Strategic thinking to improve sanitation in Kampung Pelangi 200, Bandung City: in comparison with Kampung Jodipan-Ksatrian, Malang City

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Abstract. There are 4.5 billion people in the world who do not have access to safely managed sanitation. As an informal area, basic access to sanitation is also limited as available options for sanitation infrastructure provision is hampered by financial limitations. In 2016, students of Universitas Muhammadiyah Malang conducted a project funded by PT Indana in Jodipan, Malang to provide visual improvement to slum areas by painting the houses with striking colors. Jodipan inhabitants’ attitude and perception toward sanitation has changed over time as now their village has become a tourist destination. Meanwhile in 2018, a project funded by Sanlex was conducted in Bandung to attract more tourists by painting houses in Kampung Pelangi 200 to improve the physical appearance of the village. Kampung Pelangi 200 needs to obtain economic value from the project to provide safely managed sanitation. A cohort study is used to compare characteristics and confirm a suspected association between cause and effect to the desired condition. Factors to be considered include 1) Internal factors, particularly geographical characteristics, and location of the village, as well as local culture and social relationship in between village residents. 2) External factors, particularly the involvement of stakeholders and the weather of the city.

1. Introduction

There are 4.5 billion people, roughly 60% of the world, who do not have access to safely managed sanitation. Indonesia alone contributes up to 240 million people with unsafely managed sanitation [1]. Access to basic and improved sanitation increases the likelihood to safely managed sanitation. However, this does not guarantee safe containment of discharged wastewater and/or that it is safely treated upon containment and conveyance. Rapid population growth and increasing economic needs drive urbanization in many cities in the world, including cities in Indonesia [2]. Meanwhile, land scarcity and increased land prices occur along with increased population, resulting in the formation of informal settlements in urban areas [3]. In many cases in Indonesia, riverbank becomes a favorable location to create informal settlement due to low supervision from the government toward the riverbank area and is located relatively closer to the water source [4].

As an informal area, informal settlement possesses limited basic access to sanitation. Available options for sanitation infrastructure provision and management will be hampered by financial
limitations, as allocated budget for sanitation is still low both in the national and local level [5]. This means individual or communal sanitation facility might exist in the area but is not contained or treated properly, resulting in indirect open defecation due to direct disposal to water body despite having a proper toilet. In Indonesia, visual improvement projects are commonly used to improve the livelihood of dwellers in urban slums [6] with sanitation being one of the aspects considered to be affected by the program. Different improvement methods are used such as village vertical garden and open space arrangement, village cultural re-decorating, and painting the exterior of the dwellers’ houses, which is the most common method used.

In February 2016, students of Universitas Muhammadiyah Malang, funded by PT Indana as part of their Corporate Social Responsibility (CSR) program, conducted a project to provide visual improvement in slum areas by painting houses in the village. This project established the village as a tourist destination so as to bring in profits, further helping its neighboring village (Ksatrian) to follow suit. Over time, Jodipan-Ksatrian inhabitants’ attitude and perception toward sanitation change as now their villages are tourist destinations [7]. A similar positive outcome is observed in Kampung Code, Yogyakarta, where it is found that there is a significant relationship between visual improvement project and people’s behavior toward sanitation management [8]. However, based on evaluation carried out in previous studies, not all villages receiving village improvement program may improve significantly in other aspects other than the aesthetic visual, specifically regarding sanitation infrastructure and behavior toward sanitation. For example, in Kampung Pelangi Semarang, there is very little change in sanitation infrastructure in the village prior and after the project [9]. This case implies that despite receiving similar improvement projects, there are outcome differences in the respective villages.

