

THE RISE OF RAINBOW VILLAGE: OPTIMIZING AESTHETICAL PROGRAM TO ACCELERATE SANITATION ACCESS

*Larasati Putri Defi¹, Intan Kusumayanti¹, Wika Maulany Fatimah², Prasanti Widyasih Sarli³, and Prayatni Soewondo²

¹Water Supply and Sanitation Infrastructure Management, Institut Teknologi Bandung, Indonesia; ²Water and Wastewater Engineering Research Group, Institut Teknologi Bandung, Indonesia; ³Civil Engineering, Institut Teknologi Bandung, Indonesia

*Corresponding Author, Received: 3 Dec. 2021, Revised: 5 Jan. 2022, Accepted: 22 Jan.2022

ABSTRACT: Fulfilling basic needs for clean water and sanitation is still a challenge faced by Indonesia in achieving SDGs targets. In 2019, national access to basic sanitation was 77.83%, whereas in Java Province only reached 66.25% of its population. The high rate of urbanization increases the number of slum areas in big cities in Indonesia. One of the problems commonly found in slum areas is the lack of sanitation facilities and infrastructure including clean water, wastewater, drainage, and waste management. Improving access to sanitation in slum areas has faced notable financial challenges. Meanwhile, in the past few years, the making of rainbow villages or colorful villages is becoming a trend as an effort to improve the visuals of slum areas by painting houses. In further development, village visual improvement may convert the area into a tourism destination. The increase in social and economic value from being a tourism destination is expected to help stimulate the improvement of sanitation management in the village. Thus, the need to study rainbow village optimizing factors emerge. There are several rainbow villages in Bandung including Kampung Pelangi 200 and Kampung Cibunut Berwarna. Descriptive research design is used to compare and understand how the villages respond to the program. The survey research method is used to gather data. Based on the discussion, factors to be considered to optimize the aesthetical program and enable sanitation access acceleration are 1) Legality, 2) Institutional scheme, 3) Financial, and 4) Social.

Keywords: Kampung Pelangi 200, Kampung Cibunut Berwarna, Rainbow village, Sanitation, Visual improvement

1. INTRODUCTION

Rapid and unplanned population growth will be followed by population demands on basic access that outweigh existing infrastructure and service capacity [1], leading to environmental degradation [2]. It is estimated that by 2050, 70% of the world population will inhabit urban areas [3]. The increase in population will give pressure on cities, as cities are obliged to provide adequate basic infrastructure [4]. The lack of access to basic infrastructure will affect residents' well-being, and eventually become uninhabitable urban areas [5].

In 2016, around 1.6 billion people live in inadequate housing globally, of which 1 billion live in slums and informal settlements [6]. In Indonesia, the rapid population growth and urbanization have caused slum areas to double in the last five years [7]. According to the data from the Ministry of Public Works and Public Housing (PUPR) of Indonesia, the overall slum area in 2014 was 38,000 hectares and increased to 87,000 hectares in 2019 [8].

According to SDGs, slum households are households whose members suffer from one or more of the following 'household deprivations': 1) Lack of access to improved water source, 2) Lack of access to

improved sanitation facilities, 3) Lack of sufficient living area, 4) Lack of housing durability and, 5) Lack of security of tenure [9], [10]. Sanitation infrastructure is critical for public health and the environment. Lack of sanitation is linked to reduced health and environmental degradation [11], [12]. The importance of sanitation is reflected in Sustainable Development Goals (SDGs) 6. In slum areas, economic limitations as well as socio-cultural factors and lack of knowledge cause low-income people to have a low level of concern for the quality of their housing, including water and sanitation infrastructure [13].

Fulfilling basic needs for clean water and sanitation is still a challenge faced by Indonesia in achieving SDGs targets [8]. In 2019, national access to basic sanitation was 77.39%, whereas in West Java Province only reached 69.64% of its population [14]. Improving access of sanitation in slum areas has faced notable financial challenges, both on a local and national level. Meanwhile, in the past few years the making of the rainbow village or colorful villages is becoming a trend as an effort to improve the visuals of slum areas by painting houses [16].

In further development, village visual improvement may convert the area into a tourism

destination [17]. The increase in social and economic value from being a tourism destination is expected to help stimulate improvement of sanitation management in the village [18]. There have been several rainbow villages studied which yield different outcomes from the village visual improvement in the long run. Sustainable visual and tourism practice by Jodipan - Ksatrian in Malang reflects a successful program to boost the village both from a social standpoint and environmental standpoint [19]. In Bandung, there are several rainbow villages with different characteristics. One of the villages, Kampung Pelangi 200, was not able to maintain the visual quality and tourism practices due to unclear management and minimum involvement by the village chief and government, compared with how it is managed in Jodipan and Ksatrian Village [16]. However, another rainbow village in Bandung, namely Kampung Cibunut Berwarna, is observed to be able to match the success of Jodipan-Ksatrian in Malang.

