Technique for Physically Managing Urban Slums

Yusli Kukuh*[1], Sitti Bulkis[1]; Kurniaty[2];

[1] Department of Agricultural Socio-Economic, Faculty of Agriculture, Universitas Hasanuddin, Makassar, Indonesia
[2] Department of Regional Planning and Development, Graduate School, Universitas Hasanuddin, Makassar, Indonesia

I N F O   A R T I C L E

* Corresponding author;
  yuslikukuh6@gmail.com

A B S T R A C T

According to the Gowa Regent's Decree on Determining the Location of Slum Housing and Slum Settlement in Sungguminasa Village, Sungguminasa Village has a total area of 17.7 Ha in 2020, with a moderate degree of slums. As a result, the purpose of this research is to explain the features of the socioeconomic and physical components, as well as to build a handling plan in compliance with PERMEN PUPR No. 2 of 2016. Field observations, expert interviews, and related literature were used to collect data. The respondents were chosen using a basic random sampling procedure. The scoring analysis, quantitative descriptive, and correlation tests were employed in the analysis. The study's findings show that the rise of slums in Sungguminasa Village is driven by a physical factor, specifically the current state of inadequate environmental drainage. And the socioeconomic factor, namely personal income, has a mild negative impact on the level of slums; that is, the greater the personal money obtained by the community through employment, the lower the level of slum in Sungguminasa Village.

INTRODUCTION

The unregulated population growth rate in Indonesia reflects the nation's status as a developing country with unpredictable demographic dynamics (Amian, 2017). Every human being has a basic need for shelter. Housing demand is increasing in tandem with population growth (Qonita & Rahmawati, 2021). The inevitable result of this population expansion is an increase in the demand for infrastructure and utilities, including enough housing for the people (Harsusani et al., 2016). Population growth that outpaces the government's ability to provide housing and basic services has resulted in slums that no longer meet the standards of a healthy residential environment (Purwoto et al., 2018). Slum settlements are not a new problem, but have evolved into a classic problem phenomena at the global, regional, national, and local levels (Syamsiar et al., 2020).

The dynamics of development and population increase will always run parallel to urban development in terms of infrastructural preparedness. This syndrome is more common in major cities or large cities that are undergoing rapid and considerable development (Indrajaya et al., 2022). The major elements driving settlement growth are population increase and urban development (Sulaiman, 2021). The evolution of a city is a process that no city can escape due to the increasingly complicated needs of its inhabitants (Aguswin, 2021). The dense population makes the city area more crowded and narrow, which is densely packed with urban structures and residences (Doloksaribu & Hidayat, 2020).

The problem of urban settlements is becoming increasingly complicated, owing to a variety of internal and external variables such as migration from rural to urban regions, urbanization, and the effect of the global economy (Bachmid & Ariyanto, 2017). Migrants from rural regions, in general, do not obtain formal employment owing to a lack of education and skills. Because land is limited and expensive, the informal employment they may do cannot cover their daily requirements, including access to essential urban facilities such as appropriate housing (Manurung et al., 2019).

The rising demand for residential buildings in metropolitan areas, combined with limited land, results in an increasingly restricted space available for suitable and quality housing. This results in slum settlements or densely inhabited squatter colonies in an area, the bulk of which are occupied by lower middle-class individuals (Irfan et al., 2021). The number of buildings (units) in a given land area (buildings/ha) is represented by building density (Solehati et al., 2017). Those with little financial resources prefer to live in improvised settings, leading migrants to establish semi-permanent structures with urban infrastructure that lacks fundamental utilities such as sewage, clean water networks, and road connections (Naradhipa Hudyana, 2019).

Slums are described as residential neighborhoods that are unsuited for habitation with irregular building conditions, a high degree of building density, and quality structures, amenities, and infrastructure that do not fulfill the criteria of Law No. 1 of 2011 (Rizka et al., 2018). Slums are currently seen as a phenomena of the situation of 'present living space being,' which translates as a passive victim of progress, and so must be separated in the spatial living system (Annisa Amalia, 2018). To ensure the survival of the slum population, they construct emergency shelters out of improvised materials such as old boards, cardboard, and zinc, among others (Uar, 2016).

Slum area criteria are determined by taking into account various aspects or dimensions such as the suitability of the location designation with the spatial plan, land status (ownership), location/position of the location, population density level, building density level, physical, social, economic, and cultural conditions of the local community. Furthermore, factors such as a recognized slum region next to or directly adjacent to an area that is part of a metropolitan city are employed as a buffer area for a metropolitan city (Amian, 2017).