In Jodipan, the newly added economic value provides new alternatives in improving sanitation, as it secures both financial and behavioral sustainability toward sanitation [7]. In Bandung, Kampung 200 followed a similar method. The village was built by residents previously occupying the land that is now students’ dormitory. They built new settlements by Cikapundung River, behind what is now Teras Cikapundung Park. The unique, steep geographical condition made the constructed houses look like piled up, similar to houses in Latin America (e.g. Favelas in Rio da Janeiro, Brazil) [10]. In early 2018, a project of painting the houses there to improve the physical appearance of the village was carried out, meant to attract tourists. The project was funded by PT Rajawali Hiyoto as a means of promoting its brand Sanlex. After the conclusion of the project, the village renamed itself Kampung Pelangi 200. To provide improved and safely managed sanitation, the village needs to be able to obtain economic value from the project. Compared to the success of Jodipan-Ksatrian, the case of Kampung 200 requires strategic thinking to be able to optimize the project and gain economic benefits. Therefore, this paper aims to analyze several factors to achieve a significant impact by visual improvement projects in a village and further analyze the needs to ensure the optimization of the project’s deliverables to the village.

2. **Methodology**

The methodology used in the research was selected to explore reasons and possibilities which lead to the current situation in the village. Retrospective cohort study was used to compare groups who are indistinguishable from multiple points of view, but differ in certain characteristics in terms of a particular outcome [11]. Aspects studied with this method are segmented into 3 parts: cause, affected population, and outcome. This method is commonly used in medical study to figure out 1) the cause of a known outcome in several groups of people and what differs in their characteristics, or 2) which specific groups of people are affected by the cause, resulting in the known outcome, or 3) what might be the outcome if the cause and specific affected group were known. In this study, the retrospective cohort study is used to compare 2 cases with different outcome despite coming from considerably similar group (i.e. villages with visual improvement program). Therefore, this method is used to seek causes leading to the differences in the outcome. To achieve this, comparison of each of the villages’ respective existing conditions is explained as a baseline of the situation in each village.
After the conditions are explained, the difference between villages in Malang and Bandung will be analyzed to identify factors affecting the outcomes of visual improvement in each village. Information regarding existing conditions was obtained through a descriptive model formed by data from the following approaches.

- Secondary data to portray Kampung Pelangi 200 visually prior to the improvement project and early after the completion of said project. This approach is also used to gather data regarding Kampung Jodipan-Ksatrian from previous researches.
- A quantitative survey conducted to the residents of Kampung 200. Data regarding demography, water availability, and sanitation status was collected through this survey.
- A qualitative survey conducted in Kampung 200 to further explain the result of quantitative survey. This was executed through in-depth interviews with the head of the local community, elderly residents (to illustrate the dynamic of urbanization in the village and its surrounding area over the years), shop owners; as well as secondary data from interviews with the sponsor of the project.
- Direct observation to experience and observe firsthand the impact of visual improvement in the village as well as the quality of water and sanitation infrastructure in the village.

More details on the methodology are as follows.

### 2.1. Data Collection

Data for quantitative and qualitative research was acquired through questionnaires distributed from June to July 2020 in Kampung 200. The number of samples was pre-determined through Yamane formula (equation 1) with a 1% margin of error.

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

In Yamane formula, \( n \) refers to sample size, \( N \) is the population size, and \( e \) is margin of error. However, other than Yamane formula, Saturation method is also prepared. The saturation method is used if the data that have been collected and analyzed indicates that no further collecting is necessary [7]. For the interview, random sampling was used to determine respondents to ensure equal probability of being chosen. The questionnaire was built to attain this information:

- Demographic condition
- Social and economic aspects
- Water supply sources
- Existing sanitation infrastructure

In order to ensure in depth explanation from the respondents, questionnaire is made by combining both closed and open-ended questions.

### 2.2. Data Analysis

Quantitative data results were analyzed using descriptive statistics, processed and illustrated using Microsoft Excel. The information gained, supported with documentation from direct observation, will be used to describe the existing condition of Kampung Pelangi 200. Retrospective cohort approach will be then used to seek impactful factors in visual improvement toward sanitation of Kampung Pelangi 200 in comparison with Kampung Jodipan-Ksatrian.