The rise of the rainbow village due to the increasing village aesthetic improvement programs gives an opportunity to start accelerating sanitation access in slum areas. However, the result differences in one village to another indicates that the program is not yet optimized. Thus, to ensure that the program can result in its best potential, a study related to optimizing factors of aesthetical improvement program in rainbow villages is needed. This research will study rainbow villages with different characteristics in Bandung, namely Kampung Pelangi 200 and Kampung Cibunut Berwarna. In this study, the qualitative research method is used to gather data and compare characteristics to obtain suspected associations between caused and effect to the desired conditions in Kampung Pelangi 200 and Kampung Cibunut Berwarna.

2. DESCRIPTION OF AESTHETICAL PROGRAM

The research locations are located in Bandung city and their location are respective to each other can be seen in Fig. 1.

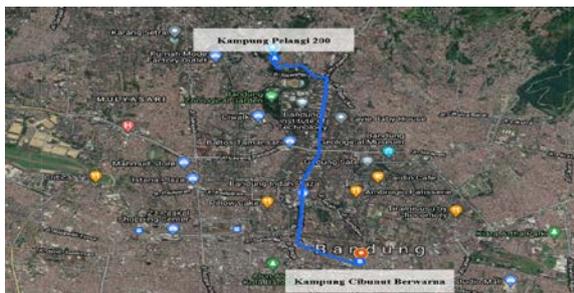


Fig. 1 Kampung Cibunut Berwarna and Kampung Pelangi 200 relative to each other on Bandung City



Fig. 2 Existing Condition of Kampung Cibunut Berwarna



Fig. 3 Existing Condition of Kampung Cibunut Berwarna

2.1 Research Area Description

2.1.1 Kampung Cibunut Berwarna, Bandung

Kampung Cibunut Berwarna is a village located in Sumur Bandung district, Bandung City, West Java. Geographically, this village is located alongside the downstream area of the Cikapundung River. There are several ways to access Kampung Cibunut Berwarna, but the most commonly used entrance can be accessed through Sunda Street (Fig. 4). Kampung Cibunut Berwarna consists of 9 neighborhoods/*Rukun Tetangga* (RT) under 1 hamlet/*Rukun Warga* (RW) with around 550 households. Details of the area distribution of each RT can be seen in Fig. 5.



Fig. 4 Research location: Access to Kampung Cibunut Berwarna



Fig. 5 Research location: Area distribution of each RT in Kampung Cibunut Berwarna

2.1.2 Kampung Pelangi 200, Bandung

Kampung Pelangi 200 is a village located in Cidadap District, northern Bandung, West Java. Similar with Kampung Cibunut Berwarna, Kampung Pelangi 200 is also located alongside Cikapundung River. However, watershed-wise, Kampung Pelangi 200 is specifically located on the upstream area of the river, near the Cikapundung Riverspot facility. Kampung Pelangi consists of 4 RT with a total number of households of around 225.

2.2 Description of Aesthetical Improvement Program

2.2.1 Kampung Cibunut Berwarna, Bandung

Kampung Cibunut Berwarna was initiated in 2016 by Kampung Cibunut inhabitants to participate in the “Adu Geulis” competition held by Bandung Forum for Waste-Free Champion to make proposals containing ideas of structuring residential areas (villages). Kampung Cibunut proposed to create a mural that has educational value, called “Edu Wall”. Edu Wall is planned to have a different theme for each RT ranging from local culture, local figure., world insight, to environment and peace. In a longer-term plan aside from making Edu walls, stakeholders are also aiming to paint all houses in Cibunut Village where each RT will adopt a different color concept from the other RTs.

Various stakeholders were also involved in the making of the proposal, from karang taruna (youth organizations), community organizations, to alumni associations, including university (Institut Teknologi Bandung) and senior high school (Senior High School State 3 Bandung) alumni association. During this event and exhibition, Kampung Cibunut managed to become 1st place in the competition and received paint procurement assistance from a paint company namely PT. ICI Paints Indonesia. The village painting process was carried out from 2016 to 2017. The initiative was further acknowledged on November 27, 2017, when Kampung Cibunut Berwarna was inaugurated by the Mayor of Bandung as a creative village with an environmental perspective.

