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Factors Influencing Sanitation Management in Slums on The Riverbank of Kotalama Urban Village

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Abstract

One of the largest slum areas is located in Malang's Kotalama sub-district, which is distinguished by a considerable area that has undergone development along the riverbanks. The main challenge encountered in the area which has undergone development along the riverbanks, pertains to the insufficient management of sanitation. The aim of this research is to identify the sanitation conditions in the slum settlements within Kotalama sub-district and analyze the driving and inhibiting factors influencing sanitation management efforts in these slum settlements. The research method used is qualitative research. The results of the study concluded that 1) sanitation conditions in Kotalama District were in the "moderate" category with a score of 41.1. 2) The regulatory aspect reveals that the availability of policies serves as a driving factor, whereas the control and content of policies act as inhibiting factors. In the bureaucratic structure aspect, the presence of Micro SOPs serves as a driving force, while the availability of micro SOPs and fragmentation act as inhibiting factors. The resources aspect, encompassing human, budgetary, and infrastructural components, functions both as a driving and inhibiting factor. the communication aspect, effective communication among implementers and between implementers and the community is a driving and inhibiting factor. The Environmental aspects, including social conditions, community support, physical environment, and technology, have a dual role as both driving and inhibiting factors. The institutional aspects, such as capacity and government support, manifest as inhibiting factors. Furthermore, in the spatial aspect, both driving and inhibiting factors influence sanitation management in the Kotalama sub-district.

Keyword : Sanitation, Settlement, Slums, Riverbanks

INTRODUCTION

The increase in the population rate of urban areas as one of the impacts of increasing urbanization has resulted in increasingly competitive land use. This condition triggers the continued development of pockets of illegal and slum settlements in urban areas, one of which is the growth of settlements around riverbanks. The problems of people living along the river are usually related to poor sanitation management, both wastewater and garbage disposal. The more people who live by the river, the greater the potential for discharging wastewater and garbage into the river, impacting environmental pollution.

Indonesia is currently ranked second as a country with a population with poor access to sanitation; this is because most of the rivers and dams in Indonesia are polluted by household waste due to poor sanitation management (Haston, Wati 2016). Currently, sanitation management is a benchmark in implementing sustainable development and is one of the global agendas, namely the SDGs. It is because proper sanitation is a basic right for every human being (Ishatono & Raharjo, 2016).

As one of the urbanization destinations, Malang City is experiencing rapid growth and enabling demand for space. This condition has resulted in the growth of informal settlements in watershed areas, railway borders, and other government asset lands in Malang City.

In 2021, the Malang City Government drafted Malang Mayor Decree Number: 188.45/86/35.73.112/2021 concerning the determination of slum housing and slum settlement

locations in Malang City spread across 31 urban villages with an area of 274.83 Ha, of which 27% of the total area is slums that grow on riverbanks (*Squatter*).

Kotalama Urban Village is one of the slums that still has the largest slum area of 28.38 Ha, where 70% of the total slum area is on illegal land, namely on the river border, and has major problems in the aspects of wastewater and waste management (Kotaku, 2022). Kotalama slums are passed by two large rivers, namely the Brantas River and the Bango River, so the community can make the river a place of waste which results in pollution (Lusiana et al., 2020). In addition, since 2022, Kotalama Village has become one of the priority locations for handling stunting in Malang City, where one of the indicators of the cause is poor sanitation conditions (Malang City Health Office, 2022).

The Malang City Government has made various efforts to handle sanitation in Malang City, such as drafting regulations related to sanitation development and forming working groups as a forum for collaboration in handling sanitation and other cooperation programs. However, until now, the condition of sanitation handling in Malang City still needs to be more optimal. It can be seen in the Ministry of Health data 2023 uploaded through the STBM-smart page; Malang City is currently ranked 16th out of 36 Cities / Districts in East Java province.

Handling slum problems, especially sanitation, becomes more complex when associated with illegal occupancy status (*Squatter*). Because there is often a practice of *negligence* towards developing urban marginal spaces, weak urban management and informal settlements are considered not entitled to state funds. In addition, the slum nickname often masks the positive aspects of the settlement, making it seem difficult to deal with.

According to Sinharoy et al. (2019), Tchouchu & Ahenkan (2023), Sandy (2020), and others, there are several factors that influence the success of sanitation handling policy implementation.

Based on the above conditions, it shows that sanitation handling in slums, especially in the riverbanks of Malang City, still requires more optimal handling, so it is necessary to analyze the handling of sanitation in slums on the riverbank; the objectives of this study are 1) to identify sanitation conditions in Kotalama Village and 2) to analyze the driving factors and inhibitors of sanitation development and 3) So that appropriate handling strategies can be formulated to improve the sanitation quality for the community, especially in terms of domestic wastewater management and waste management in Kotalama Sub-district.

Basic Settlement Sanitation

"sanitation" refers to treating waste and wastewater; "Sanitization" keeps the environment sterile. According to Widyati in Sembiring (2019), One way to prevent disease and live healthier is sanitation through community empowerment. Sanitation is an effort to improve people's quality of life while preventing disease. Waste management, drainage systems, and garbage disposal are all aspects of basic sanitation. [8].

Inadequate drainage, wastewater handling, and garbage disposal lead to environmental sanitation problems. According to UN Water in Auvaria & Nilandita (2018), Basic household sanitation, household solid waste management, drainage, and industrial waste management are some of the sanitation components.