### 3. Description of the Project

The location of respective research locations relative to Java can be seen in Figure 1. In this section, the description of the projects of Kampung Pelangi 200 and Kampung Jodipan-Ksatrian will be compared to be further analyzed. This is crucial as the nature and motive of the projects will be the initial exposure to the observation in the retrospective cohort study to determine the outcomes of each project. The description was collected from the results of in-depth interviews and the secondary data.
3.1. Area Description

3.1.1. Kampung Pelangi 200. Kampung Pelangi 200 is a village located in Hegarmanah subdistrict in Cidadap district, Bandung, West Java. The village is located alongside the upstream area of Cikapundung River, near Cikapundung Riverspot (Teras Cikapundung). It is located on a steep terrain by the river and the houses appear to have been built right on top of each other. There are 2 ways to access the village; one is by a sidewalk just next to Cikapundung Riverspot (Figure 4), and the other is by a sidewalk from Sangkuriang Street (Figure 3). The first entry is commonly used because it is designed for strolling and is paved aesthetically (Figure 5). This sidewalk was built alongside the construction of Cikapundung Riverspot in 2013 to 2015. Meanwhile the second entry is not commonly used because it is placed around housings and not on the main street, so it is naturally designed as the exit.

Initially, the name of the village was “Kampung 200”. The detail of this location can be seen in Figure 2. Almost all part of the villages stood on land owned by Institut Teknologi Bandung (ITB) and is divided into 4 Rukun Tetangga (RT), numbered 3, 4, 10, and 11. The “200” in the name was taken from the amount of compensation fee provided by ITB when ITB evicted the residents from their houses, which were located upward from the current location, to build new dormitory buildings in 1994 to 1995. After the demolition, the residents were still allowed to reside on ITB’s ground but the land ownership would still owned by ITB. Selling the land is prohibited, but selling the houses is permitted. The residents who moved in were then given choices in the form of land lots to build their house on. These lots would then become RT 10 and 11, and half of RT 4. The other half of RT 4 and all of RT 3 have been living by the river longer than RT 10 and 11, and the land’s ownership would be considered owned by the community; It cannot be sold as it is categorized as customary land.

There are roughly 135 households on RT 4 and 10, and around 90 households on RT 3 and 11. The placement of each of these RTs within the village will cause different sanitation-related behavior and thus, affecting the analysis. Details of this placement can be seen in Figure 3. Through direct observation, it can be seen that the environment surrounding the village can be classified as clean, as there are not much solid wastes scattered around even though small food plastic wrappers can still be found on the ground (there are very few and can be rid of easily). Despite standing on university owned land, there are many residents who have lived in the village for more than 30 years.

Figure 1. Bandung and Malang relative to each other on Java. Bandung is located on the western part of the island while Malang is located on the eastern part of the island (Source: Analysis Result, 2020).
Figure 2. Research location in detail: Kampung Pelangi 200 (Source: Analysis Result, 2020)

Figure 3. RTs in Kampung Pelangi 200 (Source: Analysis Result, 2020).
3.1.2. Kampung Jodipan-Ksatrian. Kampung Jodipan-Ksatrian are two subdistricts (kelurahan) in Blimbing, Malang, East Java. The village is also located on a riverbank, and is also registered as illegal settlements according to Government Order (PP) 2011 on rivers [12]. The population of Kampung Jodipan-Ksatrian can be seen in Table 1.

| Area name | Jodipan | Ksatrian |
|-----------|---------|----------|
| Population| 91 households | 220 households |
| Sample Size| 48 households | 69 households |

It is also known that 90% of the residents in Kampung Jodipan dispose of their solid wastes directly to the river because of 1) the long distance between house and the temporary garbage disposal in comparison with the river which is closer, and 2) no direct impact on the residents, hence the residents unaware of the impact of their action [7].

