

Waste Crisis in Tapak Jedah: Revealing the Ecological Condition of Bengkulu City's Environment and Illustrating Sustainable Solutions

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Abstract: Waste is an invaluable or worthless object found in the environment around us. Garbage or waste arises as a result of the activities we do. Waste problems can cause environmental pollution. Environmental pollution has an impact on health, aesthetics, economic losses, and the disruption of natural ecosystems. This paper will describe the problem of waste accumulation around residential areas in the Tapak Jedah area of Bengkulu City. The waste problem is never-ending. The increase in population, accompanied by the high flow of urbanization to urban areas, causes a high volume of waste every day. The method used in this research article is a qualitative method, which describes the state of household waste disposal sites and their impact on the environment. From this research, it is concluded that there is still a lack of public awareness of the importance of protecting the environment from garbage and waste, which results in damage to the surrounding natural ecosystem. The role of the government and the community is very important in maintaining the surrounding natural ecosystem, especially in the Bengkulu city area. Some of the efforts that can and have been made by the government include the enactment of regional regulations and appeals for the prohibition of dumping garbage in the area and the provision of facilities that are already quite adequate, such as the existence of several bins placed in each kelurahan. However, for sustainability, it seems that the local government could also provide garbage trucks for the efficiency of environmental cleanliness activities.

Keywords: Environment, Environmental Pollution, Garbage, Waste

1. Introduction

The definition of waste according to Law No. 18 of 2008 is the residue of daily human activities and/or solid natural processes. Garbage and waste are basically the residue of an imperfect energy change process. This is in accordance with the second law of thermodynamics, which is widely used in physics. Although energy never disappears from nature, it is converted into a less useful form (Akram et al., 2019). The law is then used as one of the basic principles of environmental science, which states that no system of energy conversion is completely efficient. This means that there will always be a residue called enthrropy (Firmalasari & Rasyidah, 2020).

When humans eat, some of it will be converted into energy for activity, and the rest will be converted into waste feces or enterotoxins. Similarly, in the production process in industry, not all raw materials can be converted into finished materials, but some will be converted into garbage or waste (Jakhar et al., 2023; Nagaraju et al., 2021). In households too, not all consumer goods are used up or eaten; some will

be discarded in the form of waste, both organic and inorganic waste. The two types of waste are solid waste and liquid waste. Waste that comes from unused metal, paper, wood, or plastic is solid waste. While waste derived from oil or chemical substances is called liquid waste (Nsindu et al., 2023).

Indonesia, as a developing country, will certainly continue to strive to carry out development aimed at meeting the needs of its people. In Bengkulu City, in particular, there are many piles of waste originating from industrial and household waste. This accumulation of waste has an impact on environmental changes caused by the pollution of the environment by waste and garbage. Environmental pollution is the process of changing the environmental order through human activities or natural processes so that the quality of the environment drops to a certain level that causes the environment to be unable to function as it should (Guylain et al., 2023).

2. Method

This research is focused on environmental pollution that occurs in Tapak Jedah, Lingkar Barat Kel, Kec. Gading Cempaka, Bengkulu City. The method used in this research is a descriptive qualitative method, which seeks to describe in full the matters relating to the problem under study which focuses on the accumulation of garbage in Tapak Jedah. In collecting data, the author conducted a field survey by directly visiting the trash cans in Tapak Jedah and interviewing a resident who was at the location (Gunawan, 2022; Sugiyono, 2020).

3. Result and Discussion

Landfill Conditions at the Jedah Site

The condition of the landfill in Tread Jedah is not suitable for disposal. The location right on the side of the road is very unpleasant to see. The community has unknowingly damaged the surrounding natural ecosystem.

Based on information from a resident who was there, the community has long been dumping garbage in the tread jedah area. The distance of the TPA (Final Disposal Site) location makes residents reluctant to dispose of waste there. As is well known, the landfill is located in the Sebakul area of Selebar sub-district. The Tapak Jedah landfill itself is a protected forest area called TWA Pantai Panjang and Baai Island. Behind the ravine where the garbage accumulates there is a small river that enters the protected forest area.