2.2.2 Kampung Pelangi 200, Bandung

In Kampung Pelangi 200, the aesthetical program was a collaboration between the chief of RW 12 and PT. Rajawali Hiyoto produces paint branded “Sanlex”. The initial idea from the chief was to turn Kampung 200 into a colorful village as a tourist destination inspired by Jodipan-Ksatrian in Malang. The chief then contacted Sanlex’s public relations division to get information on their Corporate Social Responsibility (CSR) program, as Sanlex has conducted multiple CSR-related activities such as painting schools, villages, etc. The painting process was conducted from the end of 2017 until early 2018. By March 2018, residents were given 2 to 3 can of 25 kg paint of the residents’ preferred colors. The painting was carried out with the lead of the chief, in which the residents were responsible for their own respective houses and were encouraged to help their neighbors as well. Sanlex in collaboration with the subdistrict government-held multiple public events and activities in the form of fun walk media exposure to introduce the village as a new tourist destination in Bandung.

2.3 Response After the Program

2.3.1 Kampung Cibunut Berwarna, Bandung

In Kampung Cibunut Berwarna, the response after the project was positive. The inauguration of Kampung Cibunut Berwarna attracts many tourists to visit, take pictures, and share their experiences in managing waste in Kampung Cibunut Berwarna. From 2017 until now, the visual appearance of the village is still notably vibrant, despite fading color in some houses. Kampung Cibunut Berwarna still has an allocation for painting the village one more time from PT. ICI Paints Indonesia. However, until now this allocation has not been used because there is no desire from the community to use the paint allocation from the company.

2.3.2 Kampung Pelangi 200, Bandung

In Kampung Pelangi 200, the response after the project was considerably quiet. This was due to the absence of further active involvement of the paint company (Sanlex) and also the individualistic nature of the residents. Even with publicity and acknowledgment from the local government, no significant move was taken to ensure the achievement of the initial goal: to turn Kampung Pelangi 200 into a tourist destination. The initiator of the project was the chief of hamlet (RW); however, the plan was considerably one-sided and the residents’ involvement was minimum, thus residents’ eagerness was also minimum. Based on the collaboration contract, the residents can acquire paints from Sanlex until 3 years after the initial painting. However, not many of the residents are aware of or utilize this opportunity. Some of the residents who are still

willing to follow the colorful village theme conducted maintenance from their own pockets (e.g., buying paint, paint thinner, brush, etc.).

3. METHODOLOGY

This research is a part of a series of studies on rainbow villages in Indonesia. Descriptive research is used to describe the characteristics of the population and the phenomenon studied. This research design is used to understand how 2 different groups (Kampung Berwarna Cibunut and Kampung Pelangi 200) respond to the village aesthetic improvement program. Primary and secondary data are used to obtain a thorough understanding. The survey method is used to gather primary data, where a mix of open-ended and close-ended questions is used as the tool.

3.1 Data Collection

Primary data collection was conducted in Kampung Cibunut Berwarna using a random sampling method to ensure an equal probability of respondents in the group being chosen. The questionnaire was built to attain information about the demographic condition, social and economic aspects, water supply sources, and the existing sanitation infrastructure. Yamane method was used to determine sample size with the formula as follows:

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

n = sample size (85 households)
 N = population size (550 households)
 e = margin of error (10%)

Secondary data is used to describe Kampung Pelangi 200 which was obtained from the previous study.

3.2 Data Analysis

Close-ended questions data were analyzed using descriptive statistics, processed, and illustrated using Microsoft Excel. Open-ended questions data were analyzed using conventional content analysis. The information gained, supported with documentation from direct observation, will be used to describe the existing condition of Kampung Cibunut Berwarna.

4. RESULTS AND DISCUSSION

Primary data analysis results regarding Kampung Cibunut Berwarna will be briefly explained. Subsequently, strategic thinking to discuss optimizing factors will be thoroughly discussed by comparing Kampung Cibunut Berwarna (Through primary data) and Kampung Pelangi 200 (Through secondary data). The results of the comparison will be used to create a strategic concept that is expected to make the next aesthetic program more tactical when implemented. Thus, aesthetic programs can have a wider impact.

4.1 Kampung Cibunut Demographic Characteristic

Household economy status is defined as referring to the Central Bureau of Statistics of Indonesia (BPS) categorizing the amount of household monthly income. Using this approach, households with monthly income below Rp. 1.500.000 is categorized as poor; Rp. 1.500.000 – Rp. 2.500.000 as middle, Rp. 2.500.000 – Rp. 3.500.000 as upper-middle and above Rp. 3.500.000 as an upper class [20]. The result shows that the amount of household monthly income in Kampung Cibunut Berwarna can be categorized as poor and middle class with both percentages of 36.6%. While the rest of the households can be categorized as an upper-middle and upper class with percentages around 22% and 4.9%. Data regarding household occupations support the classification of the household status of the economy as the dominant occupation is self-managed small merchant shops. However, because the majority of the households are self-employed, during this pandemic even the highest-earning households are vulnerable to fragile economic situations.

