



Residents' Assessment in Kaligawe Slum Area, Semarang

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Abstract

To reduce slum areas, the government of Semarang City has issued a decree of determination of slum areas in 2014 and initiated some slum upgrading activities from the central and local government. Kaligawe, as one of the areas close to the industrial estate and has many residents, is included in a slum area that must be handled. The slum area in Kaligawe consists of 7.35 hectares from RW 1 – RW 4 (*RW=Rukun Warga/Community Association*). In addition to the description of the slum characteristics, residents' assessment is also needed regarding the neighborhood condition. This study aims to analyze residents' assessment in Kaligawe as one of the slum areas in Semarang. This study applied a questionnaire survey that was distributed to 90 residents of Kelurahan Kaligawe (*Kelurahan= Sub-district*) slum area randomly from RW 1 – RW 4 and NUAP Kaligawe 2017 document review as the data collection source. The findings indicated that although Kaligawe has a low socioeconomic level, the residents' assessment of Kaligawe's neighborhood is overall good. It is because they are already used to live with new neighborhood conditions, and also significant improvement resulted due to slum upgrading program in Kaligawe area.

Keywords: housing; residents' assessment; slum

1. Introduction

Population increasing and economic growth can affect the development of a city. Semarang City, on its development, has become a center of activity concentration and service center for its surrounding area because of economic growth. Semarang City is one of the leading sectors in the industry and trade sector. The sectors are the main attraction for residents from outside of Semarang City to get a job and live in Semarang City. The industrial areas in Semarang City have been growing great.

One of the biggest industrial areas is located in the surrounding Kaligawe area. In Kelurahan Kaligawe (*Kelurahan= Sub-district*) Semarang City, most of the residents work as industrial workers (48%) and construction workers (40%) (Statistics Bureau of Semarang City, 2017). The geographical location of Kelurahan Kaligawe which close to Terboyo Industrial Area, Kaligawe Small Industrial Area (*LK Kaligawe*), and Tanjung Emas port, which also has many factories and companies, attract many migrants to work and live in Kaligawe. Workers need residence near their working place. Therefore, many workers attracted and live in Kaligawe area, although with the risk of rob (tidal flood) and flash flood from East Canal Flood River (*Sungai Banjir Kanal Timur*) as often overflow.

Being a densely populated area, risky of a flood, and rob disasters make Kaligawe potential to be a slum area. Data from UN-Habitat (2003 in Winarso, Putra, & Nurmala, 2009) stated that the slum area in the world keeps growing. More than 923 million people or 31.6% population of the world live in slums (Brueckner, 2013). Slums are often seen as victims and threats of urban poverty, but besides that also seen as dynamic parties which capable of facing urban challenges (Dupont, 2000, in Ishtiyah & Kumar,

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2011). They play an important role in supporting the city's economic system through informal sector works. So slums need to be integrated into urban settlement system and guarantee access to basic services (Ishtiyag & Kumar, 2011). Policies in developing countries in overcoming slums have developed from resettlement by demolishing and displacing to in-situ redevelopment and upgrading (Mukhija, 2010) to indicate an inclusive approach between public-private-NGO collaboration, community participation, tenure security, and microfinance (Imparato & Ruster, 2003; UN-Habitat, 2003). In Indonesia, the collaboration between multi actors can drive social learning and empowerment for advanced local planning (Hudalah, Winarso, & Woltjer, 2010). Decentralization provides possible chances to enhance local resources and skills through local CSO (civil society organizations) partnership (Lewis, 2010). In line with decentralization that reinforces local autonomy and planning, especially in Southeast Asia countries, the community participation starting to represent how it can be an effective policy to reform urban poverty in slum upgrading (Das, 2015).

One of the slum upgrading programs in Indonesia is the Kampung Improvement Program, which has been started since the Dutch government then continued after the Indonesian independence in the late '60s (Kustiwan, Ukrin, & Aulia, 2015). The goal of the program is to improve living conditions for urban poor by providing a basic level of services and infrastructure (Devas, 2016) and public health because health issues can develop into other problems (Poerbo, 1978). The Kampung Improvement Program (KIP) was first established in Jakarta in 1969, and a similar program began to implement in Surabaya in 1976. This program is considered to be successful in solving environmental problems and reducing urban poverty (Das, 2015; Dhakal, 2002). In the first period of Kampung Improvement Program Development in Surabaya, there is no community participation and empowerment (Dianingrum, Faqih, & Septanti, 2017). However, slowly, the system changed, and in the fourth period since 2010, it focused more on human resources development to make the program sustain.

