Typology of slum settlements in Keputih sub district

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Abstract. The Government of the Republic of Indonesia has committed to handling slum settlement up to 0% as set forth in the National Medium-Term Development Plan (RPJMN) of 2015-2019. One of the areas still have identified as a slum is Keputih sub district, especially in the area of Community Groups (RW) 01, 02, 03, and RW 08. This research is a first step in mapping and agglomerate slum areas accordingly with seven slum indicator from the Directorate General of Human Settlement, Ministry of Public Works and People's Housing of the Republic of Indonesia. From the results of field surveys and agglomerate scores of slum areas it is known that slum areas of RW 02 are areas with moderate slum typology, and for RW 01, RW 03 and RW 08 areas are with light slum typology.

Keyword: slum settlement, typology of slum

1. Introduction

In the Law of the Republic of Indonesia Number 1 of 2011 it is mentioned that the State is responsible for organizing housing and settlements in the framework of protecting the entire Indonesian nation to be able to live properly, affordable and in a healthy, safe and sustainable environment. Housing and residential area itself is a unified system consisting of coaching, organizing, maintenance and repair, prevention and quality improvement, land supply, funding and financing system, and community participation. One of the basic problems in the organization of housing and settlements is the existence of slum settlements that mostly occur due to the high flow of urbanization that becomes magnet for migrant communities to settle in big cities [1]. The flow of urbanization to these big cities is not sustained by the existence of affordable settlement land for the community, so many residents are forced to settle on illegal lands and in improper neighborhoods and are below minimum service standards [2, 3].

The notion of slum settlement itself is an uninhabitable settlement due to high population density, low living standards, building irregularities, high building density, and quality of buildings and facilities that do not meet the requirements [4, 5]. Slums are abandoned areas in cities with very small, high-density housing and dwelling conditions, and are illegal houses with no legal recognition [1]. In addition, slums are identified with settlements located in small alleys with buildings made of semi-permanent and temporary materials with the presence of minimal support facilities [6]. Refers to some understanding above it can be concluded that the term slum settlement used in this study is a residential environment that is not suitable for habitation which has a high density of buildings and access to network infrastructure and public facilities are minimal.
In particular the impact of slum settlements will lead to a bad paradigm on the administration of the government, with the impact of a negative image of the helplessness and inability of the government in the regulation of life services and livelihoods of its citizens. On the other hand, in the socio-cultural order, communities living in slum-dwelling economies generally include the poor and low-income groups, which are often the reasons for the degradation of discipline and disorder in various societal social settings [5]. Other impacts of the existence of slum settlements are the emergence of social inequality, decline in the quality of life, and the emergence of various criminal acts [7, 8]

The eradicate slums with target of 0% in 2019 itself has been mentioned in the National Medium Term Development Plan (RPJMN) of the Republic of Indonesia of 2015-2019. Some of the action that the Government has planned is develop a slum road map and slum upgrading data since 2014 which is done collaboratively with relevant ministries / agencies as well as local governments throughout Indonesia. Surabaya City Government itself in its efforts to handle slums has compiled the Urban Development and Settlement Strategy (SPPIP) document in 2010 and continued with the preparation of Urban Slum Development Plan (RKPKP) document in 2015. In RPJMD Document of Surabaya City contained a program in the form of integrated social rehabilitation of slum areas (RSDK) for the improvement of the physical environment and socio-economic conditions of the community therein.

Keputih Sub District is one of the areas in the city of Surabaya that still has a slum settlement, especially in Community Groups (RW) 01, 02, 03, and RW 08. This research was conducted to mapping and find out the typology of slum in Keputih sub district, whether it is an area with heavy slum typology, medium slum typology, or light slum typology. With the knowledge of the typology of slums in each RW is expected to be an input for the Surabaya City Government and the District and Subdistrict in determining which slum areas need to be handled as soon as possible in order to create a slum free city.

2. Research methods

The research method used in this research is qualitative method through descriptive approach. This method aims to be able to formulate the results systematically, factually, and accurately about the properties of the object of research used.

