needs	183,00	kk	40,94%	1
Average Water Supply Conditions				40,60%	
4. Environmental Drainage Conditions	Inability to Drain Water Runoff	0,61	ha	1,43%	0
	Drainage Unavailability	3.710,50	meter	63,59%	3
	Disconnect from City Drainage Systems	950,00	meter	16,28%	0
	No Maintained Drainage	1.524,59	meter	26,13%	1
	Quality of Drainage Construction	934,59	meter	16,02%	0
Average Condition of Environmental Drainage				17,94%	
5. Wastewater Management Conditions	Wastewater Management System does not Match Technical Standards	51,00	kk	11,41%	0
	Wastewater Management Infrastructure And Facilities are not in Accordance With Technical Requirements	257,00	kk	57,49%	3
Average Wastewater Supply Conditions				28,75%	
6. Waste Management Conditions	Solid Waste Facilities and Infrastructure are not In Accordance with Technical Requirements	340,00	kk	76,06%	5
	Solid Waste Management System that does not Match Technical Standard	151,00	kk	33,78%	1
	Waste Management Facilities and Infrastructure are not maintained	447,00	kk	100,00%	5
Average Waste Management Conditions				69,95%	
7. Fire Protection Conditions	Unavailability of Fire Protection Infrastructure	143,00	unit	34,46%	1

Aspec	Criteria	Baseline			
		Numeric	Piece	Percent (%)	Value
	Unavailability of Fire Protection Facilities	203,00	unit	48,92%	1
Fire Protection Conditions Average				41,69%	
Total value					27
Slum level					Mild Slum
Average Sectoral Slum					35,63%
Handling Contribution					0,00%

With a total value of 27, so the level Kemuning Region is Mild Slum.

### Management of Slums in Kemuning Region

The activities of Directorate General of Human Settlements who had been taken in realizing the concept of integration are:

- a. Developing an inspection road concrete and PJU,
- b. Development of Communal WWTP,
- c. Construction of house connections ( SR ) IPAL Kemuning Village,
- d. Toilets for Low Income Society (MBR),
- e. TPS3R development,
- f. Procurement of trash bins, motor bikes and containers,
- g. Construction of environmental roads and environmental drainage,
- h. Construction of public open space and parks tem tinkers,
- i. Flat construction and utility facilities flat area, and Provision of hydrant for fire anticipation.

## 2. Evaluation Activity Handling Kemuning Region

### *Evaluation on Slum Matrix After Implementation Program*

After the slum settlement management activities were carried out in the Kemuning Area, a recalculation was obtained on the indicators of slum indicators to determine the results of measurable environmental quality improvement. The final matrix at the level of slum turned into 6 points, then the slum handling activities that have been carried out in the Kemuning Zone made the settlement into the category of Slum and contributed 77.27% and reduced the average sectoral slum to leave 8.10%. Criteria in several sectors that contributed to a significant score change include 'Waste unavailability' and 'Waste Water Management Infrastructure and Facilities that are not in accordance with Technical Requirements' which were reduced by 3 points, then the criteria for 'Waste Preservation Facilities and Infrastructure' which were reduced 4 points, and the criteria for 'Waste Infrastructure and Facilities not in accordance with Technical Requirements' which were reduced by as much as 5 points. Although there are criteria that have experienced a significant reduction in points, there are still a number of criteria that have not changed points at all, namely the criteria 'Building Irregularity', 'Unsatisfied Drinking Water Needs', and the criteria of 'No Drainage Maintenance'. Comparison of this assessment in the future can be a consideration to determine the priority of further treatment so that it can resolve the slums in the Kemuning area completely and continuously.

## 3. Beneficiary Evaluation through Questionnaires

### *The Validity Test of Questionnaire Instruments through the Guttman Scale*

In this study, testing the validity of using reproducibility coefficient and scalability coefficient, then tested in the Guttman table using a Microsoft Excel spreadsheet application with the SKALO program (Guttman scale analysis program). If we calculate it, we must find how many errors each subject (Widhiarso, 2012).

n: 30x50 = 1500

$$\begin{aligned} K_r &= 1 - \{e/n\} \\ &= 1 - \{148/1500\} = 0.9013 \end{aligned}$$

In this calculation, it appears that  $K_r > 0.90$ , so it is concluded that the reproducibility coefficient for this variable is good for use in surveys.

$$\begin{aligned} K_s &= 1 - \{e/p\} \\ &= 1 - \{148/0,5(1500-1418)\} = 0.8027 \end{aligned}$$

In this calculation, it appears that  $K_s > 0.60$ , so it can be concluded that the scalability coefficient for this variable is good for use in surveys. The results of both  $K_r$  and  $K_s$  calculations show that all question items for this variable (numbers 1-30) are valid.