In 2014, the Mayor of Semarang City had issued the Mayor Decree No. 050/801/2014 about the Determination of Housing and Settlement Slum Area of Semarang City, within 7.35 hectares of Kelurahan Kaligawe is a slum area. In Kaligawe, the slum upgrading program called NUSP (Neighbourhood Upgrading and Shelter Project), which is outlined in NUAP (Neighbourhood Upgrading Action Plan). Delineation of Kelurahan Kaligawe slum area comprised on the part from RW 1 to RW 4 (*RW=Rukun Warga/Community Association*). The population of slum residents is 2.973 inhabitants. About living conditions, based on Neighbourhood Upgrading Action Plan (NUAP) Kaligawe document 2017, showing 656 houses with 874 households. It can be assumed that some houses occupied by more than one household. From the socio-economic aspect, the residents mostly work as labor, so it can be concluded that they are dominantly middle to low-income people.

Referring back to Kaligawe's location in the industrial area, making migration to this area increased. Migration is due to the growth of the industrial sector in Semarang, attracting the interest of the labor to work in the industrial sector, so it does attract migration into an industrial area (Marsyukrilla & Manaf, 2013). Another impact of this is the industrial area is now fulfilled with migrants who need adequate housing with complete facilities and infrastructure (Wang & Pan, 2012). Kaligawe becomes an urban kampong that strategically located and needs to be preserved for the middle to low economic community, in particular for residents who work in the surrounding industrial area. The goal of housing provision for workers is to minimize the transportation costs from the worker's home to their workplace (Coulson & Fisher, 2009).

Variables used in residents' assessments are adapted from research on residential satisfaction conducted by several researchers. Residential/housing satisfaction has a meaning "an assessment conducted by the occupants of the gap between an occupant's desired housing characteristics and the characteristics of current residential" (Lee & Park, 2010). Housing is an essential thing that contributes to the quality of life, and it relies on individual interests/satisfaction so that it can be different from one to another. The components of housing which influence the preference of residential selection are the number of bedrooms, land area, house type, design, and several bathrooms (Tambunan, 2012). Based on other researchers, there are four classifications can affect the level of satisfaction with the dwelling conditions, i.e. dwelling unit features, dwelling unit supports services, neighborhood environment, and management of housing estate (Ibem & Aduwo, 2013). Also, there is a researcher stated there is a linkage between household and dwelling characteristics in a developing country like Indonesia (Brueckner, 2013). Good household characteristics (such as economic condition and education) lead to housing occupancy with better structural characteristics while the dwelling characteristics are rooms, walls, floor, roof, toilet, water source, sewage drainage, garbage collection, electricity, phone, ventilation, and yard.

As mentioned above, preference of residential assessment/satisfaction can vary, so this article tries to analyze residents' assessment in Kaligawe as one of the slum areas in Semarang, to at least get an overview of the slum residents' opinions. From here, it will also be seen how the slum upgrading programs influence residents' assessment. Therefore, it is necessary to know the residents' assessment of their existing neighborhood conditions. Also, in that way, we will know the right solution to improve and preserve the urban settlement and reduce the slum area in Semarang.

2. Methods

This research used a quantitative method by distributing questionnaires to respondents who live in Kaligawe slum area (see Table 1) and document review. The questions are related to the characteristics of

slum residents and their assessment of existing housing and neighborhood conditions in Kaligawe slum area. Besides that, data collection is also sourced from NUAP Kaligawe 2017 document that presents data based on the field census.

Tabel 1: Sample Distribution

| Location | Total Households | Respondents |
|--------------------|------------------|-------------|
| RW 01 – RT 01 | 36 | 4 |
| RW 01 – RT 02 | 37 | 4 |
| RW 01 – RT 03 | 46 | 5 |
| RW 01 – RT 04 | 38 | 4 |
| Total RW 01 | 157 | 17 |
| RW 02 – RT 01 | 33 | 3 |
| RW 02 – RT 02 | 40 | 4 |
| RW 02 – RT 03 | 41 | 4 |
| RW 02 – RT 04 | 45 | 5 |
| RW 02 – RT 05 | 47 | 5 |
| RW 02 – RT 06 | 43 | 4 |
| RW 02 – RT 07 | 46 | 5 |
| Total RW 02 | 295 | 30 |
| RW 03 – RT 02 | 49 | 5 |
| RW 03 – RT 03 | 69 | 7 |
| RW 03 – RT 04 | 47 | 5 |
| RW 03 – RT 05 | 60 | 6 |
| Total RW 03 | 225 | 23 |
| RW 04 – RT 01 | 59 | 6 |
| RW 04 – RT 02 | 57 | 6 |
| RW 04 – RT 05 | 26 | 2 |
| RW 04 – RT 06 | 55 | 6 |
| Total RW 04 | 197 | 20 |
| TOTAL | 874 | 90 |

Remarks: RT= Rukun Tetangga/neighborhood
 Source: Authors' Analysis (2018)

The analysis method used descriptive analysis and scoring analysis. Descriptive analysis will describe the residents' characteristics and housing overview in Kaligawe slum area by displaying it in the frequency distribution. The purpose of scoring analysis using the Likert scale is to assess the residents' opinions about existing housing and neighborhood conditions in Kaligawe slum area. The Likert scale ranges from one to five, score one shows terrible condition and score five shows excellent condition. The next step is, to sum up the total score and figure out the average score to know what should be improved in the area.