Education levels from the majority of Kampung Cibunut Berwarna households are relatively high compared to the average national education level. While the average of the national education level is on the second grade of middle school, 61% from the total households in research area education level are on high school level or equivalent.

Many newcomers live amongst the former residents in Kampung Cibunut Berwarna who mainly lived either in rented houses or boarding houses. However, the households in the research area are still dominated by former residents who used to live in the area for more than 10 years with a percentage of 82.9%. Most of the residents (80.5%) in the research area are living in their own house or the house they inherit from their parents.

4.2 Sanitation Infrastructure and Sanitation Related Behavior

2 main water sources are used in Kampung Cibunut Berwarna, water pipes from a regionally owned water supply company (PDAM), using either subsidized or non-subsidized connection, and groundwater. The ratio of water sources used by the residents can be seen in Fig. 4.

The majority of the residents discharge their wastewater to the existing sewerage system that was built by the government in 1987 under the “Bandung Urban Development Project (BUDP)” program. The rest of the residents that are not connected to the system usually houses located along the riverbanks, tend to discharge their wastewater directly to the river. After the coloring program, there have not been significant changes in the wastewater sector mainly

due to the invisible nature of wastewater infrastructure (located underground). The ratio of residents' wastewater management is shown in Fig. 6.

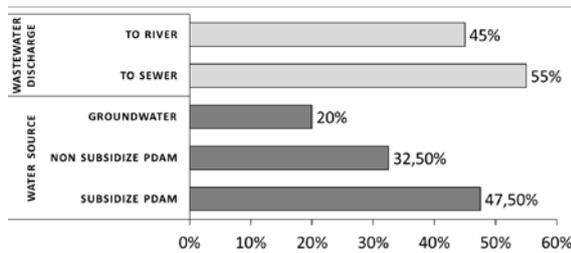


Fig. 6 Ratio of clean water sources and wastewater discharge in Kampung Cibunut Berwarna.

Before the program, the majority of the residents have not done waste segregation and most of the waste produced is directly collected by the waste worker. After the program, supported by the new local waste bank, the number of waste segregation done by the residents is rising quite high. Later, the collected segregated solid waste from the local waste bank is going to be sold to the central waste bank. The ratio of solid waste segregation done by the households before and after the visual improvement program can be seen in Fig. 7.

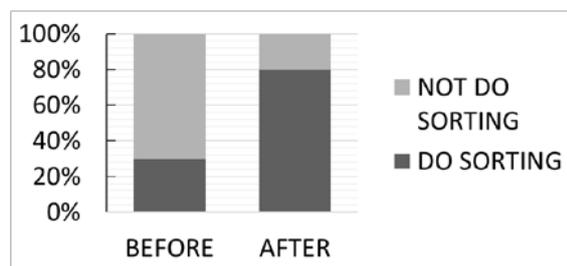


Fig. 7 Ratio of solid waste sorting activities before and after the program. Do waste sorting (black) and not do waste sorting (grey).

4.3 Economic Impact of The Project

The initial concept of the visual improvement project in Kampung Cibunut Berwarna was only for aesthetic purposes. Tourists who visit Kampung Cibunut Berwarna usually come because they are attracted by the multicolor mural design of the village through the @cibunutfinest social media account and feel engaged to take pictures with the aesthetic atmosphere and backgrounds.

There is no entrance fee for tourists who come in small numbers (1-5 people). However, for a large group of tourists (>20 people) whose arrivals are usually on the recommendation of the Bandung City Government, the village provides tour packages for Rp. 45,000 per pax. The tariff is allocated for meals, snacks, and incentives for the speaker to share about waste management in Kampung Cibunut Berwarna.

Hamlet (RW) chief collaborates with the family welfare empowerment organization (PKK) and residents who have businesses in the culinary field to provide food and snacks for tourists.

Based on the guided interview results with the stakeholders of the Kampung Cibunut Berwarna, there is no special financial scheme to focus on tourism. The initial purpose of making Instagram social media account was only as a documentation of residents' activities and communication media for the Kampung Cibunut Berwarna community, not for branding as tourism villages.