### ***Instrument Reliability Test of the Questionnaire Through Cronbach's Alpha***

After getting the results of a questionnaire from 50 respondents, then the reliability test of the questionnaire instrument was carried out using the Cronbach's Alpha formula. A questionnaire can be said to be reliable if a person's answer to a statement is consistent or stable from time to time (Ghozali, 2008). This test is carried out with the help of the SPSS application because the number of items and the number of respondents is quite large so it is not possible to do manual calculations in Table 2.

***Table 2. Scoring Reliability Results on the SPSS Application***

Item-Total Statistics			
	Mean Scale If the Problem if delete	Variance Scale If the Problem if delete	Value Cronbach's Alpha If the Problem if delete
Problem 1	25.00	11.510	0.767
Problem 2	25.10	11.520	0.774
Problem 3	25.00	11.796	0.774
Problem 4	25.00	11.633	0.770
Problem 5	25.02	10.428	0.741
Problem 6	25.12	11.087	0.765
Problem 7	25.00	11.388	0.764
Problem 8	24.94	11.527	0.762
Problem 9	24.94	11.690	0.766
Problem 10	25.00	11.714	0.772
Problem 11	24.96	11.468	0.763
Problem 12	24.92	11.749	0.766
Problem 13	24.94	11.445	0.761
Problem 14	24.96	11.631	0.767
Problem 15	25.52	10.908	0.768
Problem 16	24.96	11.427	0.762
Problem 17	24.94	11.690	0.766
Problem 18	24.94	11.690	0.766
Problem 19	25.18	11.375	0.775
Problem 20	25.26	10.115	0.746
Problem 21	25.02	10.714	0.749
Problem 22	25.18	9.947	0.737
Problem 23	25.12	10.271	0.743
Problem 24	25.14	10.817	0.759
Problem 25	25.34	9.902	0.742
Problem 26	25.10	10.296	0.743

Problem 27	25.02	10.632	0.746
Problem 28	25.04	10.488	0.744
Problem 29	25.02	10.428	0.741
Problem 30	25.00	10.735	0.748

Reliability Statistics	
Cronbach's Alpha	Number of questions
0.765	30

After calculating Cronbach's Alpha with the SPSS application, an average value of 0.765 was obtained with the smallest value of the questions being 0.737 and the highest of 0.775. It can be concluded that all questions or questions are reliable questions because they meet the "Cronbach's Alpha if item deleted > 0.5" requirement. The result of the research is call reliable if the value of the alpha cronbach > 0.5.

### Questionnaire Result

The questionnaire consisted of several questions on each of the seven indicators of slums, as for after the questionnaire to the respondent seen in Table 4.

**Table 4. Average Percentage of Each Question on the Questionnaire**

No.	Question	Yes	Not
<b>ARRANGEMENT OF BUILDINGS / HOUSES</b>			
1	Is the area of the house felt enough for all residents? (not narrow and still free)	92,00%	8,00%
2	Is there a distance between the house and the neighbor's house? (not coincide)	82,00%	18,00%
3	Is there a distance between the house and the road? (house has yard)	92,00%	8,00%
4	Are the occupants of the house satisfied with the look of the house today? (does not require urgent renovation)	94,00%	6,00%
5	Is the terrace height of about 40 cm or more from the face of the neighborhood road?	90,00%	10,00%
6	Is the house not on the river border?	80,00%	20,00%
<b>ENVIRONMENTAL ROAD ACCESS</b>			
1	Is the width of the road around the house 2 meters or more?	92,00%	8,00%
2	Has the neighborhood road been hardened? (with paving blocks or asphalt)	98,00%	2,00%
3	Is the road around the house in good condition? (no holes)	98,00%	2,00%
<b>DRINKING WATER MANAGEMENT</b>			
1	Is the house connected to the PDAM pipeline?	40,00%	60,00%
<b>ENVIRONMENTAL MAINTENANCE</b>			
1	Has there been no standing water as high as 30 cm or more around the house?	92,00%	8,00%
2	Is there a drainage system in the area around the house?	96,00%	4,00%
3	Is the environmental drainage channel connected to a small river or a larger drain?	100,00%	0,00%
4	Is environmental drainage maintained routinely?	98,00%	2,00%