3. Result and Discussion

3.1 Characteristics of Kaligawe Slum Area

Slum conditions are identical to the general impression of bad attitudes and behavior in terms of living standards of the middle-low class. It interprets a high-density population area with a poor environment and low housing quality, inadequate infrastructure, and some land tenure problems (UN-Habitat, 2008). The word 'slum' tends to lead to something negative. That condition is easily viewed physically, such as from environmental conditions and housing conditions.

3.1.1 Housing Condition of Kaligawe Slum Area

Housing improvement in slums, generally shifting from temporary material using, which eventually becomes permanent housing in self-help and informal ways (Tunas & Peresthu, 2010). Variables that discussed in this point are a type of residence, floor area, and land status. Residential buildings that exist in Kaligawe slum area are mainly a permanent house with floor construction made of ceramic material, brick wall with roof construction made of tile. Nevertheless, there are still semi-permanent houses which the wall is made of brick, but the floor is not tiled because the occupant cannot afford to raise the house regularly due to road elevating (see Figure 1). The number of homes that belong to the category of inappropriate house/sub-standard house (*Rumah Tidak Layak Huni*/RTLH) as many as 131 units (20%). The following graph displays complete data of the housing condition of Kaligawe slum area (see Figure 2). According to research discussed Kampong Improvement Program, physical improvements in KIP include improvements in infrastructure, public facilities, and physical condition of the dwellings (Dianingrum et al., 2017). NUAP, which is one of slum upgrading activities in Kaligawe, also improved some inappropriate residents' houses. There are 23 units of houses improved through this NUAP activity budget.

Urban slum problems in developing countries are much related to informal land ownership (Brueckner, 2013). Regarding land status, most of the land in Kaligawe slum area is previously waqf land, land as an asset of an Islamic organization. However, based on the secondary data from the Action Plan for Environment Revitalization (*Rencana Aksi Perbaikan Lingkungan Kaligawe*/RAPL) NUAP 2017, it is now dominantly certificated as private ownership. There are also some of the people who still only have a land sale and purchase deeds (*Akta Jual Beli*/AJB), and that still has weak legal force. If the normalization

of East Canal Flood River has been completed, there will be a possibility of land-use change or land sale and purchase, which results in high land prices around the area. If the community does not yet have a legal land certificate as it should, it will be detrimental to the people living in the area because they do not have the legal force for their land. Most of them said when they bought and built their own house, the land status was already their land.

Houses in Kaligawe have a large area per one unit. This is because the residential area in Kaligawe is residential that has long existed. More than 50% of houses in Kaligawe slum area have a floor area > 70 m². Houses with floor area > 70 m² can accommodate the needs of human space for their number of people in a family. Based on the standard of moving needs, a human needs at least 9m² so he can comfortably live. Thus, the floor area of a house can meet the needs of the residents.



Figure 1. Various Types of Residence in Kaligawe Slum Area (Source: Survey Documentation, 2018)

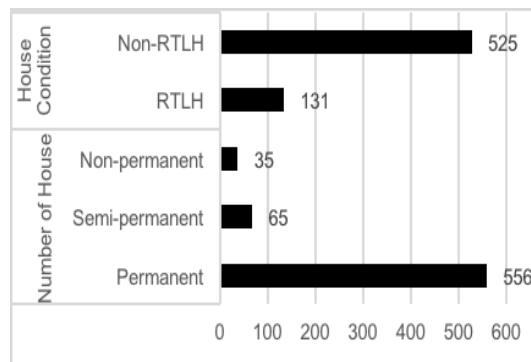


Figure 2. Housing Condition in Kaligawe Slum Area (Source: Semarang City Government, 2017)

3.1.2 Environmental Condition of Kaligawe Slum Area

The majority of the road network in Kaligawe made of asphalt/paved, but it is in damaged condition, low elevation, and easy to be flooded during the rainy season. In a slum upgrading project, the most flexible infrastructure to be built and upgraded is road, in the form of road improvement. However, this way has an impact on the condition of homes that continue to sink because they have to pursue the height of the road that continues to be built (see Figure 3).

The other problems related to an environmental condition in the slum area is drainage, waste system, and wastewater/sanitation treatment. In Kaligawe slum area, the waste problem is strong related to the drainage problem. This region is bypassed by drainage channels such as Kali Es and East Flood Canal River where the two large channels are still poorly maintained and cannot optimally drain the water. In the area which is prone to flood, drainage in Kaligawe should be the main concern. The primary drainage such as The East Flood Canal, now is still being normalized by the government. While for the secondary and tertiary drainage in the settlement area needs awareness and effort from the community to keep it clean from garbage so it can flow well again. The community has to be a concern that they should improve the waste system in the order they no longer dispose of carelessly in open spaces/surrounding ponds/in the drainage. Besides that, the government has made some efforts by making closed drainage to improve tertiary drainage conditions. Regarding sanitation, mostly the residents have their private toilets in their houses, and also there is a public toilet in the area. However, there are still several toilets that are disposed of directly to the river.