According to a resident who works as a scrap collector in Tapak Jedah, residents have been dumping garbage there for quite some time. It is not known exactly when the garbage began to accumulate there. But over time residents began to throw garbage around there. The dumping site is a ravine on the side of the road. Usually residents throw garbage down the ravine.

From the data collected, those who throw garbage there are not only residents around Tapak Jedah but there are also residents from other areas who throw smpah there. The influencing factor is the lack of facilities provided by the government.

Although a sign has been installed not to throw garbage in the Tapak Jedah area which was handed down directly by the Ministry of Environment and Forestry, residents still continue to throw garbage there. And also the limited number of garbage collectors makes the garbage there even more buried. People are also less aware of the impact of environmental pollution.

Impact of Waste Accumulation on the Environment

Some people still think that the waste problem is only an aesthetic problem, i.e. unpleasant odor, disturbed scenery, and uncomfortable passing through a place with a lot of waste. Pollution of the river environment was only mentioned by people in areas near the river. Environmental pollution such as smoke from burning waste was perceived by people who knew that the treatment of waste in illegal TPS was burning. Tapak Jedah is not a land that has an official permit to be used as a dumping site because it is near the highway. The number of illegal TPSs shows the poor behavior of the community in managing waste. The behavior of people who still litter or have not managed waste in its place is a problem that is still commonly found in Indonesia. And the impact disturbs aesthetics, causes unpleasant odors, causes environmental and health pollution, causes pollution of rivers around the TPS.

The provision of open dumping landfills has many negative impacts, especially on the environment and the community around the landfill. The selection of landfill placement faces many problems due to the limited urban land and the complexity of the consequences. Inappropriate landfill site selection and open dumping systems result in a wide range of negative impacts such as health impacts, pollution, aesthetics and social problems. Openly operated landfills will produce by-products in the form of methane gas and leachate. Leachate affects underground water properties such as high concentrations of total dissolved solids, electrical conductivity, hardness, chloride, COD, nitrate and sulfate, and contains heavy metals, which tend to decrease after the rainy season and increase before the rainy season (Mihajlović, 2020).

The following are the positive and negative impacts of waste on the environment and human health:

1. Positive effects

Although waste is classified as unused and discarded objects, if managed properly, waste can be used as objects that are beneficial to human life. The benefits of waste include (Salim & Ullsten, 1999), 1) waste can be used to stockpile low land or swamps. In carrying out the hoarding, it must be considered so as not to cause adverse effects on the environment and human health; 2) can be used as a fertilizer that can loosen the soil and benefit plants; 3) can be turned into animal feed or as fuel and 4) inorganic waste can be made into handicrafts, for example bags made from detergent packs and other plastic products.

2. Negative effects

If the amount of waste collected is large enough and not managed properly, it can cause various problems (Salim & Ullsten, 1999), 1) health problems, waste piles that are not managed properly can become a breeding ground for disease

vectors, such as rats, flies, and other insects, making it possible to transmit a disease, such as stomach diseases, typhus, diarrhea, dengue fever, malaria, worms, respiratory diseases, skin diseases, and so on; 2) environmental problems, waste that is not managed properly can cause pollution to surface water groundwater and air. Thus it can indirectly pollute or disrupt human life. Waste that is not managed properly can pollute the environment directly or indirectly. What is meant by the environment is all objects, conditions or circumstances and influences contained in the society we live in and affect living things including human life.

Government and Community Efforts in Waste Management

The government plays an important role in tackling waste. Quoted from the page harianrakyatbengkulu.com (2019) Secretary of Commission I, Hamsi, A, Md revealed, the problem of garbage will not be solved only by installing a board that says it is forbidden to throw garbage. Because in the community environment, the problem of garbage continues to occur because the facilities for providing trash bins are still minimal.

The local government has enacted City Regulation Number 02 of 2011 which contains waste management in the city of Bengkulu. The government must provide adequate facilities to tackle this problem. The facilities that must be provided are making trash bins that are placed in each village. The government must also provide a waste transportation car that is tasked with transporting waste to the landfill.

There are various types of waste in Tapak Jedah, including plastic waste. Waste disposal is mainly done by burning waste. However, there are some residents who do not like burning garbage so that it becomes a serious polemic. According to him, if you want to burn garbage, then you have to take care of it until the fire is completely extinguished. The Forestry Service also urges not to burn waste. And in the end the garbage continues to be buried and more and more.