Slum clearance is a concurrent government matter involving the Central Government and local governments (Law Number 23 of 2014 about Regional Government), thus its execution must be coordinated and integrated in accordance with the terms of the legislation. The implementation is operationalized at the district / city level (Slum Regional Regulations, Location Decrees, Regent Regulations / Mayor Regulations Handling Plans), and cooperation and collaboration are required in order for the authority of each level of government to be executed. The provincial government plays a strategic role in fostering regencies/cities in

order to encourage the availability of instruments in the regions, particularly regencies/cities, as well as coordinating and implementing prevention and quality improvement of slum housing and slum settlements in accordance with their authority.

As a means of preserving the area's survival, developing an ecologically friendly development plan in settlements is critical (Cahyani & Aji, 2018). The current idea of urban infrastructure and facility development is based on the positivist principle, with an emphasis on: growth strategy, job program, and basic necessities strategy (Indrajaya, 2020). According to the Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia No. 14 of 2018 concerning Prevention and Improvement of the Quality of Housing and Slums, the pattern of handling slum settlements consists of three stages, as well as several stages in the pattern of handling slum settlements, including: restoration, rejuvenation, and resettlement (Akbar & Novira, 2019). The current land potential in its use necessitates processes for managing and maximizing the usage in line with its designation, particularly the distribution of facilities, facilities, and infrastructure services to enable development implementation in all areas of the region (Angriani et al., 2021). As a result, scholars are interested in learning about the features of slum communities in Sungguminasa Village. In addition, develop methods for dealing with slum regions by applying baseline (numeric) analysis and rapid estimates of the success of improving the quality of settlements connected to environmental drainage.

METHOD

Obtaining more precise data in a research via direct observation in the field on the region or object of study under investigation (Irawan et al., 2018). A survey of primary and secondary data was used to acquire data. Primary data is information gained directly from field observations, such as information obtained from respondents in the field (Sudirman, 2021). The practice of gathering data from numerous books, internet media, and relevant research materials is known as literature study (Chrishanum et al., 2022). Secondary sources are data sources obtained from agencies associated with the study in order to collect the data required for analysis operations (Sagung Alit W. & Jihan, 2018).

Analysis Method

Several analytical procedures were employed in this investigation, which will be detailed below:

a. The Slovin formula is used in this study because the number of samples must be representative in order for the research results to be generalizable, and the calculations do not require a table for the number of samples, but can be done using simple formulae and calculations. The Slovin formula is used to determine the sample for the population since the Somba Opu sub-district comprises two villages, thus numerous samples will be obtained from each sub-district with an error rate of 10%, as shown below:

$$n = \frac{N}{1 + N.e^2}$$

b. This scoring is the process of determining the score on the respondent's answer by making appropriate classifications and categories based on the respondent's opinion or opinion. The Linkert scale is used to calculate the score, and its measurements are as follows:
   - 5 points for an excellent response
   - 4 points for a correct answer
   - 3 points for reasonably good replies
   - Score 2 for poor
   - Score 1 for extremely poor

c. Descriptive Quantitative Analysis According to Sugiyono (2009:147), a descriptive technique is a method used to evaluate data by describing or explaining the data that has been acquired as it is without the intention of drawing broad conclusions or making generalizations. Quantitative analysis, according

to Rosgandika Mulyana (2005:8), is "a scientific approach for obtaining high validity and reliability and has a high possibility of scientific truth, quantitative nature delivers weight (rating), ranking (ranking), or score (scoring)."

d. Correlation Analysis The researcher analyzes the data using the Spearman Rho correlation method, which is a statistical method used to test allegations about the existence of a relationship between variables if the data is on an ordinal scale (ranking) or a ratio/interval scale but does not meet the normality assumption.

Table of Relationship Levels Between Variables

Meaning of R	R interval
Perfect Negative	-1
Strong Negative	$-1 < r < -0.9$
Moderate Negative	$-0.9 < r < -0.5$
Weak Negative	$-0.5 < r < -0$
No Correlation	0
Weak Positive	$0 < r < 0.5$
Moderate Positive	$0.5 < r < 0.9$
Strong Positive	$0.9 < r < 1$
Perfect Positive	1

Source: Sudarno (2017)

RESULTS AND DISCUSSION

Sungguminasa Village is geographically located at 5°1152.94"S to 119°285.29E. It is one of fourteen urban settlements. Sungguminasa Village has geographical characteristics (topography), with the majority of the area classed as plains. One kilometer separates the sub-district capital from the urban village capital.