Figure 3. Sinking Houses in Kaligawe Slum Area
(Source: Survey Documentation, 2018)

3.2 Household and Community Condition of Kaligawe Slum Area

This analysis will discuss the characteristics of households and communities in Kaligawe slum area. Those characteristics are seen from the social and economic conditions and housing utilization. With that way, we can see slum condition not only physically, but also from the non-physical side.

3.2.1 Social Characteristics of Kaligawe Slum Area

Residents who live in Kaligawe slum area are mostly between the ages of 26 and 55, thus forming a middle-old population pyramid. Some of them have lived for more than ten years (84%). Some have lived from 7-10 years ago (8%), and the rest have lived for only a few months ago (see Figure 4). The diversity of reason to stay in Kaligawe is influenced by several factors such as the affordable and cheap price, close to their workplace, suitable for family needs, have lived a long time with their parents, even from birth they already lived in Kaligawe, and their existing home now is a legacy from their parents.

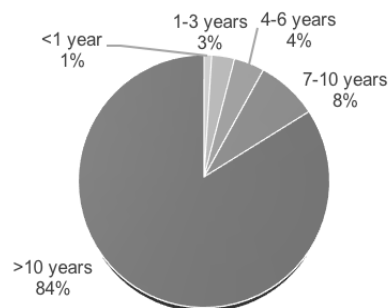


Figure 4. Length of Stay in Kaligawe Slum Area
(Source: Semarang City Government, 2017)

Residents' characteristics were identified based on number of households and people in a house influence the willingness and considerations of living in vertical housing. From questionnaires result, mostly a house is occupied by 1-5 people. Nevertheless, there are also some houses occupied by up to 8 people or even more. While, for household occupation, a house can be occupied by 1-4 households. Those who live in large numbers in a house admitted that they were comfortable with the condition because they could gather together with extended families, so they did not need to find another place to live and do not want to move to the vertical housing.

3.2.2 Economic Characteristics of Kaligawe Slum Area

Dominant jobs in this area are labor and the private sector. Most of them work in Kaligawe Small Industrial Estate, Terboyo Industrial Estate, and Tanjung Mas Port. They are migrants who came from surrounding Semarang City, such as Demak Regency and Kendal Regency.

For the level of income, dominantly, the respondents have income less than IDR 1.000.000 per household. The second-largest percentage is income with a range of IDR 1.000.000-2.000.000. When compared to the Regional Minimum Wage of Semarang City in 2017 IDR 2.125.000, many of them live below the minimum standard. So we can know that the population in this place is a population with middle to low economic level (see Figure 5).

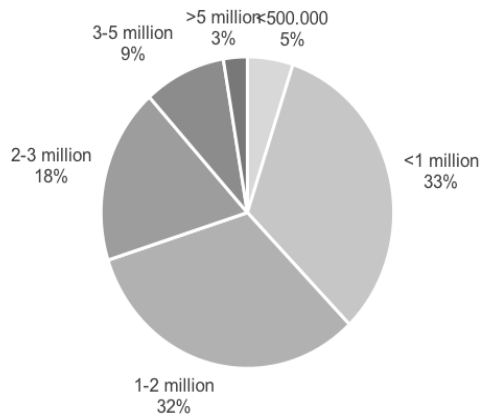


Figure 5. Housing Average Income in Kaligawe Slum Area
(Source: Semarang City Government, 2017)

3.2.3 Housing Utilization in Kaligawe Slum Area

Housing function in Kaligawe slum area is 38% of respondents use their houses for living and business, and 62% of respondents use their houses only to live. The business owned by citizens includes small shops, laundry services, electronic repair services, beauty salons, selling craft bags, and aluminum crafts. Most residents also do not have a large room as their place of business. They use the terrace or living room in the house as a place of business (see Figure 6). If it is associated with the willingness of the community to live in vertical housing, they will rethink the room utilization/space changes in their unit if they continue their business. A service business such as childcare or lesson private tutor also needs room as well to accommodate people. This thing would be difficult to do in a 21 m² or 24 m² type unit unless they own/rent a separate room for business activities.



Figure 6. Home Business in Kaligawe Slum Area
(Source: Survey Documentation, 2018)

About room utilization, many respondents said the main room in their house is used for various kinds of activities, such as a living room that functions as a family room for watching TV as well as being used as a sleeping area, and sometimes also used as a dining room if their kitchen is narrow. Mostly, they have 2-3 bedrooms in their house. If there are many family members live in the house, they probably will use the living room as their sleeping area. For the number of stories, dominantly in this residential area is one-story. Most of them only have one-story building because it is an enough wide house. Even so, homes in this area still have risks, such as the risk of flooding entering the housing area due to the normalization of the East Canal Flood River that is still being worked on at this time. For those who have enough funds, they will build a higher house foundation than the road to avoid flooding.

