Socio-economics and environmental impact of supit urang landfills capacity

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Abstract. This research aims to identify Supit Urang landfill's impact towards Socioeconomic of the surrounding resident. Primary data collected by making a sample framework was determined by limiting the area within a radius of 1 Km from landfills. The number of samples in this research is 30 respondents, stratified in a range of 200 m. The Result shows that Supit Urang Landfill's existence brings some environmental degradation, such as air, water pollution, excess of methane and avalanche. 37% of the study population experienced ARI as a former adaptation towards landfills existences, while 63% of them did not seek treatment. Clean water for consumption and sanitation of the surrounding population comes from wells. The presence of waste also produces methane that can be used as a household fuel.

1. Introduction

Currently, Environmental problems is inseparable from population growth and science and technology rapidly. Rapid population growth is threatening the environment through optimalization of agriculture, uncontrolled of urbanization and industrialization, and destruction of natural habitats [1]. Impact of the use of technology that is the irregular and unethical human environment is the degradation of natural resources and environmental degradation [2]. The example of human behaviour that causes damage to the environment is waste that comes from the result of human activity.

Issues of regarding waste is a classic problem that often occurs in large cities, as was the case in Malang. Malang is a city that has a fairly dense population. The causes of amount of waste become generated from the activity of the population is also quite large. The landfills (TPA) to be used as landfill in the city of Malang, Supit Urang landfill located in Mulyorejo, Sukun district, Malang. The Supit Urang is a landfill that uses a system control landfill, where the processing is done by making use of waste as methane. The resulting gas is then used to fuel power plants and households. Later, the electricity will be distributed to the surrounding residential area Supit Urang landfill.

Various types of waste in the landfill of course there Supit Urang, but the types of waste that dominate in this landfill is waste from households. The existence of Supit Urang is certainly greatly affected the surrounding environment. The negative impact of that waste into the environmental pollutants and threaten the global environmental health [3]. Garbage is not managed properly will cause environmental
imbalance. The moment when the rainy season, the solid waste can trigger a flood, then when dry combustible trash will cause air pollution which poses a threat to local residents.

The garbage also can emit gases such as methane [4] and carbon dioxide [5]. The gas is the cause of the reduction of air and produces an unpleasant odor, so it can be detrimental to health. The trash also is home to a variety of parasites, the nest of rats, cockroaches, flies, and mosquitoes, which can cause diseases such as diarrhea, ISPA, cough, and dengue fever. Based on observations that have been made, position Supit Urang landfill located in the area a higher altitude than other areas, causing water pollution [6]. The water pollution caused by the infiltration of rainwater that passes through the waste. The result, a variety of water sources used for the daily needs of the residents have been contaminated by rainwater mixed with substances in the trash, resulting in a decline in the level of water quality and the health of the population. This research aims to identify Supit Urang landfill's impact towards Socioeconomic of the surrounding resident

2. Methods

This research is a survey study conducted at the landfills Supit Urang (TPA), located in the Village Mulyorejo district, Sukun, Malang. This study intends to explore how the public's knowledge on the utilization of the final disposal (landfill), in addition, this study also aims to determine the readiness of the community in anticipation of the impact for their TPA Supit Urang in positive and negative perspectives. Analysis of the data used univariate and multivariate quantitative descriptive approach to the single frequency and crosstab. Besides this research also use inferential analysis in the form of chi-square to see the relationship of the variable impact of the landfill on the environment and the communities around our readiness Supit Urang in the socio-economic communities. The effort to measure the socio-economic level of the people who are in the area Supit Urang landfill.

This study used 30 respondents as research subjects from 30 families. Selection of respondents were used as research subjects were selected randomly. The division of these respondents are categorized by distance or radius of 1 km from the landfill Supit Urang. Respondents were selected aged 22-68 years and is dominated by women, since the interviews conducted in the morning. The majority of respondents' family dominated by private employees, while for women more likely to become a housewife.