KELURAHAN SUNGGUMINASA

Image of Research Site Map

Socio-Economic Aspect

According to the results of the survey in Sungguminasa Village for Social Aspects, the community gave an answer of 55 percent no for the surrounding environmental arrangement, almost balanced answers for the activities of mothers, namely 49 percent none and 51 percent for routine recitations, and dominant answers for socialization activities on environmental protection held by the Regional Government/Neighborhood Association/Citizen Association, 88 percent no and 12 percent never. The table below contains further information.

Socio-Cultural Table (Mutual cooperation)

KTL	AMOUNT	%
There are none	55	55%
There is one.	45	45%
Amount	100	100%

Source: SPSS Data Processing, 2022

Socio-Cultural Table (KIB)

KIB	AMOUNT	%
There are none	49	49%
Regular Study	51	51%
Amount	100	100%

Source: SPSS Data Processing, 2022

Socio-Cultural Table (SPL)

SPL	AMOUNT	%
There are none	88	88%
Once	12	12%
Amount	100	100%

Source: SPSS Data Processing, 2022

Table of Personal Income Main Activities Crosstabulation

PERSONAL INCOME	Main Activities					Total
	Working	Open unemployment	School	Taking care of household	Other	
> Rp 2.000.000	42	0	0	0	4	46
Rp 1.500.000 – Rp 1.999.999	1	0	0	0	0	1
Rp 1.000.000 – Rp 1.499.999	4	0	0	0	0	4
Rp 400.000 – Rp 599.999	2	0	0	0	0	2
Rp 200.000 – Rp 399.999	2	0	0	0	0	2
< Rp 200.000	0	2	1	42	0	45
Total	51	2	1	42	4	100

Source: SPSS Data Processing, 2022

In terms of the Economic Aspect, it shows that 42 people who work have personal incomes greater than Rp. 2,000,000 and 42 people who care for the household have personal incomes less than Rp. 200,000, with other personal income ranges being larger, indicating that the majority of respondents have incomes between these two ranges.

Correlation of Socio-Economic Variables: Mutual Cooperation Activities (X1.1) Against Slum Levels (Y1)

Correlations Table

Spearman's rho		Slum Level	KTL
Slum Level	Correlation Coefficient	1,000	-1,77
	Sig. (2-tailed)	-	,078
	N	100	100
KTL	Correlation Coefficient	-,177	1,000
	Sig. (2-tailed)	,078	-
	N	100	100

Source: Correlation Analysis Results, 2022

The r value of Spearman's correlation study between socioeconomic aspects: mutual cooperation (ktl) and the amount of slums is -0.177. Based on the correlation level table, the value of r suggests a weak negative association between the socioeconomic aspects: mutual cooperation and the degree of slums. Following the r value is a p significance value of 0.078 (p > 0.05). A weak negative connection followed by a p value greater than 0.05 suggests that the socioeconomic aspect: mutual cooperation has no link with the slum level.

Socio-Economic Variable Correlation: Personal Income (X1.3) to Slum Level (Y1)

Correlations Table

Spearman's rho		Slum Level	Personal Income
Slum Level	Correlation Coefficient	1,000	-1,98'
	Sig. (2-tailed)	-	,048
	N	100	100
Personal Income	Correlation Coefficient	-1,98'	1,000
	Sig. (2-tailed)	,048	-
	N	100	100

*Correlation is significant at the 0.05 level (2-tailed)
(Source: Correlation Analysis Results, 2022)

The Spearman correlation coefficient between socioeconomic aspects: personal income and slum level is -0.198. According to the correlation level table, the value of r suggests a weak negative association between socioeconomic aspects: personal income and the degree of slums. Following the r value was a p significant value of 0.048 (p 0.05). A weak negative association followed by a p value of 0.05 suggests that socioeconomic factors: personal income has a link with slum level; the higher the personal income, the lower the slum level.

Correlation of Socio-Economic Variables: Socialization of Environmental Protection (X1.2) to Slum Levels (Y1)

Correlations Table

Spearman's rho		Slum Level	Environmental Protection Socialization
Slum Level	Correlation Coefficient	1,000	-,076
	Sig. (2-tailed)	-	,450
	N	100	100
Environmental Protection Socialization	Correlation Coefficient	-,076	1,000
	Sig. (2-tailed)	,450	-
	N	100	100

Source: Correlation Analysis Results, 2022

The r value of the Spearman correlation study between socioeconomic aspects: socialization of environmental protection and the degree of slums is -0.076. According to the correlation level table, the value of r suggests a weak negative association between socioeconomic aspects: socialization of environmental protection and the degree of slums. Following the r value is a p significance value of 0.450 ($p > 0.05$). A weak negative connection followed by a p value greater than 0.05 suggests that the socioeconomic aspect: socialization of environmental preservation has no link with the slum level.