3.3 Residents' Assessment of Existing Housing and Neighbourhood Conditions in Kaligawe Slum Area

3.3.1 Assessment of Housing Condition

Aspects in Housing Condition consists of a type of residence, floor area, location, and land status. Based on residents' assessment data that had been collected through questionnaires, the majority of the respondents considered that their housing location is good. This aspect has the highest rank on assessment scores. They are satisfied to live in Kelurahan Kaligawe because it has a strategic location, near to the city center, near to the primary road, as well as close to their workplace. Around 50% of the respondents have a moderate opinion on the type of residence and floor area. They feel enough with typology and condition of their homes now.

For land ownership, the two most significant percentages are 41% of the respondents argued good, and 39% argued bad, and the rest argued moderate. The number of both most significant opinions is almost the same because land ownership has become an issue in the area since many years ago. The land, which was initially waqf land, gradually became a high-density residential area until now. Table 2 shows the scoring assessment of housing conditions per RW in Kaligawe slum area.

Table 2: Assessment of Housing Condition per RW

| Variable | Slum Area | Average Score | Variable | Slum Area | Average Score |
|-------------------|-----------|---------------|-------------|-----------|---------------|
| Type of residence | RW 01 | 2.94 | Location | RW 01 | 3.76 |
| | RW 02 | 3.37 | | RW 02 | 3.80 |
| | RW 03 | 3.39 | | RW 03 | 3.70 |
| | RW 04 | 3.40 | | RW 04 | 4.00 |
| Floor area | RW 01 | 3.06 | Land status | RW 01 | 3.29 |
| | RW 02 | 3.00 | | RW 02 | 3.30 |
| | RW 03 | 3.30 | | RW 03 | 2.74 |
| | RW 04 | 3.30 | | RW 04 | 2.70 |

Source: Authors' Analysis (2018)

Looking from Table 2, the best average score of the community's assessment of housing conditions is in the Location variable. This variable is undoubtedly the best score because it is one of the advantages of staying in Kaligawe. The second-best average score is Residence. The lowest score of type of Residence is in RW 01 since, in Table 2, the least number of permanent houses is in RW 01. For the floor area, the community's response is quite moderate because the house they are living in is large, and it is not surprising if one house can consist of several households. Land Status in RW 01 & 02 is also quite moderate, but in RW 03 & 04, the score is less probably because the process in land certificate still runs.

3.3.2 Assessment of Housing Physic

Things that are more physically visible, such as several rooms, quality of wall, floor, and roof, toilet, lighting and ventilation, yard, and household furniture, are included in this assessment (see Table 3). In aggregate, an assessment of the number of rooms, wall quality, floor quality, and roof quality the results obtained are 49% - 50% saying moderate, then the percentage of the second majority says good. Looking at these results, it can be said that the respondents could accept the physical condition of their current home. The number of rooms in their house is mostly in one ample space that is only given partitions. Meanwhile, the quality of walls, roofs, and floors is like a permanent building in general. However, they still feel the need to improve the quality of their homes, which are often affected by flooding, so they must continue to elevate and renovate houses every five years.

Regarding the physical condition of other houses, the majority of respondents still said moderately on ownership of toilets, lighting and ventilation, yards, and household furniture. For example, in the presence of yards, 81% of respondents said moderate, 13% said good, and 6% said bad. Not many people have yards in their homes because they spend their land on building houses, and there is not much land left for yards.

Table 3: Assessment of Housing Physic per RW

| Variable | Slum Area | Average Score | Variable | Slum Area | Average Score |
|-----------------|-----------|---------------|------------------------|-----------|---------------|
| Number of rooms | RW 01 | 2.88 | Toilet | RW 01 | 3.12 |
| | RW 02 | 3.00 | | RW 02 | 3.23 |
| | RW 03 | 3.26 | | RW 03 | 3.35 |
| | RW 04 | 3.35 | | RW 04 | 3.45 |
| Wall quality | RW 01 | 3.06 | Lighting & ventilation | RW 01 | 3.06 |
| | RW 02 | 3.37 | | RW 02 | 3.33 |
| | RW 03 | 3.39 | | RW 03 | 3.22 |
| | RW 04 | 3.50 | | RW 04 | 3.45 |
| Floor quality | RW 01 | 3.06 | Yard | RW 01 | 2.94 |
| | RW 02 | 3.43 | | RW 02 | 3.07 |
| | RW 03 | 3.43 | | RW 03 | 3.13 |
| | RW 04 | 3.60 | | RW 04 | 3.15 |
| Roof quality | RW 01 | 3.06 | Household furniture | RW 01 | 3.12 |
| | RW 02 | 3.43 | | RW 02 | 3.33 |
| | RW 03 | 3.43 | | RW 03 | 3.35 |
| | RW 04 | 3.60 | | RW 04 | 3.50 |

Source: Authors' Analysis (2018)

Since RW 01 has the least number of permanent houses, it is also related to the low score on an assessment of housing physic when compared to other areas. In RW 01 there are many sub-standard houses. They feel dissatisfied with the physical condition of the house, such as a wall, floor, roof quality, and toilet.