3.2. Description of the Project

3.2.1. Kampung Pelangi 200. The visual improvement project was conducted by the end of 2017 until early 2018. The project was a collaboration of the chief of RW 12 and PT. Rajawali Hiyoto that 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 another colorful village i.e. Kampung 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 school, villages, etc. By March 2018, residents were given 2 to 3 can of 25 kg paint of the residents’ preferred colors. 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.
To introduce the village as a new tourist destination in Bandung, Sanlex in collaboration with the subdistrict governmental body held multiple public events and activities in the form of fun walk media exposure. No further activities were held after this, even though another fun walk event was planned before the pandemic. However, due to city lockdown and bans on gathering, the event was then cancelled.

3.2.2. Kampung Jodipan-Ksatrian. The visual improvement project in Kampung Jodipan-Ksatrian was more thorough and involved more stakeholders compared to that of the Kampung Pelangi 200 project. The Kampung Jodipan-Ksatrian project was initiated by students of Communication Major of Universitas Muhammadiyah Malang, in collaboration with PT Indana, as a part of their Public Relation class. PT Indana is a local company in Malang that produces paint with a brand name “Decofresh”, and decided to sponsor the project in the form of paint and fund. Due to this support, the project then titled “Decofresh Mewarnai Jodipan”, literally meaning “Decofresh paints Jodipan”. At first, only Kampung Jodipan was targeted for the project. However, due to the high publicity of the first project and the acknowledgement from government officials, PT Indana was asked to extend the visual improvement project to Kampung Ksatrian as well. Kampung Ksatrian is located just across the river from where Kampung Jodipan is located.

The sanitation system in Kampung Jodipan-Ksatrian was finally able to be reformed thanks to the profit from the ticketing system to enter the village. In regard to solid waste management, the costs to collect the household waste (from houses to temporary disposal area) and to transport it (from temporary disposal area to landfill) can be financed from the profit of tourist entrance fee (around IDR 2.000 per person). This profit would also be used to build new toilets for tourists.

3.3. Response after the project

3.3.1. Kampung Pelangi 200. In Kampung Pelangi 200, response after the project was notably quiet. This was due to the absence of further active involvement of Sanlex and also the individualistic nature of the residents. This was the result of the lack of improvement initiative which was expected to realize the village’s potential. Even with publicity and acknowledgement from 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 RW; however, the plan was considerably one-sided and the residents’ involvement were minimum. According to the result of the interview with female teenage and young adult residents in the village, the painting plan and activities were only discussed among adults, and there was no specific representation in which the young residents’ could participate in. There is a local youth organization (karang taruna) in the village that helped with the labor work. However, most were males and were helping only the physical work; they did not contribute with any improvement initiative. Another response from female adult residents indicates that due to the individualistic nature of the residents, the sustainability of Kampung Pelangi 200’s visuals is compromised. This tendency was also identified early in the project, where residents painted their houses in their own respective schedules as the residents refused to work on the painting project as a communal work. The quality of the painting job was also bare minimum, as some of the residents felt burdened that they had to paint their own house and to buy their own house-painting supplies; Sanlex provided only the paints. Thus, some of the houses’ exterior do not look good or appealing up close. Sometime after the first painting, only very few residents were willing to carry out maintenance. This is the reason why currently the colors on the houses are fading. Documentation regarding recent visuals of the village can be seen in Figure 6, 7, and 8.
Figure 6. Most recent picture of Kampung Pelangi 200

Figure 7. Current visual of house exterior in Kampung Pelangi 200. The paint is

Figure 8. Current visual of alleyways in Kampung Pelangi 200. At first, the sidewalk was also colorful, and there was
fading and the initial quality of painting is also lacking decoration on top of the alleyways. However, the paint is washed away by rain and the decoration were put off because it was damaged.