Based on some theories above, researchers want to focus on environmental sanitation conditions, including wastewater and solid waste management.

Policy Implementation

In theory, policy implementation is a means to an end. Lester and Stewart (Winarno, 2012) explain that policies are carried out through various actors, organizations, processes, and strategies to achieve the intended goals or objectives.

According to Grindle, quoted in Sandy (2019)According to Grindle, the substance (content) of the policy and the setting (context) of implementation are two factors that influence policy implementation.

Meanwhile, according to Edwards III in Sandy (2019), the effectiveness of a policy is influenced by several elements, including (1) communication; (2) resources; (3) character or attitude; and (4) bureaucratic structure.

Based on some of the theories above, researchers want to focus on knowing the driving and inhibiting factors of sanitation development by focusing on 5 (five) aspects, namely 1) Regulatory Aspects, 2) Communication Aspect, 3) Environmental Aspect, 4) Resource Aspect and 5) Bureaucratic Structure Aspect.

RESEARCH METHODS

This research uses a qualitative research methods. Qualitative research is a type of research intended to understand phenomena related to what is experienced by the research subjects, such as behaviors, perceptions, motivations, actions, etc., in a holistic manner and through descriptive means using words and language, within a specific natural context, and by employing various natural methods (Moleong, 2020).

Data Collection Methods

The data collection method in this research uses primary surveys and secondary surveys. Primary surveys in this study were field observations, interviews, and questionnaires distributed to respondents, namely heads of households (KK) in Kotalama Village. Secondary surveys were obtained from literature/literature studies, planning documents, rules/regulations and similar documents related to the research.

Sampling Method

The population in this study are family heads (KK) in the slum area in Kotalama Village, Malang City, namely in RW 04, 05, 06, 08, 09 and 10, with a total population of 424 KK.The sampling technique used is *Probability Sampling*, which is a sampling technique that provides equal opportunities for each element of the population to be selected as sample members. According to Cooper & Emory (1997), the minimum sample size for research is 100 respondents. According to Cohen et al. (2007), the minimum limit that researchers must take is 30 samples or at least 15% of the population size. Based on these considerations, the researcher determined the sample size of 100 households with the distribution of sample proportions in **Table 1.**

Table 1. The proportion of Samples in Research Sites

No.	RW	Total Population (HH)	Number of Sample (HH)
1	4	82	19
2	5	64	15
3	6	77	18
4	8	61	14
5	9	59	14
6	10	81	19
Total		424	100

In addition, for the needs of the interview, informants were obtained, which were determined by *purposive sampling* technique, which is a data source sampling technique with certain considerations, including Malang City BAPPEDA, PUPRPKP Office, Environment Office, Health Office, Kotalama Village Government, Kota Tanpa Kumuh (KOTAKU) Program. TFL DAK Sanitation, Kotalama Urban Village Community Self-Help Agency (BKM) and RW heads in the research location.

Data Analysis Method

Analysis of Sanitation Conditions in Slum Settlements of Kotalama Village

The analysis of sanitation conditions was conducted by obtaining data from the community regarding sanitation conditions based on indicators determined in **Table 4. The** data collection tool was a questionnaire with a *Guttmann* measurement scale. The Guttmann scale is used to determine a firm research answer to a problem asked, including "yes-no," "true-false," or "ever-never" (Sugiyono, 2020). The index used in this scale is in **Table 2**.

Table 2. Guttmann Scale Index

No.	Answer	Score
1	Yes	1
2	No	0

After getting the total score, then calculate the respondent's interpretation assessment, namely the resulting value using the Index % formula. In order to get the results of the respondent's interpretation, first, the highest score (X) and the lowest score (Y) must be known.

Table 3. Score Interpretation Criteria Based on Interval

No.	Score Interpretation Criteria	Score
1	Good	66,8-100%
2	Medium	33,4-66,7%
3	Bad	<33,3%

Analysis of Drivers and Barriers to Sanitation Handling in Kotalama Urban Slum Settlement

This analysis describes the driving factors and inhibiting factors in efforts to handle sanitation in slum areas in the Kotalama Urban Village riverbank, where this research is a ***driving factor*** that influences and supports the success of sanitation handling in Malang City. In contrast, ***inhibiting factors*** inhibit, block, and hold back sanitation handling in Malang City.

The researcher collected information by conducting interviews with respondents according to the indicators of drivers and barriers to sanitation handling that have been determined in **Table 4.** The researcher used an interactive approach for data analysis that included data collection, data reduction, data presentation, and conclusion drawing. It was due to the participatory nature of the research, which involved researchers conducting fieldwork and interacting directly with interviewees.