The best assessment of four areas is in RW 04. It has the highest score in all variables in housing physic. Even if seen from numerical data, the number of permanent houses and standard houses (Rumah

Layak Huni) does not differ too much from RW 03. Respondents of RW 04 may be more compromised on the physical assessment of their homes.

3.3.3 Assessment of Facilities and Infrastructure

Facilities and infrastructure are essential things to a neighborhood because a good or bad place can be seen from the factors of completeness and quality of infrastructure. In the research area where Kaligawe was determined as one of the slums in Semarang City, infrastructure was a concern and the main target of the slum management program such as NSUP (National Slum Upgrading Project) and NUSP (Neighbourhood Upgrading and Shelter Project).

To assess infrastructure in an area, it is usually seen from the network as follows: road network, drainage, garbage system, clean water, sanitation, electricity network, and fire protection tools (see Table 4). From the infrastructure, the respondents assessed infrastructure in good condition were road network, garbage system, and clean water. The respondents said that the road network was good because it is in good condition, and the majority of road had been paved. For garbage systems, routinely, there is a cleaning officer who picks up trash from each house 2-3 times a week. While for clean water needs, they get from the source of deep water (artesian) well or PDAM (municipality clean water). Electricity has flowed to all the houses so that 60% of respondents said very good for the electricity network.

The majority of respondents rated moderate on drainage and sanitation. With dense housing conditions and small drainage channels, this area often experiences drainage problems. Also, if there is heavy rain, this area is still often flooded. Therefore, 49% of respondents assessed moderate for drainage. For sanitation, generally they have their private toilets in their houses, and also there are some communal toilets. However, with conditions where land continues to sink, and homes continue to be raised, they experience difficulties with the height of the sewer from their home toilet. Another infrastructure that is still lacking is fire protection tools. Around 60% of respondents said bad for fire protection tools because they do not have sufficient equipment for fire protection. There is no fire extinguisher in their neighborhood unit, and with a narrow road, condition makes it difficult for firetrucks to enter in case of a fire in the area.

Table 4: Assessment of Infrastructure per RW

| Variable | Slum Area | Average Score | Variable | Slum Area | Average Score |
|----------------|-----------|---------------|-----------------|-----------|---------------|
| Road | RW 01 | 3.65 | Sanitation | RW 01 | 3.00 |
| | RW 02 | 3.67 | | RW 02 | 3.20 |
| | RW 03 | 3.83 | | RW 03 | 3.26 |
| | RW 04 | 3.65 | | RW 04 | 2.85 |
| Drainage | RW 01 | 3.29 | Electricity | RW 01 | 4.35 |
| | RW 02 | 3.40 | | RW 02 | 4.53 |
| | RW 03 | 3.57 | | RW 03 | 4.61 |
| | RW 04 | 3.00 | | RW 04 | 4.45 |
| Garbage system | RW 01 | 3.47 | Fire protection | RW 01 | 2.29 |
| | RW 02 | 3.67 | | RW 02 | 1.97 |
| | RW 03 | 3.78 | | RW 03 | 2.13 |
| | RW 04 | 3.55 | | RW 04 | 2.35 |
| Clean water | RW 01 | 3.71 | | | |
| | RW 02 | 3.87 | | | |
| | RW 03 | 3.83 | | | |
| | RW 04 | 3.85 | | | |

Source: Authors' Analysis (2018)

Overall, Electricity is the most satisfying infrastructure, according to respondents, while Fire Protection is the opposite because of the absence of fire protection tools in this area. The interesting thing here about community assessment is they rate positively and score well on things like road, drainage, garbage, and sanitation in a slum area, usually synonymous with dirty environments and inadequate infrastructure. If the community now scores well on the existing infrastructure, it means there is a quality increase in the environment. One of the improvement efforts is made through the NUSP program, which was implemented since 2016 to improve the living conditions of the people in urban slum areas.

The availability of some facilities is vital to meet the needs of its population, especially basic facilities such as health, economic, and education facilities (see Table 5). Besides, supporting facilities such as green open space are needed so that the composition of the built and non-built environment is balanced. In aggregate, around 70%-72% of respondents said suitable for education facilities, health facilities, and economic facilities. It means that they have enough quantity and quality of those facilities. However, for green open space, it is generally felt that quantity and quality are still lacking. As many as 63% of respondents assess poorly about the green open space in their residential area. It is because this area is already densely populated and buildings. Even though there is empty land near Kali Es, the green space is not maintained and instead becomes a pond and overgrown with wild plants.

