Disposal of Waste Communal in Region of Flow River on Settlement Solid Population

Yenita Sandra Sari¹, Didi Dwi Anggoro², Henna Rya Sunoko³, and Cenap Ozel⁴

¹Doctoral Program of Environmental Science, School of Postgraduate Studies, Universitas Diponegoro, Semarang, Central Java, 50241, Indonesia
²Department of Chemical Engineering, Faculty Engineering, Universitas Diponegoro, Semarang, Central Java, 50275, Indonesia
³Faculty of Medicine, Universitas Diponegoro, Semarang, Central Java, 50241, Indonesia
⁴Department of Mathematics, King Abdulaziz University, 21689, Jeddah KSA

Email: yenitasandra@gmail.com

Abstract. Changes that occur in housing development will change the zone that should be green open space its function to become a dense residential area. The purpose of this research is to find out how the physical condition of the toilet facilities sanitation development program for the community by the Bandung City government, such as what is the domestic waste disposal system residents, as well as to conclude how much community involvement in protecting the watersheds around the facility is also a communal toilet facility. The parameters used are the physical condition of the toilet, the existence of a septic tank, the use of a watershed, and the level of concern of the community using communal toilet facilities. This research is expected to be an evaluation material for the construction of community sanitation facilities in densely populated areas. In densely populated cities need public toilets. However, due to the lack of community participation, the condition of the facilities became damaged, dirty, and not maintained. The facility has become unsuitable for sanitation; squad latrine models are more widely used. The septic tank, which is supposed to be a waste collection facility, turns out that most domestic waste is discharged into the river through pipes. This is very unhealthy, causing pollution in watersheds. To make a government policy made that disposing of household waste from public toilets with pipes is prohibited because it causes the effects of river basin pollution, posing public health risks.

Keyword: Toilet; Sanitation; Bandung

1. Introduction
Urban residents have various characters in society. Daily activities also have various patterns and habits. The sanitation sector synergies in policy implementation [1]. Health as the basis for improving the quality of life [2], Indonesia with a high population growth rate of 1.2% per year is a high population country [3][4][5] the importance of planning as well as implementing solutions for domestic waste management [6]. The increase in population in the use of latrines occurs inequality so that adequate coverage of facilities is needed [7] and sanitation interventions have an impact not only
on the use of latrines [6] Bandung is a city with a variety of cultures and the character of the community, residents, and tourists who live. The importance of maintaining the number of the urban population to balance urban environmental conditions, the maximum service access is adjusted to public infrastructure [8][9] [10]. In urban areas do not have access to good sanitation, especially toilets, globally.[11] Urbanization and the interest of the community to settle down and live, certainly increase the number of settlements and reduce open space.[12] Changes that occur in housing development will change the environmental zone which should be green open space as a water catchment area, changing its function into a dense residential area, of course, its contribution to communal services and activities in sanitation[4]

Sanitation services (wastewater) are the responsibility of local governments in Indonesia [13][13]. Government programs in sanitation development, especially for residents in densely populated areas, have made one of the basic needs of sanitation facilities greeted with enthusiasm.[14 ]. Toilet sanitation affects the health of both mother and child [15]. Appropriateness affects behavior even in difficult and controversial conditions.[16] This is not only a matter of domestic waste but also of economic importance. Environmental perceptions are a product of social, cultural, experience, and cultural values in society. [17] A policy initiative needs to be carried out and sustainable and balance between rights and obligations that are just for society.

The communal MCK sanitation facility program is expected to provide a direct contribution to the welfare of the residents, but other effects need to be considered, studied, and concrete solutions. [7] Development aspect which is part of basic human needs, namely sanitation [18], in Indonesia sanitation refers to the needs of the community (demand-driven) not only a technical target (supply-driven). Indonesia compared to other countries in Southeast Asia is drastically lagging in the development of wastewater management. [19] Sustainable sanitation was developed for the benefit of the community and a basic element of the waste management paradigm.[20]

As a developing country, Indonesia must have a domestic waste management program.[21] There are many challenges in efforts to improve sanitation: the local collective action challenge; the coproduction challenge; the affordability challenge; the house tenure challenge; more significant effort is needed to overcome it. [22] Sanitation needs special attention.[23] the mitigation potential of the waste sector in developing countries is higher than in developed countries. [24]. It is estimated that 360 million people live without access to toilets.[25] Communal toilet services are essential in a situation of limited Indonesian society [26].

The purpose of this study was to determine the physical condition of the toilet facilities of the sanitation development program for the community by the Bandung city government, such as whether domestic waste was disposed of by residents, and to conclude how much community involvement in protecting the watershed around the facility as well as the communal facility toilets. This research is expected to be used as material for evaluating policies for the development of community sanitation facilities in densely populated areas.

2. Methods
This research was started in September 2019 in 8 urban villages in the city of Bandung, which have communal toilet facilities from the Government's sanitation development program. A total of 31 research location points were observed and made observations and conducted interviews with the community who carried out activities and used the facilities. As many as 337 families who were active users, interviews were conducted randomly at the location points when the facilities were being used by residents. The parameters used were the physical condition of the toilet, the presence of a septic tank, the use of the river basin, and the level of awareness of the community using the communal toilet facilities. The data analysis used was quantitative and qualitative. According to Sudharto: 2017 "With the efforts of researchers to find sources of information or data from processed and analyzed samples, the results are compared with hypotheses". To complete the data analysis, the researcher utilized multiple regression analysis with dummy variables.
3. Results and Discussions

This section discusses the relationship between variables. The X variable is the number of latrines, waste disposal sites, water sources, closed models, and participation. The variable Y is the active user.