Integrated community-based waste management is carried out by reducing waste as much as possible by processing waste in locations as close as possible to the source of waste, which can be done in temporary waste storage (TPS), transfer depots or in locations around the source of waste according to local conditions (Perania, 2018).

Efforts that can be made in integrated waste management are the selection carried out starting from the source of waste generation, both from households, markets, industries, public facilities, commercial areas, and other sources. Organic waste (food waste, leaves, etc.) is separated from inorganic waste (plastic, glass, etc.). Waste that has been separated can be taken or sold for recycling in the recycling industry (Radeef, 2023).

There are some residents who scavenge waste that can still be used and recycled. These residents sort waste at the garbage dump in Tapak Jedah. Another way the government can do this is by socializing the local regulations that have been set. By working with local governments, community leaders, and youth organizations. As well as calling on the community to participate in preventing and protecting the environment from garbage and waste pollution (Putra et al., 2019).

Waste management is absolutely necessary given its adverse effects on health and the environment. Waste becomes a breeding ground for disease-causing and disease-carrying organisms. Waste can also pollute the environment and disturb the balance of the environment. Therefore, the government is trying to handle it.

Ways that People Can Do in Waste Management

Waste that has been collected can be processed further, both at the location of the source of the waste and after arriving at the landfill (Preston et al., 2011). The goal is that waste can be reused, so as to reduce the pile of garbage that is usually needed:

1. Organic Waste Management

Organic waste can be utilized directly, without going through a certain process, for animal feed, especially fish. Organic waste can also be processed for various purposes including making compost (Law, 2006; Preston et al., 2011).

2. Inorganic Waste Processing

Inorganic waste is usually in the form of bottles, paper, plastic, cans, used electronic equipment and others. By its nature, it can be decomposed by microorganisms, so it will last a long time as waste. To solve the problem of inorganic waste, the following can be done (Law, 2006).

Reduce (Reduce Usage)

Reusing items that are still feasible is also one of the most beneficial behaviors, both economically and ecologically, such as bottles and electronic devices. Electronic equipment waste can be sold to scrap dealers or electronic equipment service shops, because there are usually components that are still suitable for use.

Reuse

There are many items that after being used can be used again with the same function as the original function without going through the processing process.

Recycle

Recycling is one of the solid waste management strategies that consists of sorting, collecting, processing, distributing and making used products/materials (Benton Jr, 2015; Law, 2006; Preston et al., 2011).

4. Conclusion

Garbage and waste are the residue of incomplete energy conversion processes. Garbage that comes from metal, paper, wood, or plastic is solid waste. While waste derived from oil or chemical substances is called liquid waste. In Bengkulu City in particular, there are many piles of waste that come from industrial and household waste. This accumulation of waste has an impact on environmental changes caused by the pollution of the environment by waste and garbage. Environmental pollution is the process of changing the environmental order by human activities or natural processes, so that the quality of environmental quality drops to a certain level that causes the environment to be unable to function as it should.

Tapak Jedah should not be used as a waste disposal site because in addition to being right on the side of the road, the area is also a protected forest. Despite the

no-dumping signs put up by the Ministry of Environment and Forestry, people still dump their waste there.

Open dumping has many negative impacts, especially on the environment and the community around the landfill. The selection of landfill placement faces many problems due to the limited urban land and the complexity of the consequences. Inappropriate landfill site selection and open dumping systems lead to a wide range of negative impacts such as health impacts, pollution, aesthetics and social problems.

The local government has enacted City Regulation Number 02 of 2011 which contains waste management in the city of Bengkulu. The government must provide adequate facilities to tackle this problem. The facilities that must be provided are making trash bins that are placed in each village. The government must also provide waste transportation cars that are tasked with transporting waste to the landfill.

Efforts that can be made in integrated waste management is the selection that is done starting from the source of waste generation, both from households, markets, industries, public facilities, commercial areas, and other sources. Organic waste (food waste, leaves, etc.) is separated from inorganic waste (plastic, glass, etc.). The separated waste can be taken or sold for recycling in the recycling industry. Organic waste can be processed into animal feed and compost. Meanwhile, inorganic waste can be handled in three ways, namely reduce, reuse and recycle.

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