No.	Question	Yes	Not
5	Does the drainage system use concrete?	96,00%	4,00%
<b>WASTE WATER MANAGEMENT</b>			
1	Is there a toilet / toilet in the house?	96,00%	4,00%
2	Are there individual or communal septic tanks ?	98,00%	2,00%
3	Is the toilet / toilet connected to the septic tank ?	98,00%	2,00%
<b>GARAGE MANAGEMENT</b>			
1	Is there a garbage collection site (TPS or TPS 3R) for the environment around the house?	74,00%	26,00%
2	Are there any sorting bins for the environment around the house?	66,00%	34,00%
3	Are there waste transportation facilities for the environment? (carts and / or garbage trucks)	90,00%	10,00%
4	Are there officers who manage waste in the neighborhood around the house?	80,00%	20,00%
<b>PROVISION OF FIRE PROTECTION EQUIPMENT</b>			
1	Is there a hydrant in the home environment?	78,00%	22,00%
2	Is there a fire extinguisher available in the house?	58,00%	42,00%
3	Are there pump cars for the neighborhood?	86,00%	14,00%
<b>ARRANGEMENT OF GREEN OPEN SPACES</b>			
1	Have you built green open space for the environment around your house?	88,00%	12,00%
2	Do residents often visit green space?	88,00%	12,00%
3	Is the condition of green space still good enough?	90,00%	10,00%
4	Is RTH maintained routinely by the manager?	92,00%	8,00%

The seven aspects of slum assessment made into several questionnaire questions, the aspect of Provision of Fire Protection Equipment is the lowest, followed by Solid Waste Management and Green Open Space Arrangement. Wastewater Management is the third lowest in two villages (Kemuning Village and Guntung Paikat Village). These four aspects can be considered as aspects that have not yet fully benefited from the activities to increase the settlement of the Kemuning area. Sanitation aspects, especially waste, garbage, and drainage, still require attention and seriousness from the residents of the Kemuning area after the implementation of settlement improvement activities.

### 3. Technical Recommendations

#### *Sustainability Factors for Slum Management*

Success factors in the management of slums are among others:

- a. Routine cleaning of the Kemuning River in mutual cooperation by the community, even held events such as fishing competitions on August 17.
- b. Construction of environmental roads along the river banks becomes access.
- c. Green Open Space around the area has an impact on improving the quality of the residential environment into a community recreation area, even there is a sports activity area.
- d. Good environmental drainage causes no flooding.
- e. Securing groundwater through communal WWTP (Wastewater Treatment Plant).
- f. Safeguarding the cliff against landslides.
- g. The level of public health has increased due to the reduction in diarrhea.
- h. Community social activities such as independent reading parks, creative economy, etc.

***Untreated Slum Problem Factors***

Based on the final slum analysis and questionnaires along with observations, the factors of untreated slum issues in the Kemuning area settlements need to be improved, among others:

- a. Provision of fire protection such as hydrants, small fire extinguishers (APAR), and pump cars.
- b. Lack of socialization and education for the community to increase community awareness related to waste management and maintenance that have been built.
- c. Community awareness for the maintenance and care of Green Open Space that has been built. But this also requires the role of the local government to disseminate and maintain the infrastructure that has been built.
- d. The sustainability of the wastewater management development, namely the incomplete communal WWTP because there is no land for its development. This also requires the role of the Regional Government when preparing the regional master plan and land preparation process, as well as the sustainability of the program.

**Slum Management Model for Kemuning Region Settlement**

The slum management model of the Kemuning Region can be seen in Figure I.