2.1. Research study area
The focus of the main observations in this study is on slum areas in Keputih sub district especially in the areas of RW 01, RW 02, RW 03 and RW 08 as shown in Figure 1. Delineation of the RW area was obtained from the initial discussion and mapping with the government of Keputih sub district itself.

2.2. Data collection method
Data collection method in this research is through survey of instasional, field observation, and structured interview during August-September 2017. The observation aspect in field observation activity include the condition of the building and the availability of basic infrastructure of settlement area. The respondents in this study are the people who inhabit the local slum areas as well as the government.

2.3. Data analysis method
In agglomerate slum settlement area in Keputih sub district it is used by scoring method based on result of field observation and result of structured interview to the respondents. Discouraged variables and parameters for assessing slum level will refer to the provisions in accordance with the Minister of Public Works Regulation. The results of the assessment will show the typology of slum conditions that are divided into the typology of heavy slum, moderate slum, and light slum.
3. Result
The indicators of slums area used in this study include the condition of the building, environmental road conditions, drinking water conditions, environmental drainage conditions, wastewater management conditions, waste management conditions, and fire protection conditions.

3.1. Condition of slum areas
As mentioned in point 2.1 above, it is known the focus of this research is on RW 01, RW 02, RW 03, and RW 08 Keputih sub district. In RW 01 itself, the slums are scattered on RT 03, RT 04 and RT 05. For RW 02, slums are located in RT 01, RT 02, RT 03 and RT 04. For RW 03, slums are spread on RT 01, RT 04 and RT 05. As for RW 08, slum areas are spread on RT 01, RT 02, RT 05, RT 06 and RT 07. The description of the condition of slums in Keputih sub district with detailing per RW is presented as follows:
### Table 1. Slum condition in Keputih Sub District

| Slum Area | Slum Indicator         | Existing Conditions                                                                 |
|-----------|------------------------|-------------------------------------------------------------------------------------|
| RW 01     | Building               | There are several buildings that located above the drainage channel                  |
|           | Road network           | There are still non-paved road network                                               |
|           | Provision of water     | Not all houses are served by PDAM                                                    |
|           | Drainage system        | Drainage system at some point are clogged, unable to drain the water due to the amount of garbage |
|           | Wastewater management  | The majority people do not have private MCK                                           |
|           | Garbage management     | Served by garbage transport                                                          |
|           | Fire protection system  | Not have fire protection system, and the roads are inadequate to passed with PMK vehicles |
| RW 02     | Building               | There is still a building that needs repaired                                         |
|           | Road network           | Less road access, as well as the majority of roads have not been paved               |
|           | Provision of water     | Lack of master meter of PDAM, and the water needs of the population is not fulfilled because the water only flows at night |
|           | Drainage system        | Drainage channels are full of garbage, there are still many unserved areas of environmental drainage, and there was a puddle when the tide is high |
|           | Wastewater management  | There is no septic tank for each private MCK, the disposal directly flows into the river |
|           | Garbage management     | The garbage management are managed by local community                                |
|           | Fire protection system  | Not have fire protection system, and the roads are inadequate to passed with PMK vehicles |
| RW 03     | Building               | There is still a slum building                                                        |
|           | Road network           | There are some broken roads                                                          |
|           | Provision of water     | Served with PDAM but water does not flow smoothly, master meter is not fulfilled       |
|           | Drainage system        | Environmental drainage does not flow smoothly                                         |
|           | Wastewater management  | Waste water management is in compliance with technical standards                     |
|           | Garbage management     | Served with garbage transport regularly                                               |
|           | Fire protection system  | Not have fire protection system, and the roads are inadequate to passed with PMK vehicles |
| Slum Area | Slum Indicator     | Existing Conditions                                                                 |
|----------|-------------------|---------------------------------------------------------------------------------------|
| RW 08    | Building          | There are still non-permanent residents' houses, as well as house buildings in several irregular and congested areas |
|          | Road network      | Environmental roads in some areas are non pavement                                      |
|          | Provision of water| Master meters of PDAMs are not fulfilled, the fulfillment of water needs of citizens is not rife |
|          | Drainage system   | The absence of drainage in some locations                                               |
|          | Wastewater management | The waste water management system is not up to standard, some areas directly dump into the river |
|          | Garbage management | Served with garbage transport regularly                                                |
|          | Fire protection system | Not have fire protection system, and the roads are inadequate to passed with PMK vehicles |