Table 4. Research Variables

Variables	Sub Variables	Indicators
Environmental Sanitation Condition	Waste water management	◦ Availability of private latrines or communal toilets ◦ The connectedness of latrines and toilets to septic tanks ◦ Fecal Sludge Collection System Service
	Waste management	◦ Waste segregation ◦ Rubbish receptacle ◦ Neighborhood collection

Variables	Sub Variables	Indicators
Driving and inhibiting factor	Regulatory Aspects	◦ Environmental transport ◦ Sanitation development policy ◦ Government control of sanitation development
	Communication Aspects	◦ Transmission (good and clear communication system or flow) ◦ Consistency (the information conveyed must be fixed)
	Environmental Aspects	◦ Socio-cultural conditions of the community ◦ Environmental carrying capacity ◦ Level of technological advancement
	Resource Aspects	◦ Human resources ◦ Budget resources ◦ Facility Resources
	Bureaucratic Structure Aspects	◦ *Standard operating procedure* (SOP) ◦ Fragmentation
	Community Institutions Aspects	◦ Institutional capacity ◦ Government support
	Spatial Aspects	◦ The influence of spatial policy on sanitation development

Formulating Alternative Strategies for Sanitation Management in Slum Settlement Areas in Kotalama Sub-district

In this analysis, based on the results of the slum settlement sanitation condition and the identification of driving factors and hindering factors in sanitation handling efforts in slum settlement areas, a formulation of sanitation handling strategies in the riverbank slum settlement of Kotalama Sub-district is carried out using SWOT analysis.

RESULT AND DISCUSSION

Sanitation Condition in Kotalama Sub-district

Waste Management Condition

Waste Management in this study focuses on the management system that describes the process of segregation, containerization, collection and transportation of waste at the household level in Kotalama Village.

a. Waste Sorting

Based on the calculation of the questionnaire results in **Table 5**. With the results, 92% of the respondents stated "No," and 8% stated "Yes." It illustrates that most residents in Kotalama Village need to sort their household waste. In Kelurahan Kotalama, household waste is usually put into plastic bags together without any sorting and thrown directly into the river for houses not served by the cleaning system. Meanwhile, people served by the collection system dispose of waste in containers or bins, both private and communal, without any prior separation.

Table 5. Waste Sorting Condition

		Frequency	Valid Percent
Valid	NOT	92	92.0
	YES	8	8.0
	Total	100	100.0

b. Rubbish Receptacle

Based on the calculation of the questionnaire results in **Table 6**, 64% of the respondents stated "No," and 36% stated "Yes." It illustrates that the availability of household waste containers in Kotalama Village still needs to be improved. The unavailability of household waste containers is related to narrow neighborhood roads and extreme terrain, which will interfere with circulation when placing garbage in front of or around the house. However, if someone puts garbage inside the house, it will cause odors. In addition, several times, the community placed garbage bins around the house, but they disappeared, considering that crime in the research location is quite high.

Table 6. Condition of Waste Receptacles

		Frequency	Valid Percent
Valid	NOT	64	64.0
	YES	36	36.0
	Total	100	100.0

c. Waste Collection

Based on the calculation of the questionnaire results in **Table 7**, 64% of the respondents stated "No," and 36% stated "Yes." It illustrates that there are still many people whom TPS has yet to serve due to the relatively far distance of settlements (> 1000m). Land limitations have resulted in the placement of TPS in containers by the Malang City Government in locations far from residential areas. In addition, residents are also unwilling to become coordinators or house-to-house waste collection officers.

Table 7. TPS Service Condition

		Frequency	Valid Percent
Valid	NOT	52	52.0
	YES	48	48.0
	Total	100	100.0

In **Table 8**. 36% of the community in Kotalama Village is served by the waste collection system with an indirect individual collection pattern, namely waste collection is carried out by cleaning staff by visiting each source of waste generation (households) using garbage carts to be taken to the TPS on Jalan Muharto, this is because 36% of respondents live around the main road of the neighborhood so that garbage transportation can be passed. The rest of the respondents manage their waste by burning it or throwing it into the river.

Table 8. Waste Collection Pattern

		Frequency	Valid Percent
Valid	NOT	64	64.0
	YES	36	36.0
	Total	100	100.0

d. Waste Collection

Waste collection is broken down into waste collection fleet services and collection frequency. Based on the calculations in **Table 9, it** is known that 63% of the community stated "No," and 37% stated "Yes." It illustrates that the waste collection fleet serves only some residents in Kotalama Village. It is related to the hilly topography or contours, especially on the riverbank, so that waste collection vehicles and carts can only serve relatively wide neighborhood roads, see **Figure 1.**

Table 9. Waste Collection Fleet Service

		Frequency	Valid Percent
Valid	NOT	63	63.0
	YES	37	76.0
	Total	100	100.0

Figure 1. Contours of the Settlement Area

Based on the calculation results in **Table 10**. only 37% of people are served by waste collection at least once every 2 (two) days, while the rest are not collected and directly disposed of in the river/channel see **Figure 2.**

Table 10. Frequency of Waste Collection

		Frequency	Valid Percent
Valid	NOT	63	63.0
	YES	37	76.0
	Total	100	100.0

Figure 2. Dumping Rubbish into the River

Wastewater Management Condition

The condition of wastewater management in Kelurahan Kotalama, which in this study focuses on the availability of private WC or communal MCK, the connection of toilet and MCK with a septic tank, and the service of the desludging system.

a. Availability of private WC or communal toilets

Based on the calculation in **Table 11,** the condition of private or communal toilets in Kelurahan Kotalama is known. 4% of respondents stated "No," and 96% stated "Yes." It illustrates that private or communal toilets have served the majority of residents in Kelurahan Kotalama; 4% of people use the river for bathing, washing and toileting (BABS).

Figure 3. Private WC Condition

Table 11. Availability of Private WC or Communal Toilets

		Frequency	Valid Percent
Valid	NOT	4	4.0
	YES	96	96.0
	Total	100	100.0

b. The connectedness of the toilet and lavatory to the septic tank

Based on the calculation of **Table 12, it** is known that related to the connection of toilets and MCKs with septic tanks in the research location, 54% of respondents stated "No," and 46% stated "Yes." It illustrates that the majority of residents in Kelurahan Kotalama no longer have gooseneck toilets connected to septic tanks.

