

Potential of Settlement Infrastructure Activities in the Regulation of Slum Areas Meranti, Pekanbaru. Indonesia

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Abstract. The slum area of Meranti is one of seven slum areas in Pekanbaru City according to Mayor's Decree No. 151/2016 . The method used in determining the potential of infrastructure activity in the slum area of Meranti is by analyzing the secondary data and primary data through the use of questionnaires and interviewed and field observation. The results of the analysis of the space requirements for housing and public service facilities needs is obtained that the potential settlement infrastructure activities is a priority in the arrangement slum area of Meranti is the provision of drinking water, environmental drainage, waste water management, solid waste management and the availability of public open space.

Keywords: infrastructure, Meranti

1. Introduction

Urbanization has become the largest contributor to the growth of slum areas in urban areas, economic factors are taking part in the slum areas because urbanized people choose stay living that often does not pay attention to cleanliness, as well as those on the banks of river and drainage (Riau Mandiri, 2016) . Based on the Rencana Pembangunan Jangka Panjang Nasional (RPJPN) 2005-2025; realizing a city without slums and Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2015-2019; *zero* slum target and driven by the Undang-undang no. 1/2011 on housing and residential areas is necessary to create settlements that are habitable and sustainable. Pekanbaru City slum area covering an area of 113.56 hectares in seven region with 19 (nineteen) identified urban slums by SK No. 151/2016 , one of them is the area of Meranti located in the Village of Sri Meranti, Rumbai District. This area of Meranti is located on the outskirts of the Siak River which is always experiencing ups and downs.

Undang-undang No. 1/2011 on Housing and Settlement Area, it is explained that Slum Settlements are uninhabitable settlements due to building irregularities, high density of buildings, and quality of buildings and facilities that do not meet the requirements, while the Housing is a housing underground degradation of function quality as shelter.

Various problems are faced by the community of Meranti Area. The arrangement of the area is only focused on the southern Siak River (direction to the center of the city), while the area around the riverbank of the North Siak River is still much to be addressed. This condition is worsened by the lives of people who mostly middle to lower. The unfavorable environmental sector is supported by the difficult economic life and the inadequate institutional function that exists in the community increasingly makes the Meranti slum area lagging behind other regions. Limitations of resources owned by the community require the participation of universities through various forms of activities called collaboration as well as a form of implementation of Tri Dharma Perguruan Tinggi (Putri, 2017).

2. Review: Slum Area

The area of *Kumuh Meranti* includes a high priority (very heavy) slum area located in the outskirts of Siak River, Pekanbaru City. The identification of the slum environmental characteristics (Fitria and Setiawan, 2014) has resulted in the fact that in slum settlements there is a tendency that the worse the category of slum is worse, especially in terms of the provision of facilities and infrastructure, education levels, income levels and hazards flood / puddle. According to Putro (2011), identification of slum areas in riparian areas includes the criteria of economic vitality, non-economic vitality (the feasibility of the area as a settlement), the status of the land, the physical condition of the building, the condition of infrastructure and facilities; roads, drainage, fresh water, waste water, local government commitments and priority handling. There is a marked difference in the slum level between the coastal and non-coastal areas where the coastal area on average has a much higher slum rate than non-coastal areas where significantly increasing slum levels are population density, poverty level, land legality and clean water services as well as open spaces, as for educational level factors, security vulnerability, road conditions, and average household members have no significant effect on slum level (Nursyamsiyah *et al.*, 2015). The environmental characteristics of slum settlements (Amri, 2014) resulted in the fact that if slum conditions are not controlled for growth, environmental quality and public health will continue to decline, people's habits are also influential where the habit of disposing of garbage, dirty water and latrines in rivers makes rivers polluted, due to the lack of awareness of the population on environmental health so that it implies the quality of the environment that is prone to flood and the quality of life of the population vulnerable to disease outbreaks. According to Uar (2016), in addition to infrastructure development, community capacity building is also done in terms of economic, socio-cultural and skills training and socialization for capacity building.

3. Methodology

Collecting data and information planning is done through an activity involving citizens who voluntarily joined the Participatory Planning Core Team (TIPP). TIPP is divided into several groups by involving all the Rukun Warga (RW) which is the scope of the planning area. Each group then looked for data and information related to potential and environmental problems, spatial, infrastructure, economic and social institutional at Rukun Tetangga (RT). The primary data was collected through direct observation method and interview with resource persons such as RW Chairman, RT Chairman, community leaders, and direct actors such as traders, small-scale entrepreneurs, and home industries. After the activity, the observations are completed then together with TIPP summarizes data from RT into RW action plans as well as verification and clarification of data.