For the continuity of this project, involvement from Sanlex is also minimum. According to the chief of RW that was interviewed, it is known that the residents are still eligible for more paints from Sanlex as the collaboration’s contract is valid for 3 years after the initial painting. However, not many of the residents are aware of this or do not really care; they are not eager or excited about the tourism plan. 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.).

3.3.2. Kampung Jodipan-Ksatrian. Response to visual improvement in Kampung Jodipan-Ksatrian was huge and impactful. Government officials acknowledged the project directly and immediately asked PT Indana for a continuation, which resulted in Kampung Ksatrian visual improvements. The government also announced that Kampung Jodipan-Ksatrian has become a tourist attraction, revoking the community’s status as illegal residents. Another follow-up made by the government was the launching of “Thematic Village Competition” where all of 57 subdistricts (kelurahan) in Malang competed by sending proposals of ideas on how to improve their villages and budget planning to the local government [7]. The government also encouraged these kelurahan to collaborate with university representatives or professionals. The active involvement of PT Indana was also fruitful in the sense that they were asked to help improve visuals in villages outside Malang. The overall impactful activities in Kampung Jodipan-Ksatrian has also inspired other cities to use similar methods on village visual improvement, and therefore, many other Kampung Pelangi (Colorful Village) were born.

4. Results and Discussion
In this section, analysis of the impact of visual improvement in Kampung Pelangi 200 toward sanitation and sanitation behavior is explained. The demographic of the area is explained beforehand to briefly understand the characteristics of the village’s residents. Next, the impact of visual improvement to the economy of the residents is presented. Sanitation-related behavior will be discussed in the form of the advance of sanitation system in the village after the painting. In the Strategic Thinking section, comparison of outcomes between Kampung Pelangi 200 and Kampung Jodipan-Ksatrian will be listed, along with different aspects that exist or do not in the respective villages. From this comparison, the factors to be considered on planning an impactful visual improvement project can be concluded.

4.1. Demographic of the Area
A survey was conducted in Kampung Pelangi 200 to understand demographic aspects; information on economy status, education level, land ownership, and duration residence was obtained from the village residents. Classification of economies in Indonesia refers to that of the Asian Development Bank (ADB), which considers consumption expenditure per household as it will represent the purchasing-power parity in Indonesia [13]. Using this approach, households with expenditure under USD 68 (around IDR 1,000,000) per month is categorized as poor middle; the middle class (consisting of aspirant middle, emerging middle, and middle) would comprise expenditure of USD 68 to USD 206 (around IDR 3,000,000) per month. Households with expenditure of USD 206 to USD 343 (around IDR 5,000,000) per month are categorized as upper middle class. According to the survey, 80% of the respondents are categorized as middle-income class, almost poor middle class. This indicates income fluctuation and vulnerability, albeit unable to be categorized as poor. Meanwhile, the remaining 20% are considered upper middle class. The composition of lower middle income is considerably high as according to the data from neighborhood chiefs, around 90% of household in their area receives subsidized water supply from the government, in which only the lower to lower middle-income class are eligible to receive.
The residents’ level of education is low; no resident has ever received a higher-level education. The highest levels of education recorded are high school level (37%) and elementary school level (34.3%), with the rest being in middle school level and not receiving education at all. As a baseline, at national level, 60.84% of graduates are from high schools [14]. Limited access to education also reflects the types and varieties of the residents’ occupation. The majority of men in the village work as laborers or general employees, while the women are usually unemployed, work as housemaids, or opens a small shop at home.

The residents have lived in the area for a long period of time; 91.4% stated they have lived in the village for more than 10 years, and so far, 94.3% live in their own house despite not having ownership of the land. In the village, more than 93% stated that the driving force behind their community is their RW chief; only a few stated the youth organizations is; and one respondent stated there is none. This indicates the power relation in the village and how the chief is trusted to be the “motor” of the community.