Table 12. The connectedness of toilets or communal toilets with septic tanks

		Frequency	Valid Percent
Valid	NOT	54	54.0
	YES	46	46.0
	Total	100	100.0

Limited land and the community's paradigm of the river as a giant dumping ground resulted in low ownership of gooseneck toilets connected to septic tanks. In addition, the facilities and infrastructure built by the government cannot be utilized sustainably due to the absence of operations and maintenance from the community.

Figure 4. Wastewater Discharge to River

c. Fecal Sludge Collection System Service

Based on the calculation of **Table 13, it is** known that regarding the desludging system service, 63% of the respondents stated "No," and 37% stated "Yes." It illustrates that only 37% of the respondents are serviced by the desludging system, while the rest are left alone without periodic maintenance. The consistency of the community in draining the septic tank is very low due to the unreachable location of the septic tank and the absence of a full septic tank event because it is thought that the septic tank is not sealed, resulting in leakage, which is feared to affect the groundwater quality periodically.

Table 13. Fecal Sludge Collection System Service

		Frequency	Valid Percent
Valid	NOT	63	63.0
	YES	37	76.0
	Total	100	100.0

Analysis of Domestic Wastewater Management Conditions in Kotalama Village

Based on the analysis of wastewater and waste management conditions, the next meal will be calculated accumulatively; the analysis of sanitation conditions in Kelurahan Kotalama can be seen in **Table 14.**

Table 14. Analysis of Sanitation Conditions in Kotalama Village

Variables	Indicator	Questionnaire Results		% Score	Criteria
		Yes	No		
Wastewater Management Condition					
Private WC or Communal MCK	Availability of private WC or communal toilets	96	4	96	Good
Septic Tank	The connectedness of the toilet and lavatory to the septic tank	46	54	46	Medium
Fecal Sludge Haulage	Fecal Sludge Collection System Service	37	63	37	Medium
Waste Management Condition					
Sorting	Household Waste Sorting	8	92	8	Bad
Staging	Availability of Household Waste Containers	36	64	36	Medium
	Suitability of Household Waste Containers	30	64	30	Bad
Collection	TPS Services	48	52	48	Medium
	Household Waste Collection Pattern	36	64	36	Medium

Variables	Indicator	Questionnaire Results		% Score	Criteria
		Yes	No		
Transport	Availability of Household Waste Collection Facilities	37	63	37	Medium
	Frequency of Household Waste Collection	37	63	37	Medium
	Average			**41.1**	**MEDIUM**

Based on the calculation of sanitation conditions above, it can be seen that the sanitation conditions in Kotalama Village are in the **"Medium"** category with a **score of 41.1.** However, if examined further, some values are nominally very contradictory, where the indicator of the Availability of Private WC or Communal MCK has a very high score of 96 with a **good** category. In contrast, the indicator of Household Waste Sorting has a low score of 8 with a **bad** category**.** The handling of sanitation in Kotalama has not been evenly distributed in all aspects or indicators of sanitation.

In addition, if we look further, the condition of waste management is, on average worse when compared to wastewater management; this could be related to the City Government's policy which stipulates that waste management at the community level is entirely the responsibility of the community in contrast to wastewater management where only the maintenance process is left to the community. It may be related to the very low level of supervision of sanitation management at the community level.

Drivers and Barriers to Sanitation Handling in Slum Settlement Areas in Kotalama Village

The driving factors and inhibiting factors for sanitation handling in slum areas in Kotalama Village are described in 5 (five) aspects, including regulatory aspects, communication aspects, environmental aspects, resource aspects and bureaucratic structure aspects as follows:

Regulatory Aspects

The regulatory aspect in this study is seen from local policies related to sanitation development and government control in implementing sanitation development policies.

a. Regional Policy Related to Sanitation Development in Malang City

Implementing sanitation development policies in Malang City has been equipped with regulations and implementation guidelines in the form of adequate planning documents. However, based on the researcher's observations, the content of existing policies still needs to be more general and more able to provide color to handling sanitation in Malang City. Local regulations should be able to describe the needs related to sanitation handling according to the region's characteristics, not just using the same "template" as other regional sanitation planning, which certainly has different characteristics. According to Grindle in Sandy (2019), the two variables that influence policy implementation are the content (content) of the policy and the implementation environment (context). The policy content consists of policy directions that should be applied according to the characteristics and problems in the field. If the policy's content or content cannot describe the handling needs in the field, the policy is considered unable to guide sanitation in Malang City.

In terms of sanitation policy, this can be a driving factor as well as an inhibiting factor, a driving factor because the availability of regulations and sanitation planning documents is a form of government support for sanitation development. At the same time, it is an inhibiting factor because

existing policies are relatively general and cannot provide color to sanitation handling according to the characteristics of sanitation problems in Malang City, especially in Kotalama slums.

b. Government Control in the Implementation of Sanitation Development Policy in Malang City

Government control in the implementation of sanitation development is still weak; planning is less used as a reference for development implementation due to political elements outside of planning; besides that, development orientation is only based on budget absorption outputs such as SPJ (Accountability Letter) and completeness of receipts. At the same time, there needs to be more control and supervision regarding outcomes and impacts, resulting in frequent development results that provide less benefit to the community and minimal sustainability. So based on these conditions, control over regulatory factors can be concluded to be a factor inhibiting sanitation development in Kotalama.