From the results of the dummy regression test, the results obtained can be seen from Table 1 as follows:

| Model | R   | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-----|----------|-------------------|---------------------------|
| 1     | .337 | .113     | -.064             | 11.374                    |

From Table 1 with an R Square value of 0.113 states, the amount of contribution in 5 to variable Y is 11.3% while 87% is influenced by other factors. This means that the 5 variables X do not give significant value to the Y variable. Many other factors must be sought to predict the value of the Y variable because there are too few R Square values. The value of R Square of 0.337 indicates that the level of strength or the relationship is small.

In the ANOVA statistical test, the results obtained can be seen from Table 2 below:

| Model   | Sum of Squares | df | Mean Square | F      | Sig. |
|---------|----------------|----|-------------|--------|------|
| Regression | 413.135 | 5  | 82.627      | .639   | .672 |
| 1       | Residual      | 25 | 129.358     |        |      |
| Total   | 3647.097      | 30 |             |        |      |

a. Dependent Variable: active_user
b. Predictors: (Constant), latrine_count, waste_placement, waterource, model_closed, participation

From Table 2, it can be seen that the significance value is 0.072 greater than 0.05 so that the model is not significant, this only represents the reality of the place and time of the study. It cannot be stated as a general description because the value is insignificant. The overall coefficient of the value obtained is not significant, although it can only be used as a reference at the time and place during the study. This cannot be used to become a general description or prove a particular theory, so it only represents the reality at the time. A negative coefficient value states that the greater the value of the X variable, the less the Y value. To explain the results of this study, Table 3 is shown:

| Model          | Unstandardized Coefficients | Standardized Coefficients | t      | Sig. |
|----------------|----------------------------|---------------------------|--------|------|
| (Constant)     | B  | Std. Error | Beta  | 2.087 | .047 |
| water sources  | -.285 | 2.985 | -.020 | -.095 | .925 |
| partispanation | -.936 | 12.381 | -.026 | -.076 | .940 |
| model_closed   | -8.860 | 15.505 | -.201 | -.571 | .573 |
| total toilet   | -10.296 | 11.895 | -.168 | -.866 | .395 |
|                | -4.791 | 3.244 | -.292 | -1.477 | .152 |
In the use of the Dummy regression method, this study describes the statistical analysis, namely:

3.1. Waste Disposal
At the place of disposal of domestic waste, between rivers, septic tanks, and dirty drains, the negative value is obtained, meaning that active users or the community tend to dispose of waste into the river. It becomes something that is not good for the environment because disposing of the waste directly into the river without processing the waste first. Active users or the public seem to only use or take advantage of these public toilet facilities. From variable X, it can be seen that domestic waste from toilet activities is discharged into the river in Bandung to a septic tank or dirty drain and it can be seen from Figure 1 below:

![Figure 1 River as a Waste Disposal Site](image)

This phenomenon occurs at the location or place and time of the study. Cities with densely populated settlements, the existence of rivers that are not far from the location, have led to the habit of using rivers as containers or dumping grounds for domestic waste. Pipes from residents' houses drain the waste, either from closed or from kitchen utensils and clothes washing. All waste is channeled into the river.

3.2. Model Closed
The sanitation facilities that are built and facilitated by the government budget are certainly very acceptable assistance and have beneficial values that can be used by the community. Access to toilets in densely populated toilets is very important. People who are less fortunate with their economic conditions do not have toilet facilities for bathing and washing toilets (MCK). For residents who can only afford to rent a housing unit, even only one room and it is used for all their life activities. Only rooms have a private bathroom or even just a room. Sanitation facilities, especially toilets, are built with an insufficient number of facilities compared to the number of active users.

From this research, there are 2 models of closed latrine models, namely closed with squat model and sampling model. It turns out that what is used is mostly the closed or squat latrine model. Here, for closed or slung-style latrines, which are closed ones that are made manually and do not need to be flushed, but feces or feces directly enter the septic tank hole. The availability of latrines is very small, so there are still not enough to use them. The closed model, especially squatting, requires tools in the bathroom such as a scoop, bucket or tub, and a closed brush.
However, the facts in this field are still very few, even between several locations active users have to bring each one from home so that activities in the toilet can be carried out with the equipment. In each toilet, the cleanliness and sanitation are not good. For closed conditions and models, it can be seen in Figure 2:

![Figure 2 Closed Model and conditions](image)

From Figure 2 the conditions and models that exist when the observations were made at the time of the study are like that, this describes that most of the models used are closed or squat latrines and the conditions are not maintained.

3.3. Participations

The city condition at the research location is a densely populated settlement. With housing conditions close to each other, as well as cities with clean conditions from organic and non-organic waste. The community becomes part of caring behavior in maintaining the cleanliness of the environment in which they live. However, community participation in public MCK facilities "The densely populated area based on SNI 03-1733-2004 is if the population density in an area is 201-400 people / Ha". [27][28] The significant increase in population will certainly have an impact on the availability of residential land for residents. From the picture above, it is found that sanitation in Bandung City has several problems, especially in densely populated settlements. There are many basic reasons that all elements of society have their respective contributions in applying environmental care.

4. Conclusion

This research involves collecting data based on existing conditions. Community involvement in using, caring for, and maintaining sanitation facilities in the form of public toilets or toilets that are built and funded by the government needs to be provided with counseling and motivation. Both active and non-active users benefit from the existence of sanitation facilities. The number of toilets needs to be increased because the ratio is very small compared to active users. Very few policies and regulations prohibiting disposing of domestic waste into rivers are realized in people's behavior. A river that should be healthy is expected to contribute to the life of living things. Water which has many benefits becomes polluted due to human behavior that is not wise and wise. The cleanliness of sanitation facilities also requires the participation of users. The government needs to study and pay attention to sanitation problems in public facilities so that a healthy environment can be preserved through an integrated system with the government.
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