**Figure 2.** The condition of the untreated drainage in RW 01

**Figure 3.** Waste stacking in the neighborhood in RW 01

**Figure 4.** Road conditions in RW 02

**Figure 5.** Inhabitants’ Houses in RW 03
3.2. The Assessment of Slums Typology
The next step is to assess each of the indicators and slum variables. The results of the assessment can be seen in Table 2 below:

| Indicator          | Variable                                                                 | RW 01 | RW 02 | RW 03 | RW 08 |
|--------------------|--------------------------------------------------------------------------|-------|-------|-------|-------|
| Building           | building irregularity                                                    | 1     | 1     | 1     | 1     |
|                    | level of building density                                                | 1     | 1     | 1     | 1     |
|                    | incompatibility with the technical requirements of the building         | 3     | 3     |       |       |
| Road network       | coverage of environmental road services                                 |       | 1     |       |       |
|                    | the surface quality of environmental road                               | 3     | 3     | 1     | 3     |
| Provision of water | availability of safe access to drinking water                            | 3     | 3     |       |       |
|                    | non-fulfillment of drinking water needs                                  | 3     | 3     | 3     | 3     |
| Drainage system    | inability to drain water runoff                                         | 1     | 1     |       |       |
|                    | unavailability of drainage system                                        |       | 3     | 1     |       |
|                    | unrelated to the urban drainage system                                   | 1     | 3     | 1     | 3     |
|                    | not maintained drainage                                                 | 5     | 3     | 1     | 1     |
|                    | quality of drainage construction                                         | 3     | 3     | 3     | 3     |
| Wastewater management | Wastewater management systems do not conform to the technical standards | 3     | 3     |       |       |
|                    | waste water management infrastructure                                     | 3     | 3     |       |       |
| Indicator | Variable                                                                 | RW 01 | RW 02 | RW 03 | RW 08 |
|-----------|---------------------------------------------------------------------------|-------|-------|-------|-------|
| Garbage management | and facilities are incompatible with technical requirements |       |       |       |       |
|            | a waste management system that does not meet technical standards |       | 1     |       |       |
|            | no maintenance of waste management facilities and infrastructure | 5     | 5     | 5     | 5     |
| Fire protection system | unavailability of fire protection infrastructure | 5     | 5     | 5     | 5     |
|            | unavailability of fire protection facilities | 5     | 5     | 5     | 5     |

Total Score: 34, 45, 21, 33

Slums Typology: light, moderate, light, light

Based on the table above are known respectively typology of slums in the area of RW 01, RW 02, RW 03, and RW 08 in Keputih sub district. Typology of slums for RW 02 is included in moderate slum typology, whereas in RW 01, RW 03 and RW 08 areas with light typology.

4. Conclusion
Slum areas in Keputih sub district have many problems both in terms of the condition of the buildings, the existence of supporting infrastructure that includes environmental roads, drainage systems, waste water management systems, water supply networks, waste systems, and disaster protection systems. When viewed from the assessment note that the typology of slum area in Keputih sub district is on the typology of light and moderate.

5. References
[1] Olalekan, B.G., 2014. Urbanization, Urban Poverty, Slum and Sustainable Urban Development in Nigerian Cities: Challenges and Opportunities. Developing Country Studies, 4(18), pp.13-19.
[2] Singh, P.O., Dhote, K.K. and Soni, N., 2013. Development of typologies of slum settlements: the case of a million plus city of India. The Sustainable City VIII (2 Volume Set): Urban Regeneration and Sustainability, 179, p.1153.
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