4.2. Economic Impact of the Project
In the initial concept of the project, the visual improvement was only supposed to attract tourists to visit and enjoy the sceneries from the sidewalk with Kampung Pelangi 200 being the main attraction. However, no specific scheme related to financial matters was planned. Unlike Kampung Jodipan-Ksatrian that collects entrance fee from the tourists, Kampung Pelangi 200 does not collect entrance fee; tourists can just walk by the village. Some of the households do open shops in front of their home. This, however, is not a part of the visual improvement or the tourist destination plan, as the residents had opened shops way before the project was carried out. However, there are not many tourists who visit the village and there is no regular crowd in the area, indicating that Kampung Pelangi 200 does not attract tourists well. Because of this, there is no specific impact of the visual improvement project on the residents’ economic status.

4.3. Sanitation Infrastructure and Sanitation-related Behavior
There is 100% access to water in the village even though it is not available all the time. The types of the sources used are groundwater, and local water company (PDAM) either in regular plans (meter marked blue) or subsidized ones (meter marked yellow). The ratio of the residents using either source can be seen in Figure 9. However, from direct interview conducted to the head of families in RT 4 and RT 10, almost all residents receive subsidized plans as long as they have registered. This is proved by the fact that some of the residents own both blue and yellow water meters in their respective houses, meaning they have two plans (regular and subsidized).

Sanitation-related behavior in Kampung Pelangi 200 is closely related to the geographical characteristic of the area as well as the economic impact of the project, but it is not specifically impacted by the visual improvement project. Because of the steepness of the village, access to upper ground requires a lot of energy and can be exhausting. Due to this, many residing in RT 3, which is closer to the river, usually dump their wastes (domestic wastewater and solid wastes) directly to the river.

![Figure 9. Ratio of water supply sources in Kampung Pelangi 200. Groundwater (blue) is 34.3%; Regular PDAM plans (red) is 28.6%; Subsidized PDAM plans (green) is 37.1% (Source: Analysis Result, 2020).](image-url)
Meanwhile, those in RT 4, 10, and 11, usually dispose of their solid wastes to the temporary disposal area on each of the wing side of the village, to be burnt afterwards. The ratio can be seen in Figure 10. The collection from households to the temporary disposal area is done by various methods such as dumping the garbage directly when necessary or dumping when the husband or the son depart for work, or even relying on other resident to come and collect the garbage. Those who collect residents’ garbage are paid USD 0.5 to USD 1 per a collection cycle. However, only few residents practice this. Also, although not recorded in the quantitative survey, from the qualitative survey it is revealed that some of the residents who live just next to the river still dump their garbage directly to the river, albeit not regularly.

**Figure 10.** Ratio of solid waste management method in Kampung Pelangi 200. 85.7% dump their garbage directly to the temporary disposal area (red) and 14.3% burn their garbage directly (blue) (Source: Analysis Result, 2020).

In wastewater management, 97.1% of the residents separate their black water and the gray water (Figure 11), and since 100% of people have gained access to water supply, 100% of household own their individual toilets. From this number, 80% of the residents use containment for their black water (Figure 12), in the form of what the residents call as septic tanks, which is actually improved pit latrines. A “septic tank” is usually a square of 0.6 to 1 m wide and 2.5 to 4 m deep on the ground. It is called a septic tank by the residents because the side wall is concreted on the upper side and uses bricks on the lower side. However, the bottom part is not concreted, making it permeable. This is the idea of the residents, in which they perceive septic tank as a medium for containment before soil filtration. Meanwhile, the 97% residents who separate their black water and gray water, discharge their gray water flow directly to the river or to a drainage system which will also flow to the river.
Pre-existing sanitation-related behavior have been unchanged before and after the project. Positive activities from the women in Program Pemberdayaan Kesejahteraan Keluarga (Family Welfare Empowerment Program) are initiated, e.g. in the form of the production of crafts made of coffee/milk sachets, which later would be turned into rugs, tissue holders, or shopping bags (Figure 13). These activities have been initiated even before the visual improvement project, and they are simple activities taught by a member to another member their free time. Another existing positive behavior in Kampung Pelangi 200 is that some residents have already begun sorting out their garbage to further ease the waste collectors’ job, as sometimes the collector must also specifically sort out the garbage to gain additional money from selling plastic bottles or glasses (Figure 14). In wastewater management, some of RT 3 residents wish to have a communal wastewater treatment plant so that they will not have to discharge their wastewater directly to the river. The residents actually acknowledge the miss in their wastewater system, because they know they are not supposed to dispose their wastewater directly to the river or that their septic tank is actually not as how it is supposed to be. However, land and budget limitation hinder their sanitation improvement.