Physical Aspects of Drainage in Sungguminasa Village

Table of Recalculation of Majority Opinion

Slum Level	Number of Slums	%
Light Slum	5	45,45%
Moderate Slum	6	54,55%
Total	11	100,00%

Source: SPSS Data Processing, 2022

According to the data above, 5 of the 11 houses are classified as minor slums. Six of the eleven homes are classified as moderately slums. As a result, the bulk of the 11 reported houses had a moderate level of slums. There are seven indicators in the Regulation of the Minister of Public Works and Spatial Planning No. 2 of 2016, which are based on the current concept:
1. Building Conditions Aspects
2. Road Condition Aspects
3. Aspects of Clean Water Access
4. Drainage Conditions Aspects
5. Wastewater Condition Aspects
6. Waste Management Aspects, and
7. Fire Protection Aspect

The discussion is the Aspect of Drainage Conditions, after completing a survey in the field and acquiring the data as mentioned above, an analysis is carried out to carry out a priority planning concept for handling so that slum areas do not occur and/or increase using calculations baseline (numeric). Table 10 has further information.

No	Aspect	Criteria	Indicators and Parameters	Score	Numerical
A. Identification of Slum Conditions					
1	Drainage conditions	Inability to drain rainwater runoff	The environmental drainage network is unable to drain water, resulting in puddles of greater than 30 cm in height that last more than 2 hours and occur more than twice a year.	76-100% inundation area >30cm, >2 hours, and >2x a year	1
				51-75% of the area inundated > 30cm, > 2 hours, and > 2 times a year	
				25%-50% inundation area > 30cm, > 2 hours, and > 2x a year	
		Lack of drainage	The absence of environmental drainage channels in residential or residential settings, notably tertiary and/or local channels	76-100% area not available environmental drainage	5
				51-75% of the area is not available environmental drainage	
				25%-50% of the area is not available environmental drainage	
		Disconnection with urban drainage system	Environmental drainage channels are not connected to channels in the hierarchy above, causing water to not flow	76-100% environmental drainage is not connected with the hierarchy above	5
				51-75 percent of environmental drainage is unrelated to the preceding hierarchy.	
				25%-50% environmental drainage is not linked to the hierarchy above	
		No maintenance of drainage	The maintenance of environmental drainage channels at housing or settlement locations is not carried out, either: 1. routine maintenance; and/or 2. periodic maintenance	76-100% area has dirty and smelly environmental drainage	5
				51-75% of the area has dirty and smelly environmental drainage	
				25%-50% of the area has dirty and smelly environmental drainage	
		Drainage construction quality	The quality of drainage construction is poor, because it is in the form of excavated soil without covering or covering material or because damage has occurred	76-100% of the area has poor environmental drainage construction quality	5
				51-75% of the area has poor environmental drainage construction quality	

				25%-50% of the area has poor environmental drainage construction quality	

Source: SPSS Data Processing, 2022

According to the table above, the accumulated value obtained is 21, which serves as an indicator of the reason of the emergence of slum settlements in Sungguminasa Village classified as light slums. If the score is 71-95, the slums are classified as severe, 45-70 as moderate, 19-44 as light, and 19 as not slums. Table provides further information.

Table of Slum Levels Based on Assessment Values of Criteria, Indicators, and Slums Parameters

Total Value	Slum Level
75-94	Heavy Slum
45-70	Moderate Slum
19-44	Light Slum
< 19	Not Slum

Source: SPSS Data Processing, 2022

Sungguminasa Urban Village's Physical and Socioeconomic Slum Management Strategy

Slum Aspect Indicator Table

Aspect	Parameter	Percentage
Inability to drain runoff (KDL1)	51-75% of the area inundated > 30cm, >2 hours, and >2 times a year	62%
Unavailability of drainage (KDL2)	25%-50% of the area is not available environmental drainage	72%
Disconnection from urban drainage system (KDL3)	76-100% environmental drainage is not connected with the hierarchy above	53%
Not maintained drainage (KDL4)	76-100% area has dirty and smelly environmental drainage	58%
Quality of drainage construction (KDL5)	76-100% of the area has poor environmental drainage construction quality	56%