4. Result and discussion

4.1 Needs Analysis of Public Service Facilities

The facilities provided in each residential neighborhood unit is intended as a means of supporting the smooth operation of the city's population. The provision of this facility is expected to increase population activity and will ultimately improve the welfare of the population through increased income per capita. The number of facilities per unit of environment is divided according to the hierarchy of urban services and the number of people served. The types of facilities provided in each residential neighborhood unit are:

1. Educational facilities
2. Health facility
3. Worship facilities
4. Facilities of government / public services
5. Economic facilities
6. Sports and recreation facilities

The facilities are scattered in every neighborhood unit. To avoid overcapacity of services, it is necessary to limit the intensity of the activities of the population to each of the environmental units. On the basis of it is expected to be realized units of environmental environments are clearly herarchical and optimal in its service.

4.2 Analysis of Regional Utility Development Potential

Potential development of utilities of Meranti area that become priority can be seen in table 1 as the result of secondary data analysis and and primary data and field observation.

Table 1. Potential of Utility Development of Slum Area of Meranti .		
Criteria	%	Parameter
Environmental drainage	32	The condition of the drainage network in residential areas has a minimum of adequate quality
Drinking water services	60	Communities served by drinking water, bathing and laundry (decent piping or non-piped protected)
Waste water management	9	Separate sewerage pipes with environmental drainage channels
Waste management	60	Domestic household waste in residential areas is transported to TPS / TPA 2 times a week
Security of fire hazards	2	The residential area has fire protection facilities

4.2.1 Drainage

The drainage system at Sri Meranti Village is mostly located along the main road of Jl. Nelayan, and Jl Paus. While in areas that are not passed by the main road, using natural drainage network that is mostly still in the form of land and in a shallow state (covered with soil). In fact, there are areas of settlements that do not have a drainage network. The drainage network in the planning area is generally disconnected and there is no integrated and patterned network, so there are some puddle locations especially in the rainy season. To prevent the occurrence of puddles at some point in the village of Sri Meranti it is necessary to manufacture drainage which technically serves as a reduction of water debris stagnant in the settlements of the Village of Sri Meranti.

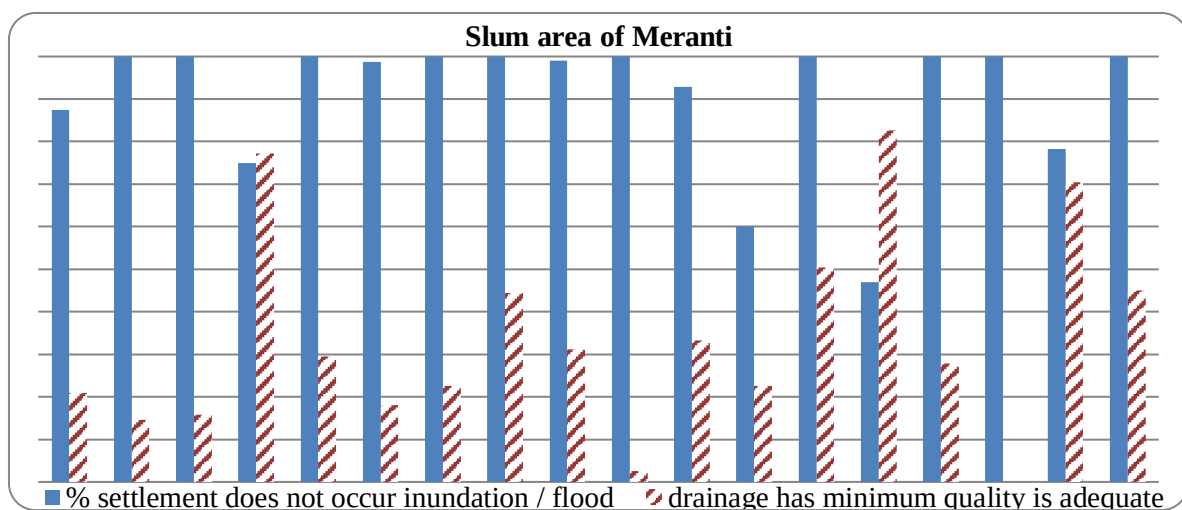


Figure 1. Environmental Drainage in the Meranti slum area

4.2.2 Clean water

Water supply from Perusahaan Daerah Air Minum (PDAM) is not evenly distributed in the planning area, so the alternative use of groundwater and PDAM should be integrated. Use of ground water without any arrangement will cause environmental damage such as landslides and others. If the standard usage of food and drink is 60 Liter / person / day, then to analyze the drinking water needs with the projection of residents of Sri Meranti Village with the number of 1978 people, with 100% service level, as much as 715,140 liters / person / day. In the framework of fulfilling the water needs in the planning area, besides relying on PDAM, other sources need to be sought considering the condition of the water source in the form of water storage facilities in line with the growth of population and urban activity. Some alternatives of Appropriate Technology are used depending on the type of water source, and the quality. One of them is rain water storage. Implementation of rainwater catchment as a source of drinking water can be done in areas prone to drinking water and on groundwater areas and surface water pollution.

Benefits:

- Provision of water to areas critical of drinking water;
- Reduce soil water retention thus maintaining soil conditions.