Around 19-26 July 2020, there would be a communal work on RT 11 to prepare for the placement of a collection container. Prior to the construction of the dormitory, the empty space around that area was designated as a spot for a solid waste container before a truck would transport the waste to the landfill. The residents used to just dump the waste inside the container so it will not scatter around. After the construction of the dormitory, there was no sufficient or proper space for the container, so it was no longer placed there and residents began dumping their garbage on the open space around. Since the...
demand for better solid waste containment is high, ITB and residents of Kampung Pelangi 200 will do communal work to tidy up the open space so the solid waste container can again be placed there.

4.4. Strategic Thinking

Strategic thinking to improve sanitation in Kampung Pelangi 200 is closely related to how the visual improvement project has introduced significant change to the village in the first place. Table 2 lists aspects of the respective projects.

Table 2. Comparison of aspects of the projects in Kampung Jodipan-Ksatrian and Kampung Pelangi 200 (Source: Analysis Result, 2020).

| Aspect                                      | Kampung Jodipan-Ksatrian                                               | Kampung Pelangi 200                                                     |
|---------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|
| Continuous and clear involvement of the sponsor | Yes; the sponsor provided periodic maintenance in the form of repainting to the village and is acknowledged by the village residents | Yes; continuous involvement of the sponsor exists, but the form of involvement from them is not clear and not widely known by all of the residents |
| Involvement of the youth                    | Yes; university students were the initiator                              | No; the project was initiated by the RW chief without any specific involvement of university students or young residents of the village |
| The community’s involvement on project      | Yes; the village residents along with the university students, military personnel (TNI), and employers of the sponsor worked on the painting | Yes, but only encouraged and not enforced. This resulted in lack of visual quality from the village |
| Additional income concept                   | Yes; entrance ticket fee is changed                                     | None                                                                   |
| Conflict of interest                        | Yes, as the frequency of visitors during working days differs from weekends. Therefore, a financial and institutional scheme in between residents is required | None, as the project do not bring additional income to the residents |
| Visibility from main road and ease of access| Yes; the village is located just under the bridge of the main road and can easily be accessed from the main road. Entrance and exit are not too far apart | Not directly visible; the village is located on a riverbank a bit far from the main road. Entrance and exit are also too far apart that the tourists need to either use the entrance as the exit or use another mean of transport to go back to entrance area (for if they park around that area) |
| Sustainability of visual quality           | Yes; continuous maintenance is still carried out by the sponsor and monitoring is still conducted by the students. The residents also possess the sense of urgency of maintaining the visual quality as it is becoming a crucial source of their additional income | Not maintained; colors are fading and many decorations are either destroyed (due to weather) or put down because it is damaged. Since there is no significant impact from the visual improvement project, many residents do not feel that it is necessary to maintain the bright colors on their house exterior. |
| Tourist facilities and additional attraction| Yes; public toilets were constructed. Mural and art attractions are installed within the village | No; tourists are only expected to stroll around and pass by. No additional attraction is installed other than colorful exterior |
From explanations on the list in Table 2, deciding factors of conducting an impactful visual improvement project can be analyzed. The factors can be categorized into two, internal factors and external factors. Internal factors include but are not limited to:

- **The geographic characteristics and the location of the village.** The location of the village will affect the visibility of the village. Visibility is crucial to the impact of project, as the visual is what is supposed to attract tourists. The steeped terrain of the village and the distance from the main street will be tourists’ consideration when choosing whether or not to visit. This is because not everyone would be willing to go through rough or hard terrain to stroll around because they may tire easily (e.g. children), or simply are not able to walk through rough terrain (such as steeped slopes) or through far distance (e.g. the elderly). Limited access means limited range of visitors.