4.4 Strategic Thinking on Optimizing Factors

Strategic thinking to improve the quality of the visual improvement project in context to accelerate sanitation access is closely related to several aspects. Table 1 list and compare an aspect of characteristics found between the village.

Legality – Kampung Pelangi 200 was constructed on land owned by the university, even though many have resided for more than 10 years. On the contrary, Kampung Cibunut Berwarna house and land ownership are the residents (although some are being contracted). The legality of the settlement area is important regarding further involvement from formal stakeholders, as legal settlements are more preferred to be chosen due to sustainability concerns.

Institutional Scheme – The purpose of a visual improvement program in the two research locations is different. Kampung Pelangi 200 main purpose was the implementation of 'Corporate Social Responsibility (CSR) from a paint company, Sanlex. In Kampung Cibunut Berwarna the main purpose was to participate in the 'Waste-Free Area' program that was held by the government. Programs implemented in line with a program held by the government are considered beneficial in supporting the success of the programs. This is related to the ease in terms of branding and also in establishing relationships with external stakeholders who can be involved in the program.

Financial – There is no significant change in a financial scheme before and after a program in both of the research areas. Before the program, Kampung Pelangi 200 has no community retribution fee and the same thing goes even though the program was already done after. In Kampung Cibunut Berwarna, there is a community retribution fee before the program is implemented and continues after the program is implemented. In this case, even though there aren't any differences in the financial case in both of the research areas, the community retribution fee contributes to supporting the community's livelihood. Community retribution fees can trigger community independence in maintaining and managing their environment, so the residents will not depend solely on assistance provided by external parties.

Table 1. Comparison of aspects on the project's implementation in Kampung Pelangi 200 and Kampung Cibunut Berwarna, Bandung

Factors	Kampung Pelangi 200	Kampung Cibunut Berwarna
Legality	Illegal , settlement constructed on university-owned land.	Legal , House, and land ownership are true to the residents
Institutional scheme	<ul style="list-style-type: none"> • Aim of the program; Corporate Social Responsibility (CSR) • Initiators; Paint company - PT. Rajawali Hiyoto (Sanlex) • Internal stakeholders; None. 	<ul style="list-style-type: none"> • Aim of the program; Government program on making “Zero Waste Area” • Initiators; Dinas Lingkungan Hidup dan Kebersihan Kota Bandung (Bandung City Environment Services and Cleanliness) • Internal stakeholders; RW, youth organization, PKK/family welfare empowerment organization), Kelompok Swadaya Masyarakat (community-based organization)
Financial	<ul style="list-style-type: none"> • Retribution tariff; No. • Entrance Fee; No 	<ul style="list-style-type: none"> • Retribution tariff; Yes, 2 monthly retribution tariffs are consisting of (1) Solid waste retribution (Rp.5.000) (2) Iran Gotong Royong (Community Retribution) (Rp. 5.000 - Rp. 7.000; depending on each RT). • Entrance Fee; Yes, but only applied to the group of visitors (≥ 20 people)
Social	<ul style="list-style-type: none"> • Household engagement; No. • Public engagement through social media; No 	<ul style="list-style-type: none"> • Household engagement; Yes, through door-to-door pre-program socialization by internal stakeholders. • Public engagement through social media; Yes, using the Instagram platform

Social – Two different perspectives can be used to analyze the sustainability of the program in terms of social aspects. From an internal perspective, community engagement plays a very important role to support the sustainability of the program. A proper approach method should be done to the residents to achieve a successful community engagement. Kampung Cibunut Berwarna took a door-to-door approach to the residents so the residents would understand completely the purpose and goal of the program. This approach aids in engaging the community with the program. From an external perspective, public outreach has a very important role in maintaining village tourism potential. In this digital area, social media can be used to gain public engagement, as already implemented by the local community in Kampung Cibunut Berwarna. These internal and external perspective fulfillments were absent in Kampung Pelangi 200.

5. CONCLUSIONS

The majority of households are in poor-middle income (36,6%) and upper-middle-income (22%), where only 55% of households are connected to the sewer system. The coloring program significantly affects the solid waste system (sorting activities increased by 60%) and does not significantly affect the wastewater system. The difference in sanitation conditions as coloring project result between the

villages studied is influenced by 1) Legality of house and land ownership which will be considered by donors and governments before planning on long term intervention, 2) Institutional scheme of village programs management and the involvement of stakeholders and community, 3) Financial plan from the community to keep programs going, and 4) Social aspects in the form of public outreach to promote and introduce the villages. These factors need to be considered not only for project sustainability but also for other additional impacts that could be achieved from the project, one of which is sanitation development.

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