The economic, health, and education facilities, according to the community, are sufficient, so the scores for the three variables are high. However, it is not applied for green open space/park facilities, which are not found in Kaligawe slum area, so the score is low. Because of its strategic location and proximity to the arterial road, the community feels that the facility is easily accessible, even though it still lacks if calculated in quantity based on minimum service standards.

Table 5: Assessment of Facilities per RW

| Variable | Slum Area | Average Score | Variable | Slum Area | Average Score |
|----------------------|-----------|---------------|--------------------|-----------|---------------|
| Education facilities | RW 01 | 3.82 | Economy facilities | RW 01 | 3.82 |
| | RW 02 | 4.03 | | RW 02 | 4.13 |
| | RW 03 | 4.22 | | RW 03 | 4.26 |
| | RW 04 | 3.80 | | RW 04 | 3.80 |
| Health facilities | RW 01 | 3.82 | Green open space | RW 01 | 2.35 |
| | RW 02 | 4.03 | | RW 02 | 1.87 |
| | RW 03 | 4.22 | | RW 03 | 2.00 |
| | RW 04 | 3.80 | | RW 04 | 2.35 |

Source: Authors' Analysis (2018)

3.3.4 Assessment of Neighbourhood and Social Life

Some points which are related to the housing neighborhood are safe from flooding, job opportunities, access, safety, convenience, quietness, and cleanness (see Table 6). As an area located in the north of Semarang and prone to flooding, 52% of the respondents said that Kelurahan Kaligawe is bad from safety from flooding. Meanwhile, from access, the location of the area is very strategic. It is a good location near downtown and near the industrial area, which is their majority workplace. Suitable for a job opportunity, as 69% of the respondents said.

About other conditions of the neighborhood, there are criteria such as safety, convenience, quietness, and cleanness. Most of the respondents said suitable for the four criteria mentioned above. There are 71% of the respondents who said suitable for safety, 67% said suitable for convenience, 62% said good for quietness, and 53% said suitable for cleanness. Based on the respondents' opinions, this area is quite livable as a residential area. What is still felt lacking by the community is cleanness, because the percentage of cleanness is the lowest compared to the other three criteria.

Table 6: Assessment of Housing Neighbourhood per RW

| Variable | Slum Area | Average Score | Variable | Slum Area | Average Score |
|--------------------|-----------|---------------|-------------|-----------|---------------|
| Safe from flooding | RW 01 | 3.59 | Convenience | RW 01 | 3.65 |
| | RW 02 | 2.40 | | RW 02 | 3.53 |
| | RW 03 | 2.43 | | RW 03 | 3.74 |
| | RW 04 | 2.50 | | RW 04 | 3.80 |
| Job opportunity | RW 01 | 3.41 | Quietness | RW 01 | 3.65 |
| | RW 02 | 3.60 | | RW 02 | 3.43 |
| | RW 03 | 3.74 | | RW 03 | 3.70 |
| | RW 04 | 3.95 | | RW 04 | 3.75 |
| Access | RW 01 | 3.65 | Cleanness | RW 01 | 3.47 |
| | RW 02 | 3.67 | | RW 02 | 3.43 |
| | RW 03 | 3.83 | | RW 03 | 3.61 |
| | RW 04 | 3.90 | | RW 04 | 3.35 |
| Safety | RW 01 | 3.53 | | | |
| | RW 02 | 3.47 | | | |
| | RW 03 | 3.70 | | | |
| | RW 04 | 3.90 | | | |

Source: Authors' Analysis (2018)

In variable Safe from Flooding, RW 01 has the highest score compared to other RW. This can happen because of the height of the land, the area around RW 01 which is close to the primary road, is higher than the inner area (RW 02-RW 04). Aside from the location of RW 01 close to the access of road, the residents gave the lowest average score for Job Opportunity. Thus we can assess that job opportunity is not only determined by location, but also other factors.

Then the other variables from Access, Safety, Convenience, Quietness, and Cleanness, all have moderate to good average score. Nevertheless, if compared between those five, Cleanness has the lowest score, considering this area still needs much improvement from the slum. Among RW 01-RW 04, RW 02 has the lowest average score of Safety, Convenience, and Quietness. Seeing from the number of population, RW 02 has the highest number of the population compared to others. This causes the score of RW 02 to be less because of more people, more crowd situations.