- **Local culture and social relationship among the residents.** This will highly affect local inhabitants’ daily behavior and further the coordination necessary to maintain the tourism area. Good relationship and solidarity among residents will bring a significant impact on the visual quality of the project. In Kampung Pelangi 200, the residents were unable to or unwilling to help others with painting because they were too focused on their respective day jobs. Meanwhile, those who did not work a day job were either unwilling to help because they felt not helped in the first place or were not asked for help (e.g. the youth organization). Coordinating for painting schedule, a concrete tourism plan, and joint execution of plans can only be achieved through maintaining good communication and relationship between all of the residents, while considering power relations into account as well.

On the other hand, external factors include but are not limited to:

- **Involvement of stakeholders.** There were many stakeholders that would affect the success of the project; however, the crucial stakeholders were and are the sponsor, the head of the local community, and the local government. The sponsor needs to set out clear agreements between the company and the residents, especially regarding the continuation and what products should be provided as the contract is long-term. Meanwhile, the head of local community would need to be able to analyze the need of their community in order to further improve their village, and seek external help that may fulfill the need (e.g. training with the help of university students, funding from local government/CSR/NGOs, media publicity, etc.). Other than that, the local government would also need to strategically see the potential in such activities and encourage similar approaches so that the other stakeholders can feel supported and thus increasing the enthusiasm toward implementation and improvement of the project.

- **Weathers and climates of the area.** Different rainfall intensity or sunlight exposure will result in different maintenance practices for the visuals of the village. Wind speed may also affect the types of decorations the village should utilize. These weather conditions must be taken into account so that from the very beginning of the project, the maintenance of the visuals’ quality can be measured, thus identifying an initial plan for the budget to
successfully create and maintain the village. This will be important when proposing funding to the sponsor or to when discussing the maintenance cost among the residents.

These factors will decide whether or not the project will be successful, and thus dictate whether further economic impact can be gained through the colorful village tourism plan. They will be highly important to note since they affect the sustainability of the village and the tourism plan for it. A successful colorful village as a tourist destination may open up new, better options on other supporting aspects of livelihood, one of them being adequate and safely-managed access to sanitation.

5. Conclusion
Nowadays, with acknowledgement to good living being encouraged even to those living in urban slums, different methods are executed in order to improve the quality of life in such area. Access to water and sanitation is notably difficult for urban slum dwellers due to the crowded and irregular layout of the settlements, legal problems, and/or affordability issue. One of the approaches to improve this is through visual improvement of the village, by turning it into a tourist destination. This improvement is expected to cumulatively improve other livelihood aspects such as better access to water, better sanitation, and better economy condition. One successful village was Kampung Jodipan-Ksatrian. However, not all villages with visual improvement are as successful as Kampung Jodipan-Ksatrian; an example of such is Kampung Pelangi 200. From this research, it can be concluded that there are some deciding factors that needed to be taken into account in order for this project to achieve its full potential:

- Internal factors, particularly the geographical characteristics and the location of the village, as well as local culture and social relationship among the village residents
- External factors, i.e. involvement of stakeholders and weathers and climates of the area

This research aims to list the factors to consider in order to increase the chance of success of similar projects in the future. Furthermore, this research also aims to shift visual improvement projects to become not only an added value to the village, but also a multiplier effect that will amplify other livelihood aspects of the residents as well. Therefore, with the project impact optimized, sanitation access in the village may be improved as well.

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