Communication Aspects

The communication factor has 2 indicators that are the focus of researchers, namely transmission and consistency of communication.

a. Transmission

To improve communication effectiveness, the Malang City Government formed the PKP Working Group as a forum for cross-OPD communication teamwork for handling housing and residential areas, including the sanitation sector in Malang City. In the development of sanitation in Malang City, communication transmission is often interrupted because 1) there is no continuity of the baton of authorized officials, namely when there is a change of officials, communication that has been built can often be interrupted; 2) there is often no continuity or follow-up because at every Pokja PKP meeting the representatives who attend are always different so that often the discussion that has been agreed upon is interrupted; 3) the lack of attendance of authorized officials at Pokja PKP meetings, then the representatives of the agencies who attend to represent are at the staff or operational level who certainly do not have the authority and courage to take a stand or policy.

In addition, communication between policy implementers and the community, facilitated by field facilitators in Kotalama Village, went well. The role of facilitators is very important because they must be able to translate the language of the program to the community as well as bridge the needs of the community in the field. It is, of course, also related to the human resource factor of the facilitator in carrying out the communication process in Kotalama Village, which has complex problems, including the characteristics of a tough community, low awareness of healthy living behavior, slums and dense settlements which affect the limited land in sanitation development. Several approaches have been taken by facilitators for sanitation development in Kotalama, including approaching key figures, both formal and informal, who are trusted by the community. Increasing awareness of the need for proper sanitation in key figures also influences the community's views and choices on a larger scale.

b. Consistency

In sanitation development in Malang City, communication was less intense only at the beginning of the program when the POKJA was formed. Although it has been facilitated in the Pokja PKP, consistency in communication could go better; this is, of course, also influenced by the transmission of communication, which is often interrupted. So the consistency of communication does not run continuously, so it becomes an inhibiting factor in sanitation development in Malang City.

Environmental Aspects

In this study, the researcher breaks down the environmental aspects into the social community, physical environmental carrying capacity and technology.

a. Socio-Cultural Society

The majority of the community are migrants from the Madura tribe who live in clusters occupying residential land along the border of the Brantas River and Bango River. The very prominent character is tough and sometimes difficult to accept new things; rejection is a defense for fear of being disturbed by their lives because they live on illegal land. The sense of tribalism and solidarity makes the people of Kotalama have a high level of kinship and are very compact. It can be both a strength and a weakness for the government to implement sanitation development activities. We can see a large social capital to mobilize or support sanitation policies from the positive side. However, if the right approach is not taken to understand the community, it can backfire at a large level.

However, the community in Kotalama Village is still in the stage of accepting the program. At the same time, the form of maintenance of development results and coordination of environmental waste management still needs to be stronger. To be utilized sustainably requires commitment and continuity from the entire community in sanitation management.

b. Physical Supportability of the Environment

Geographically, Kotalama allows the community to practice open defecation because the Brantas River and Bango River pass it; the building density in Kotalama is very high, and it is not uncommon for many settlements to grow on marginal lands such as riverbanks with poor sanitation infrastructure. Kotalama settlement has a hilly contour and is prone to land movement and landslides, an obstacle to sanitation management in Kotalama Kelurahan.

Technically, the physical environment is not a big problem because technology has advanced. The main problem is the limited land and the hilly contours, which results in a waste collection system that cannot run optimally because the collection fleet cannot reach the deepest areas. In addition, as mentioned in the previous statement, the community's commitment to coordinating sanitation development in terms of wastewater and waste management and maintenance still needs to be higher, exacerbating the existing physical environmental constraints.

c. Technology-related understanding

In terms of knowledge and technology, most people already understand septic tanks because, over time, the city government has conducted continuous socialization. However, some still are afraid or unwilling to build septic tanks for fear of explosion, odor, and discomfort. Sanitation is strongly related to regulation; so far, the low commitment of the community to regulating and managing sanitation has resulted in potential slums and stunting.

Resource Aspect

Resources are divided into three things which include: 1) Staff or people; 2) Funds or budgets; 3) Facilities

a. Staff or human resources

resources related to the adequacy of the number of personnel who are implementing sanitation development is still lacking, and the comparison between a person's ability to the workload seems to have a high gap; this is recognized by all informants that from the level of actors at the highest level to the implementers of community assistance and empowerment who are the targets of sanitation development are not prepared with sufficient personnel.

Regarding the competence or ability of the staff, the researchers found that the staff's ability can support the implementation of sanitation development. In this case, human resources employees were found to have many employee positions that were following their educational background. So that even though the number of employees or staff is very short, the conditions of employee competence following their fields or positions can improve the conditions for implementing sanitation development even though it must be done with greater effort. When

referring to theory, this is in line with the opinion of Edward III (1980), that expertise and ability (competent) are needed in implementing policies; in other words, increasing the number of staff alone is not enough to solve policy implementation problems, but it requires an adequate staff with expertise and capability.

b. Budget resources

Water and sanitation are a top priority for handling because they are related to stunting. However, it is difficult for the local government to determine the size and size of the budget, especially when faced with sanitation problems; it seems that any amount of funds will be used up for handling sanitation in Malang City. Currently, sanitation handling is more intense than a few years ago, with budgeting sources from the City APBD, APBN and foreign aid funds. According to information obtained by researchers, the handling of sanitation is currently spatially based, no longer a partial or no longer evenly distributed program in all urban villages. This approach is taken so that sanitation handling can be handled completely. It can be seen from 2018 - currently, Kotalama Village has always received DAK Sanitation funding assistance of IDR 600,000,000,' each year where approximately 80-100 beneficiaries per year.