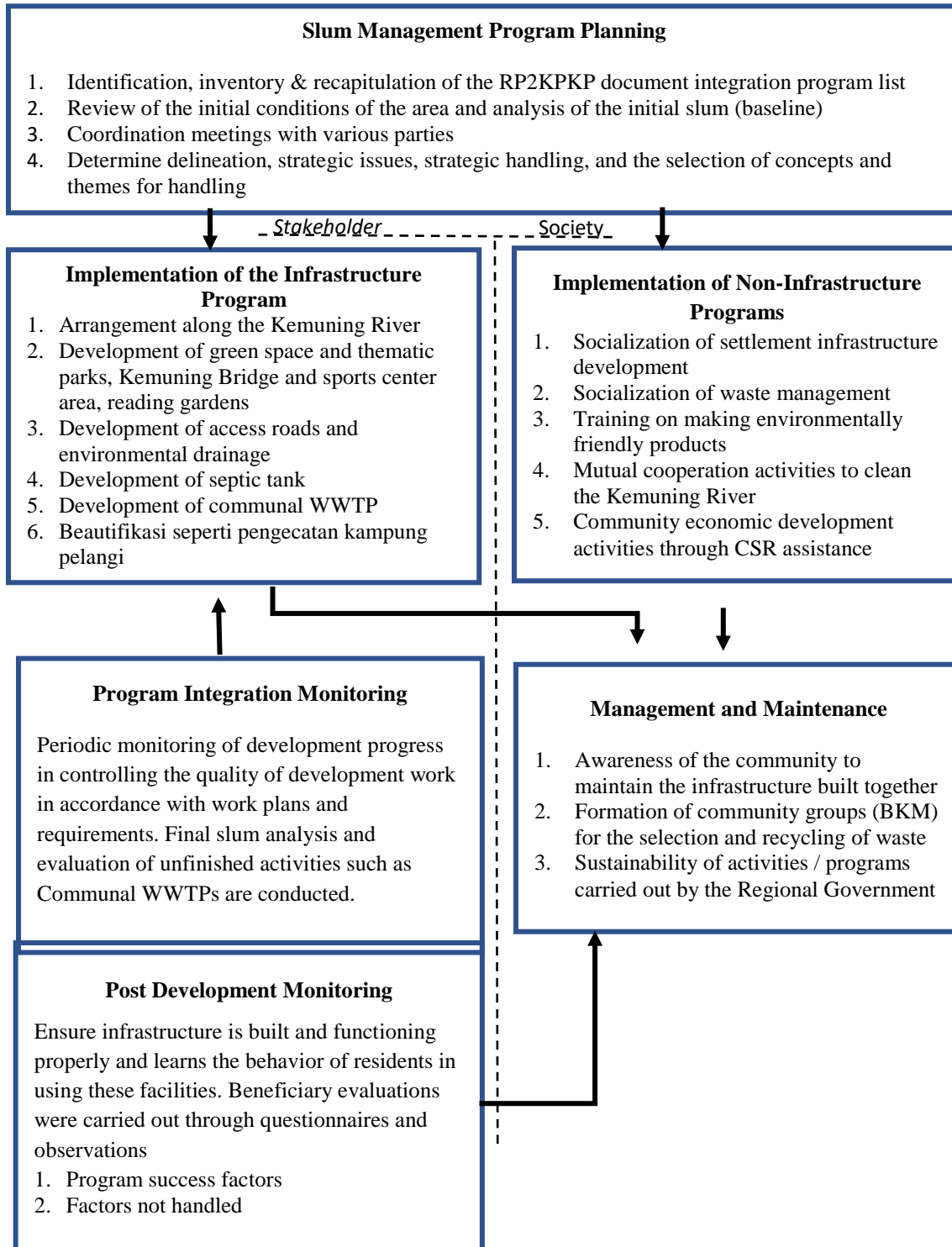


Figure 1. Diagram of Slum Management Model of Kemuning Region

**IV. CONCLUSIONS**

This study aim to understanding the characteristic of slums in Kemuning Region, evaluate the benefits of activities that have been built, find out if there are obstacles and technical recommendations for handling slums next so that it can become a best practice. Based on the slum value analysis, questionnaires and observations that have been made in this study, the conclusions obtained for the activities of handling slums are as follows:

1. Infrastructure Characteristics Kemuning area is a category of mild slum with slum typology in waterfront and lowland settlements. The value of slum has decreased initially by 27 points to 6 points through the contribution of slum handling activities by 77.27%.
2. Evaluation of the utilization of the Kemuning area slum handling activity was considered successful and beneficial, because there was support from stakeholders and the community. In addition, these activities are able to change the slum environmental conditions.

Technical recommendations for the continued handling of slums in the Kemuning area is the need for commitment from the local government in operation and maintenance (O&M), including the willingness to allocate Regional Funds for Joint Affairs (DDUB) and the process of handing over assets for the sustainability of activities so that the handling of slum problems. It also requires community commitment in maintaining the assets.

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