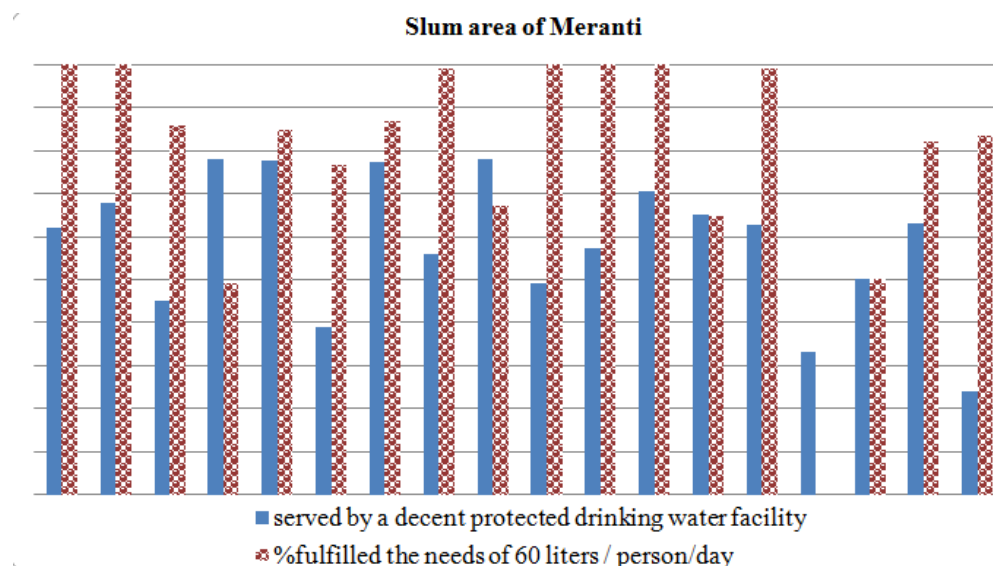


Figure 2. Clean Water Services in the Meranti slum area

4.2.3 Wastewater

Wastewater generated as a result of the activities of the residents of the village of Sri Meranti comes from water used bathing, washing, and latrines and cooking activities.

- The amount of wastewater production is calculated based on the ratio of waste water to drinking water needs, which is estimated 80% of drinking water needs will potentially become waste water.
- While domestic organic waste (stool) or commonly called *black water* that will result from domestic activities with an estimated 20 liters / person / day that comes from defecation, to be processed by using a WWTP Septic tank or Bio Filter or processing system others.

BIOFIL Tank (Biofilter) is one of the alternative technologies that can be placed in areas with high groundwater or in buildings above water, using local materials. BIOFIL tank treats domestic wastewater which its processed water can be directly discharged or flowed into water bodies because

it has fulfilled the Standard of Quality of Domestic Wastewater according to the Minister of Environment Decree.

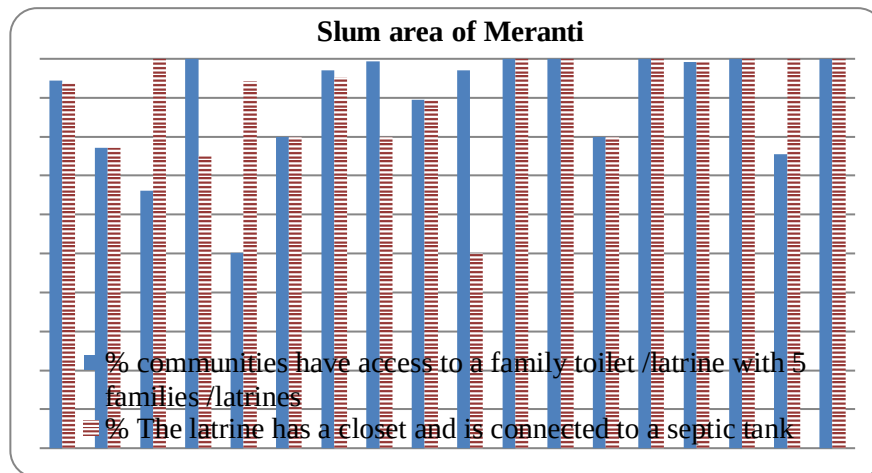


Figure 3 Wastewater Management in the Meranti slum area

4.2.4 Garbage

Garbage generated from population activity with population 19778 soul and waste generation 2,5 L / person / day with assumption every year increase 15%. The amount of domestic waste transported to TPS / TPA within a period of at least 2 times a week ranges from 1493 household units or only about 50% of which is consumed from the population in the Village of Sri Meranti. In this case, needs to be established TPS in every RT in the Village of Sri Meranti in order to prevent scattered garbage in every neighborhood of Sri Meranti Village. The application of 3R (*Reduse, Reuse, and Recycle*) can reduce the amount of waste entering the landfill. Thewaste sorting process needs to be done since from the source so it needs to procure the garbage container based on the type of garbage. Types of containers used adapted to their procurement capabilities can be garbage cans and plastic bags.

5. Conclusion

Potential of settlement infrastructure activity in arrangement of Meranti slum area that need special attention is the provision of drinking water, environmental drainage, waste water management, waste management and the availability of public open space.

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