Table 7: Assessment of Social Life per RW

| Variable | Slum Area | Average Score | Variable | Slum Area | Average Score |
|---------------------------|-----------|---------------|--------------------|-----------|---------------|
| Closeness with neighbours | RW 01 | 3.76 | Social interaction | RW 01 | 3.76 |
| | RW 02 | 4.07 | | RW 02 | 4.00 |
| | RW 03 | 3.96 | | RW 03 | 4.00 |
| | RW 04 | 4.00 | | RW 04 | 4.00 |
| Closeness with family | RW 01 | 3.76 | Social activities | RW 01 | 3.71 |
| | RW 02 | 4.07 | | RW 02 | 3.87 |
| | RW 03 | 4.00 | | RW 03 | 3.96 |
| | RW 04 | 3.95 | | RW 04 | 3.85 |

Source: Author's Analysis (2018)

Social life is one of the critical aspects of living in a neighborhood in Indonesia. In Semarang, especially in Kaligawe, they tend to socialize often with their neighbors. All variables show the big percentage of the respondents who say they have a good social life. The closeness with neighbors and the closeness with family both have 83% of respondents saying good. Mostly they live with their big family in one house, and the distance to the neighbor's house is very close and next to each other. For social interaction, 69% said good, 13% said very good, and 18% said moderate, which means overall, they have good social interaction with neighbors. Besides that, a significant percentage of the respondents also applied to social activities. As many as 79% of respondents argued good, 18% argued moderate, and 3% argued very good for social activities they have. The social activities can be in the form of regular PKK (Family Welfare Program) meetings, youth organizations, religious meetings, and common work.

Socially, the respondents from RW 01-RW 04 looked very satisfied in the assessment they gave about Social Life. From all regions, RW 01 has the lowest score on all variables. Probably because RW 01 is the outermost area close to the primary road, so the social sense is not as strong as in the inner area of Kaligawe slum area. It could be some residents in RW 01 have different types of activities that tend to be less social (see Table 7).

In general, from a scale of 1-5, all average scores below have scored more than three and some even close to 4. This indicates that the residents' assessment towards their settlement aspects is moderate-good. They are already familiar with the condition, so they think all aspects are in good condition and not objective in assessing their settlement with ideal consideration. The highest average score is Neighbourhood and Social Life. As stated above, social relations are strong between residents. The second highest score is Facilities and Infrastructure. Assessment for this variable is well probably due to slum upgrading activities from the government.

Meanwhile, the Housing Condition and Housing Physic variables are the lowest scores (see Table 8). As mentioned above, slum upgrading activities such as KIP also improves the physical condition of uninhabitable homes (Dianingrum et al., 2017). This also applies to NUAP activities in Kaligawe. But because of a limited budget, only a few houses have been improved. From 131 sub-standard houses, 23 houses (18%) were repaired. More funds are allocated to improve settlement infrastructure so that there are still many homes in poor conditions. Nevertheless, at least, this slum upgrading program is quite helpful for people who are unable to improve their homes.

Table 8: Total Average Score of Assessment per Variable

| Variable | Slum Area | Average Score | Average Score per Variable | Variable | Slum Area | Average Score | Average Score per Variable |
|-------------------|-----------|---------------|----------------------------|-----------------------------|-----------|---------------|----------------------------|
| Housing condition | RW 01 | 3.26 | 3.32 | Facilities & infrastructure | RW 01 | 3.42 | 3.48 |
| | RW 02 | 3.37 | | | RW 02 | 3.49 | |
| | RW 03 | 3.28 | | | RW 03 | 3.61 | |
| | RW 04 | 3.35 | | | RW 04 | 3.40 | |
| Housing physic | RW 01 | 3.04 | 3.27 | Neighbourhood & social life | RW 01 | 3.63 | 3.66 |
| | RW 02 | 3.28 | | | RW 02 | 3.59 | |
| | RW 03 | 3.32 | | | RW 03 | 3.70 | |
| | RW 04 | 3.45 | | | RW 04 | 3.72 | |

Source: Authors' Analysis (2018)

4. Conclusion

It should be noted that this study was carried out during the implementation of NUSP (Neighbourhood Upgrading and Shelter Project) activities as outlined in the NUAP (Neighbourhood Upgrading Action Plan) held by the government to reduce and overcome slums in Semarang. Some settlement aspects have shown progress and improvement from previous conditions, such as in roads and drainage.

Kaligawe slum area is one of the slum areas determined by the government of Semarang City, where the majority of the population are low-income residents. They probably can be said vulnerable from settlement physic, economic, and environmental life. The needs of low-income people who live in the strategic urban area have to be accommodated in such a way they can live properly. Various improvement activities should also be concerned about human resources and the sustainability of the area in order not to create new slums in other places.

Overall, from four categories of residents' assessment variables, it is in good condition seen from the scores. Besides improvements in the environmental quality of the NUSP program, the community is also familiar with their neighborhood conditions. Social life feels very strong ties. As well as upgraded facilities and infrastructure because of the program. Although there are still some houses in poor condition, but with a moderate score given by the community indicates that the slum upgrading program is quite significant to bring a better chance for Kaligawe slum area.

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