According to the findings of a survey conducted in Sungguminasa Village, slums are caused by Environmental Drainage in addition to the Socio-Economic Aspects, as shown in the table above, where the percentage level of the five indicators in the environmental drainage aspect has a value of more than 50%. So, out of 1799 persons in Sungguminasa Village, 100 research participants reside in slum communities. As a result, the researchers devised a management plan based on the Plan for the Prevention and Improvement of the Quality of Urban Slums in Gowa Regency. As a result, the survey data on the level of environmental drainage slums, which are then linked to the rules for the Prevention and Improvement of the Quality of Urban Slum Settlements in Gowa Regency, macro-micro concepts, and strategies for physical handling of slums in Sungguminasa Village, are expected to serve as the foundation for dealing with and preventing future slum settlements. the following:

1. Macro Handling Concept
   Program indications for macro handling are focused on handling based on 2 principles, namely:
   a. Infrastructure/PSU improvement in order to perform PSU services in planned areas effectively and efficiently in accordance with population growth in the region, resulting in occupancy rates that satisfy infrastructure/PSU service criteria.
   b. Improving the quality of homes and settlements via physical development and the repair and revitalization of utilities and infrastructure in slum settlements, including environmental drainage.
2. Micro Handling Concept
   Program indications for micro handling are more focused on handling which is based on 4 principles, namely:
   a. Improving housing quality through infrastructure/PSU development, one of which is the rejuvenation or restoration of environmental drainage.
   b. Stimulating the local community's economy by establishing economic KSM (Economic Community Self-Help Groups) in the context of developing/improving business fields by establishing new business fields either individually (households) or in groups in order to create a viable and sustainable economy.
   c. Independent use, administration, and upkeep of infrastructure by the community.
   d. The requirement for synchronization between the local RW/RT head and the community for infrastructure maintenance.

Based on the description above, it can be made a table of 13 strategies for prevention and improvement according to the explanation above as follows.

Table of Physical and Socio-Economic Handling Strategies for Urban Slum Settlements, Sungguminasa Village

Slums	Aspect	Problem	Precentage	Handling Strategy	
				Prevention	Enhancement
Sungguminasa Village	Environmental Drainage	51-75% of the area inundated >30cm, >2 hours, and >2x a year	62%	Supervision, Development Control	Increased capacity/number of drainage
		25%-50% of the area is not available environmental drainage	72%		Construction of environmental drainage
		76-100% environmental drainage is not connected with the hierarchy above	53%		Hierarchical interconnection of drainage networks
		76-100% area has dirty and smelly	58%		Rehabilitation of drainage infrastructure to

		environmental drainage			restore its function
		76-100% of the area has poor environmental drainage construction quality	56%		Rehabilitation of drainage infrastructure to restore its function
		Personal Income		Strengthening Community Economy	Establishment of Economic KSM

CONCLUSION

According to the findings of a survey conducted in Sungguminasa Village, the Social Sector, the community gave a 55 percent answer for structuring the surrounding environment, a nearly balanced answer for women's activities, namely 49 percent absent and 51 percent for routine recitations, and the dominant answer was for environmental protection socialization activities organized by the community. Local Government/RT/RW, 88% never and 12% never. According to the Economic Aspect, 42 people who work have personal incomes greater than Rp. 2,000,000, and 42 people who care for the household have personal incomes less than Rp. 200,000, with other larger ranges of personal income indicating that the majority of respondents have incomes between the two ranges. As a result of the survey data on the level of environmental drainage slums being linked to the rules for the Prevention and Improvement of the Quality of Urban Slum Settlements in Gowa Regency, a macro-micro concept and strategy for physical handling of slum settlements in Sungguminasa Village are expected to be the basis for handling and preventing slum settlements.

Concept of Macro Handling Program indications for macro handling are based on two principles: improving infrastructure/PSU in order to fulfill PSU services in planning areas effectively and efficiently in accordance with population development in the area, in order to create occupancy rates that meet infrastructure/PSU service standards; and strengthening the quality of housing and settlements through physical development, improvement, and rejuvenation of facilities and infrastructural development. Strengthening the quality of housing through improved infrastructure/PSU development, one of which is rejuvenation or restoration of environmental drainage; Strengthening the local community's economy through the formation of economic KSM (Economic Community Self-Help Groups) in the context of developing/improving business fields by establishing new business fields ei Independent use, administration, and upkeep of infrastructure by the community; The requirement for synchronization between the local RW/RT head and the community for infrastructure maintenance.

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