3. Results and Discussion

3.1. Socio Economics and Demographics Characteristics

Demographic characteristics in the study measured by head of household age variable. The results showed that most of the age of household around Supit Urang landfill are productive age population (15-64 years old). As many 34% of Head of household dominated in Supit Urang landfill. Then next is the population aged 21-30, which is as much as 30%. In addition, there are also a small portion of the population who are not productive, 61 -70 years. All respondents are man power in productive age population (Figure 1).
3.2. Physical Quality of House and Environmental health

The physical houses quality in resident around Supit Urang landfill is classified in good condition. All of the house within radius 1 km built in permanent form. The physical condition of the house shows a significant relationship between the physical condition of the house and the incidence of respiratory and lung diseases. This result is supported by WHO theory that the house is a physical structure used by people or humans for shelter, where the environment of the structure includes the facilities and services needed, equipment that is useful for physical and spiritual health and social conditions that are good for families and individuals. The houses with ventilation that do not meet the standards are at risk of 16.9 times greater pulmonary colliosis compared to houses that have ventilation that meet the requirements [7].

The correlation between population density and positive pulmonary TB events is very significant in terms of its influence on health, because density strongly determines the incidence of infectious diseases such as respiratory disease in this case including pulmonary disease [8]. Rooms that are inhabited by many people will have a bad impact on health and will be a potential source of infection, besides that they can also demand sanitation facilities and more air supply.

The resident health condition of Supit Urang living at a distance of 0-400 meters of Supit Urang landfill suffering Acute Respiratory Infections (ARI). Choose to stay around the landfill menas they have to adapt to the construction. Disease experienced by residents lasts for 1 to 2 months. The handling of this disease is by seeing a health center Mulyorejo the distance is not too far from the region. The presence of disease-carrying animals such as flies is also very worrying about the health condition of the population. The case when the food is not properly closed it will be visible spots - white spots that are the eggs of flies and sticking food. Supit Urang's other conditions seen in houses that are in a radius of 401 to 1,000 meters of Supit Urang landfill which is rarely even experienced by people who suffer from respiratory diseases.
The case is because the distance is quite far from the Supit Urang landfill, so ARI does not have a significant impact.

At a certain level of concentration, air pollutants can have a direct impact on human health, either suddenly or acute, chronic or chronic / sub-clinical and with vague symptoms. Starting from respiratory irritation, eye irritation, and skin allergies to the emergence of plants or lung cancer. Health problems caused by air pollution naturally affect a person's workforce, which results in a decrease in the value of productivity and results in long-term economic losses and socio-economic problems arising from the family and community. The adverse effects of air pollution for human health cannot be denied anymore, both air pollution that occurs in the wild (Outdoor air pollution) or that occurs in the room (Indoor air pollution).

The effects that arise on the human body due to air pollutants are influenced by several factors such as the type of pollutant, its toxicity, and its particle size. Oxidants such as ozone and PAN (Peroxya-cetylinitrate) can irritate respiratory mucosa, which results in an increased incidence of chronic non-specific respiratory tract (CNSRD = "Chronic non-specific respiratory diseases"), such as asthma and bronchitis. Some organic matter in the form of dust particles can cause pneumoconiosis, biological materials such as viruses, bacteria and fungi can cause infections and allergic reactions. Other pollutants such as nitrogen oxides (NOx) and sulfur dioxide (SO2) can also cause CNSRD. Some pollutants that enter the lungs can enter the blood circulation as well as CO gas which is neurotoxic (nerve poison) and "benzene" which is a carcinogen.

### 3.3. Utilization of water and water pollution

Basic needs of human life increase in line with population growth, both in urban and rural areas. Rapid population growth has many negative impacts on water resources, in terms of quantity and quality. Meanwhile, there are some people who lack of water services, but on the other hand there are resident’s activities that use water excessively. Water sources that are used to meet the needs of life, including ground water. Ground water that is widely used by the community for clean water and drinking water needs is dug well water. Groundwater potential varies from place to place, so the problems that arise are also not the same, but in general it can be said that in each region there has been a decline in groundwater reserves and a decrease in groundwater quality [9].

| Utilization | Water Source      | %   |
|-------------|-------------------|-----|
| Drinking    | Packaging water   | 20.00 |
|             | PDAM              | 30.00 |
|             | Well Pump         | 30.00 |
The utilization of water for drinking and daily life necessities consists of various sources, but the majority of the population uses PDAMs and pump wells for both (Table 1). Meeting the daily needs of people who use PDAM water has proven to be suitable for use while people who use well water are not yet suitable for use because they contain pH that is below the quality standard because the greater volume of groundwater uptake through artesian wells can reduce the surface of the ground, decrease discharge water that can accelerate sea water intrusion into the mainland. That is, the ground water content will turn into seawater that is not suitable for consumption.