Moreover, this has indeed succeeded in making the condition of toilet access in Kotalama reach above 95%. Similarly, in increasing the capacity of TPA Supit Urang, the Malang City Government has allocated a budget of Rp 12,000,000,000, - specifically for the maintenance of Sanitary Landfill utilization. Where previously received funding assistance from cooperation with the German government in the Emission Reduction in Cities (ERiC) Programme.

c. Facility Resources

Often the city government is only preoccupied with improving the quality of sanitation facilities at the city level. However, the research results found that community-level facilities still need to accommodate sanitation needs at the upstream level. One is related to the waste collection system in Kotalama Village, which has yet to reach all parts of the settlement due to the absence of innovation in facilities and community initiatives. Then related to wastewater management, septic tanks have been built. However, no desludging fleet can reach the house's location due to extreme terrain and limited circulation. It should be noted that this condition certainly affects the quality of sanitation management in the community, especially in Kotalama.

Bureaucratic Structure Aspects

Bureaucracy is an important factor in the implementation of a policy. this bureaucratic structure includes two main things first is the mechanism (SOP) and fragmentation, namely the distribution of responsibilities.

a. SOP

Sanitation development in Malang City is divided into Macro SOP and Micro SOP. The macro SOP contains how the steps or flow of an implementation of sanitation development for all actors and stakeholders, while the micro SOP talks about the guidelines and steps for implementing sanitation development in each actor according to their roles and interests so that in this case, each implementor has an SOP that is not the same.

Documents and coordination between agencies through Pokja PKP as a reference in the implementation of sanitation development become non-operational when there is no clear SOP on the flow of implementation that is more technical so that it can be executed more easily by multi-actors. This condition is not yet available in Malang City, so the sanitation development actors who are members of the Pokja PKP move based on their respective agendas and interests. The Macro SOP will be useful as a control tool so that multi-actor involvement in sanitation development can be more easily directed and controlled. From this, it is concluded that the

regulatory factor regarding macro SOPs still needs to be regulated and is an inhibiting factor in implementing sanitation development in Malang City.

b. Fragmentation

Fragmentation does occur in Malang City, but it is not an obstacle to achieving goals; according to the research results, the large number of actors is an asset for achieving goals. It is because each actor's division of tasks and functions is clear regarding the division of labor and its role (Micro SOP). Handling sanitation is highly complex, so there must be a division of authority for sanitation development to be lighter and more complete with a record of handling coordination still running.

Community Institutions Aspects

The institutional aspects in the Kotalama sub-district are still weak due to low commitment from the community in maintaining the development outcomes, the limited capacity of institutions in operating and managing sanitation, as well as the government's support in the form of monitoring and guidance towards community-based management institutions that remain very limited. These factors undoubtedly hinder the handling of sanitation issues in accordance with the characteristics of sanitation problems in the Kotalama sub-district.

These factors create significant challenges for handling sanitation issues in a manner that aligns with the specific characteristics of the sanitation problems in the Kotalama sub-district. Addressing these weaknesses and improving the institutional aspects will be crucial for achieving more sustainable and effective sanitation solutions in the area

Spatial Aspects

The spatial aspect can be concluded as a driving factor for the city government to undertake sanitation development because the sanitation development carried out by the Malang City Government is intended as a form of protection and management of rivers, not as recognition and support for turning riverbanks into settlements. The goal of sanitation development in the Kotalama sub-district is more focused on providing inclusive services to all segments of society.

However, this contradicts with financing from other sources such as KOTAKU, which requires ensuring clean and clear land, meaning the land must have a clear status and comply with spatial regulations, necessitating a lengthy permitting process for construction along riverbanks. This becomes an inhibiting factor in addressing sanitation issues in slum settlements along the riverbanks in the Kotalama sub-district. When dealing with sanitation development, having clear ownership and recognition of the land is crucial for proper planning and implementation. Land ownership disputes or lack of recognition may lead to delays, legal complications, or resistance from the community, which can impede the progress and effectiveness of sanitation initiatives. Therefore, it is essential to address land tenure and recognition concerns to ensure a smoother and more successful sanitation intervention in the area.

Based on the discussion related to 5 (five) aspects to find out the driving factors and inhibiting factors that affect sanitation development in Kotalama Village, it can be seen in **Table 15** below:

Table 15. Drivers and Barriers to Sanitation Development in Kotalama Village

Influencing Factors	Sub-Factors	Driving Factors	Inhibiting Factors
Regulatory Aspects	Local policies related to sanitation development	There is a form of government support with the preparation of regional policies related to sanitation (wastewater and waste management) and derived into planning documents as operational steps.	The content of existing sanitation policies still needs to be more general. It cannot provide specific policy directions on the characteristics of sanitation problems in Malang City.
	Government control of sanitation development	There is real action from the government regarding sanitation development in illegal locations as a *win-win solution* to minimize the negative impacts generated, not to support the abuse of protected functions as settlements.	Government control in the implementation of sanitation development is still weak; planning is not used as a reference for development implementation, and development orientation is only output-based budget absorption, not outcome-based Weak government control over the use of riverbanks as residential areas
Aspects of Bureaucratic Structure	Standard operating procedure (SOP)	Each actor already has an SOP following their respective roles (Micro SOP)	The unavailability of macro SOPs that integrate all actors in implementing sanitation development should be formulated together through the PKP Working Group for handling teamwork.
	Fragmentation	Multiple actors are an asset to achieving goals. It is because the division of authority, duties and functions of each actor is clear what they must do according to their role.	The fragmentation in sanitation management in Malang City leads to sectoral egos within each department, often resulting in non-synergistic and suboptimal sanitation handling
Resource Aspect	Human or Staff	The competence of employees following their fields or positions to improve the condition of the shortage of employees in implementing sanitation development.	Judging from the adequacy of the number of staff still needs to be improved; this can be seen from the comparison between a person's ability to the workload looks to have a high gap.

Influencing Factors	Sub-Factors	Driving Factors	Inhibiting Factors
	Funds or budget	The City Government's efforts to manage and capture opportunities for funding sources are very good, namely compiling spatial-based handling priorities and actively cooperating and collaborating with various parties related to sanitation handling needs to reduce the budgeting burden that the City APBD must allocate.	Regarding budget adequacy, it still needs to be improved, resulting in the need for sanitation handling in Malang City being delayed to improve its quality or increase its quantity.
	Facilities	Malang City's sanitation facilities are relatively good, especially at the city level.	Facilities at the community/neighborhood level still need help to accommodate the sanitation needs of the entire community.
Communication Aspects	Communication Among Policy Implementers at the City Level		Communication between policy implementers at the city level is still weak because the transmission of communication is often interrupted due to the lack of continuity of the baton of authorized officials, the lack of attendance of authorizing officials in Pokja meetings and the inconsistency of delegation of attendance in the Pokja PKP.
	Communication Between Policy Implementers and the Community	Communication between policy implementers and the community went well due to the mediation of facilitators who have experience and skills in approaching the community in Kotalama, which has a paternalistic tendency.	Communication with the community is not continuous because the assistance by field facilitators is project-based, where when the construction is completed, the communication process is also disconnected. There is a tendency for the city government to recruit facilitators who only possess technical skills without any empowerment experience

Influencing Factors	Sub-Factors	Driving Factors	Inhibiting Factors
Environmental Aspects	Social and community support	Has social capital and a level of kinship with a large mass to mobilize or support sanitation policies on a massive scale if the right communication is done.	The community has a hard character and a high level of kinship. If the communication approach is inappropriate, it will backfire at a greater level. Community commitment and continuity in the sustainability of sanitation management needs to be higher.
	Environmental capacity	-	Kotalama geographically allows the community to defecate because the Brantas River and Bango River pass Kotalama. Kotalama settlement is a dense area with hilly settlement contours prone to land movement and landslides. The density of buildings and the area's contours results in limited land and the difficulty of waste transport circulation in reaching the deepest residential neighborhoods.
	Knowledge related to technological advancements	People are familiar with sanitation technology because they often receive sanitation development programs from the city government and other programs.	There are still people afraid or unwilling to construct septic tanks for fear of exploding, smelling, and being uncomfortable where these feelings arise because the development results are often not maintained. Hence, problems arise as feared by the community due to the low awareness and concern about managing the development results.
Community Institutions Aspects	Community Institutional Capacity and Government Support	-	The institutional aspects in the Kotalama sub-district are still weak due to the following factors: Low commitment from the community in maintaining the development outcomes. Limited capacity of institutions in operating and managing sanitation.

Influencing Factors	Sub-Factors	Driving Factors	Inhibiting Factors
			Government support, in the form of monitoring and guidance towards community-based management institutions, is still very limited.
Spatial Aspects	The influence of spatial policy on sanitation development	The existence of tangible actions from the government related to sanitation development serves as a form of providing more inclusive services in the area to minimize the negative impacts that might arise, rather than supporting the misuse of green areas for settlements.	

CONCLUSION

Based on the results of the research and discussion that the researcher has presented, the researcher then formulates the following conclusions:

1. The sanitation condition in Kotalama Urban Village is **Medium**, It certainly contributes to handling access to sanitation at the city level, where Malang City currently ranks 16th (sixteen) in East Java Province.
2. Factors that become drivers and inhibitors in the implementation of sanitation development policies in Kotalama Village include:

a. Driving Factors

1) There is government support for developing regional policies related to sanitation that have been translated into operational planning documents.
2) There is real action from the government regarding sanitation development in illegal locations as a *win-win solution* to minimize the negative impacts generated, not to support the abuse of protected functions as settlements.
3) Communication between policy implementers and the community went well due to the mediation of facilitators who have experience and skills in approaching the community in Kotalama, which has a paternalistic tendency.
4) Social capital and a level of kinship with a large mass to mobilize or support sanitation policies on a massive scale if the right communication is done.
5) The City Government's efforts to manage and capture opportunities for funding sources are very good, namely compiling spatial-based handling priorities and actively cooperating and collaborating with various parties related to sanitation handling needs to reduce the budgeting burden that the City APBD must allocate.