All respondents admit that water sources for drinking and daily life are polluted. The perception of water pollution is proven that the water in surrounded settlement is smelly, tastes or colors. A lot of people proceed with their water by boiled them up for drinking water. Degradation in water resources continues to occur and getting worse from year to year. Steps have been taken to overcome the problem, but the damage still continues at an unexpected speed. Problems arising from the high environmental-based diseases in Indonesia in general are not fulfilling the need for clean water, the use of latrines that are still low, contamination of land, water and air due to household waste, industrial waste, agricultural waste and transportation facilities as well as physical environmental conditions that allow it to develop multiply vector. Water quality in clean water supply facilities that do not meet the requirements is also a problem that needs attention and is often found in the community [10].

Groundwater pollution can cause serious problems if not addressed. This is because groundwater is the source of water that is used by most of the population to meet the needs of clean water and drinking water. The need for drinking water continues to increase in line with the increase in population, meanwhile the amount of ground water decreases and the quality decreases. The decrease in the amount and quality of ground water is triggered by human activities and industrial activities. Utilization of ground water that takes place continuously without regard to the concept of preservation and preservation of ground water, the construction of residential areas that do not provide a place for water infiltration into the ground, disposal of industrial or factory wastes at ground level without going through sewage treatment, domestic waste, use excessive fertilizer or pesticides in agricultural areas. These industrial effluents enter rivers and lakes through collected waste resources (point resources) such as drains or drainage pipes and through diffuse sources such as runoff from agricultural land. Indirectly discharge into the river or lake through water infiltration and into ground water and ultimately into the river or lake.
3.4. Economics Activity

Household heads occupation around the Supit Urang landfill is classified as Private Employees/Civil Servants and Factory or Farm Labour. The classification is based on professionalism of work based on the concept of white collar and blue collar. The term blue-collar and white-collar workers was first used by a novelist named Upton Sinclair in 1920, which was then used by many workers in general in 1923. Since then, workers classified by white- or blue-collar workers. However, in the 21st century it can be said that workers can mix their collar colours according to their wishes. Both of these terms actually already have a certain stigma in the world of work. Blue-collar workers are considered inferior to white-collar workers. White-collar workers work behind the counter in the service industry. While blue-collar workers work with their hands, because they do manual work or work in the manufacturing division. White-collar workers make more money than blue-collar workers and both are in different social classes. In addition, white-collar workers usually have better education than blue-collar workers (Table 2).

| Occupation       | Water Drinking Source | Total |
|------------------|-----------------------|-------|
|                  | Packaging Water       | PDAM  | Well Pump | River |       |
| Factory or Farm Labour | 14.29                | 14.29 | 50.00     | 21.43 | 14    |
| Employee         | 25.00                 | 43.75 | 12.50     | 18.75 | 16    |

The results showed that around Supit Urang landfill there were more people whose jobs were classified as employee. However, the number of residents who work as farm workers or factory workers is also not small. If it is related to work, it can be seen that residents who work as Factory or Farm Labour use drinking water sourced from wells, while for residents who work as employees most use water sourced from PDAM.

4. Conclusion

Based on the problem formulation and the research results can be concluded that the impact of the construction of the Supit Urang landfill in terms of socio-economics is a positive impact for the people who live around the landfill because getting livelihood just as labors landfill and opened a food that is intended for workers landfill, so that the economy can be increased with the population about the existence of the landfill.

The other impact of socio-economic terms, the existence of the Supit Urang landfill also adversely affect the environment. The negative impact that polluted river water due to seepage
of water due to flow out of the landfill and the residents in the village of Supit Urang living at a distance of 0-400 meters of Supit Urang landfill suffering acute respiratory infections (ARI).

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