6) Malang City's sanitation facilities are relatively good, especially at the city level.
7) Multiple actors are an asset to achieving goals. It is because the division of authority, duties and functions of each actor is clear what they must do according to their role.

b. Inhibiting Factors

1) The content of existing sanitation policies is still relatively general and cannot provide specific policy direction following the characteristics of sanitation problems in Malang City.
2) Government control in the implementation of sanitation development is still weak; planning is not used as a reference for development implementation, and development orientation is only output-based budget absorption, not outcome-based
3) Weak government control over the use of riverbanks as residential areas
4) Communication between policy implementers at the city level is still weak because the transmission of communication is often interrupted due to the lack of continuity of the baton of authorized officials, the lack of attendance of authorizing officials in Pokja meetings and the inconsistency of delegation of attendance in the Pokja PKP.
5) Communication between policy implementers at the city level formed in the PKP Working Group does not run continuously due to transmission disconnection and the absence of SOPs or macro program memoranda PKP Working Group does not run continuously due to transmission disconnection and the absence of SOPs or macro program memoranda.
6) Communication with the community is not continuous because the assistance by field facilitators is project-based, where when the construction is completed, the communication process is also disconnected.
7) The community has a hard character and a high level of kinship. If the communication approach is inappropriate, it will backfire at a greater level.
8) Community commitment and continuity in the sustainability of sanitation management needs to be higher.
9) Kotalama geographically allows the community to defecate because the Brantas River and Bango River pass Kotalama.
10) Kotalama settlement is a dense area with hilly settlement contours prone to land movement and landslides.
11) The density of buildings and the area's contours results in limited land and the difficulty of waste transport circulation in reaching the deepest residential neighborhoods.
12) Judging from the adequacy of the number of staff still needs to be improved; this can be seen from the comparison between a person's ability to the workload looks to have a high gap.
13) Facilities at the community/neighborhood level still need help to accommodate the sanitation needs of the entire community. The unavailability of macro SOPs that integrate all actors in implementing sanitation development should be formulated together through the PKP Working Group to handle cooperation.

3. Alternative Strategies for Sanitation Handling in Kotalama Sub-district

1) Implement community-based sanitation with a priority in slum settlement areas along the riverbanks.
2) Strengthen existing Sanitation Management and Maintenance (KPP) groups in related technical departments to serve as examples for surrounding community-based organizations (KSM/KPP).
3) Map key figures with the facilitator's involvement, including the participation of the Kotalama sub-district government, to influence and mobilize other residents to participate in environmental sanitation development.

4) Allocate funding for the development of Reduce, Reuse, Recycle (3R) practices in Kotalama Sub-district, utilizing funding from various sources.
5) Develop wastewater service access, whether on-site or off-site systems, in Kotalama Sub-district.
6) Continuously disseminate legislative regulations and related information on community wastewater management and waste management to the public.
7) Implement communal waste collection policies directly organized by the community, where residents organize group waste collection at agreed-upon locations and times.
8) Enhance the roles of facilitators and relevant departments (OPD) by involving community leaders and the Kotalama sub-district government in raising public awareness regarding healthy behavior and sanitation development.
9) Enhance the institutional capacity of KPP in Kotalama Sub-district through training, involving relevant OPDs, on technical aspects of maintenance and conducting benchmark studies in areas with relevant typology and characteristics. Address non-technical aspects, such as resolving issues during community meetings, planning, activity implementation, and maintenance, to increase community commitment.
10) Innovate in settlement infrastructure, particularly for desludging of septic sludge and waste transport in areas with steep terrain and dense settlements.
11) Involve the community through Focus Group Discussions (FGD) in formulating sanitation needs and policies in slum settlements along the riverbanks.
12) Increase the roles of the sub-district institutions and KPP to mediate the community's needs with the government, serving as facilitators for their own residents, and optimize the role of the sub-district government in strengthening the functions of sanitation cadres/volunteers.
13) Maximize the sustainability of the wastewater and waste management infrastructure that has been built, with supervision and strengthening by the city government.
14) Review policies and planning documents related to wastewater and waste management by adding sanitation components for areas with specific characteristics, such as those along riverbanks.
15) Revitalize Pokja PKP as a forum for communication, enforcing Macro SOP to break the communication deadlock and sectoral egos among sanitation development stakeholders.
16) Maximize the use of a unified planning and policy document for sanitation, as a reference and control for development, by preparing program memorandums among implementing departments.
17) Coordinate community-led sanitation management with government supervision and implement incentives and disincentives.
18) Implement community facilitation by field facilitators with empowerment competence based on prioritized locations, not project-based, as sanitation requires a combination of physical and non-physical development.
19) Official invitations to coordinate Pokja PKP meetings must include direct appointment of positions, meeting minutes notification before and for the next meeting in the technical departments.
20) Optimize the role of non-formal institutions and local government partners in financing to support sanitation development.
21) The government should assist in the licensing process with the Basin Management Office (BBWS) for partners involved in sanitation development along riverbanks

Based on the research, the researcher tries to provide suggestions that are expected to be input for stakeholders in sanitation development in Malang City as follows, 1) there needs to be a balance between physical and non-physical development in sanitation development efforts in Malang City, 2) good coordination, collaboration, and integration among all stakeholders in sanitation development by utilizing the Pokja PKP, 3) there is a need for collaboration in sanitation management between formal government institutions and non-formal institutions and partners of

the government, and 4) there is a need for further research on implementing sanitation development policies in all sectors, namely Wastewater, Solid Waste and Drainage, both qualitatively and quantitatively.

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