

Ecology and Environmental Science Waste Problems and Biota Life

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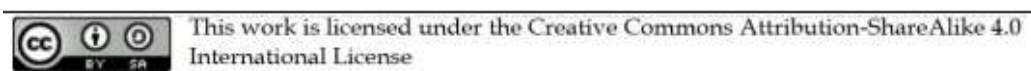
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ABSTRACT

The volume of waste generated due to human activities is strongly influenced by the rate of population growth. The amount of waste created in an area is proportional to the number of residents from various types of activities, and the number of material goods consumed by the community. The environmental issue that currently has no doubt is that waste management is still far from adequate. The rate of population growth has a significant impact on the amount of waste generated by human activities. There is still a low level of human awareness of the bad effects caused by waste. Indiscriminate disposal of garbage and not being managed properly will cause big problems because throwing garbage in the open will result in soil pollution which will also have an impact on groundwater and air channels. The seriousness and need for waste management begin to be studied from upstream (waste source) to downstream (final disposal site) with the application of ideas such as 3R to 5R, but in the community, more emphasis is placed on the 3R priority, Reuse, Reduce, and, Recycle. The disposal of plastic waste is one of the contaminants that harm marine life. Not only threatening the terrestrial environment, waste pollution that is not managed properly can also have an impact on the marine biota environment because waste that ends up in the sea is the result of land waste. About 10% of all new plastic that will be produced will be waste going into rivers and ending up in the ocean. Marine debris, especially inorganic waste, is the main enemy that will not decrease and its existence will continue to be avoided. In this case, community participation is necessary to create a healthy living environment. Everyone from the community and the community has the same rights, obligations, and roles in environmental management, regardless of rural, remote, or urban communities, because the scope is not only in certain places but throughout the Unitary State of the Republic of Indonesia.

Keywords: Environment, Waste Management, Population, Marine Life.



INTRODUCTION

Environmental problems today are indeed the most common problems in the Indonesian environment. This environmental problem can be caused by humans as consumptive beings who have more needs than other creatures living on earth (Holdren & Ehrlich, 1974). Problems such as imbalance between environmental conditions and environmental consumption will arise as a result of these demands. Every individual physically towards the environment, especially the decline in environmental quality, is responsible for community involvement in environmental management. Community participation is very important in building a healthy living framework that must start today and continue in the future. Concern for the environment and its management requires the government's role as the executive, the role of the DPR as the legislature, the role of the legal apparatus as the judiciary, and the role of the community as citizens who play an important role in environmental management and maintenance.

Garbage is a type of solid waste consisting of biological and inorganic materials which are considered worthless and must be managed so as not to damage the environment (Hendrarso, 2021). Garbage is a widespread problem that, along with the increasing rate of population growth, requires additional attention (Kaza et al, 2018). The seriousness and management of waste are starting to be observed from upstream (waste sources) to downstream (final disposal sites) with the application of principles such as the 3R to 5R, although in the community the emphasis is on the 3R priority, Reuse, Reduce, and Recycle. The rate of population growth has a significant impact on the amount of waste generated by human activities. The amount of waste produced in an area is proportional to the population, various types of activities, and the level of population consumption of goods. The disposal of plastic waste is one of the contaminants that have marine life (Verma et al,2016). Due to the excellent features of plastic, it is present in every area of our daily life (versatile, light, strong, durable, and inexpensive). Plastics are used in a variety of applications, from clothing and packaging to household and personal products. Plastic waste is a major issue not only in Indonesia but also throughout the world. According to the Indonesian Ministry of Industry (2018), Indonesia produced around 7.23 million tons of plastic in 2018. Compared to previous years, there was an increase of 2.47 percent. The plastics sector was up 6.92 percent year-on-year in 2018. According to estimates, 10% of all newly produced plastic will be dumped into rivers and eventually end up in the ocean. This indicates that around 723,000 tons of plastic will enter Indonesia's marine waters every year. The increase in the use of plastic is the result of technological advances, industrial growth, and population growth. The more the use of plastic, the more plastic waste is produced. The average Indonesian population produces 0.8 kilograms of waste per person every day, bringing the total daily waste to 189 thousand tons. Plastic waste accounts for 15% of this total, for a total of 28.4 thousand tons of plastic waste every day. Plastic pollution in Indonesian seas must be handled holistically and sustainably, with a full understanding of the conservation and management of Indonesian aquatic ecosystems.

METHODS

The author attempts to write this scientific article using a way of writing scientific articles based on the methods and types of library research, namely by gathering data or scientific works in the literature that are relevant to population and the environmental ecology.

FINDINGS

Based on Law No. 11/2020 concerning Job Creation explains that the environment is a unitary space with all objects, power, circumstances, and living things, including humans and their behavior, which affect nature itself, the continuity of life, and the welfare of humans and other living creatures. Environment, According to Siahaan (2004), can be divided into three main parts: 1) Physical or inorganic environment, which includes cosmic and phytogeography forces such as land, air, and sea, as well as radiation, attraction, and waves; 2) The biological or organic environment, which includes everything that is biotic, such as microbes, parasites, animals, and plants, as well as the prenatal environment for biological activities such as reproduction, growth, and so on; 3) The social environment,

which in this case is divided into three parts: The physiological environment includes, among others, cultural materials such as equipment, machines, weapons, and buildings. The biosocial environment includes humans and non-humans, including humans and their relationships with each other, domestic plants and animals, and any organic material used by humans to fulfill their daily needs; The psychosocial environment is an environment related to the inner nature of humans, such as attitudes, opinions, desires, and beliefs. Customs, religion, ideology, language, and other factors all contribute to this. Government regulations or legal standards serve as guidelines for the implementation of environmental management. These rules serve as benchmarks for standards and controls and provide boundaries and guidelines for their proper and appropriate implementation and management. Disposal of garbage that is not managed properly will cause big problems, (Sharholy et al, 2008). Because throwing garbage in the open will result in soil pollution which will also have an impact on groundwater and air channels. Likewise, burning garbage releases pollutants into the air, and dumps garbage into rivers thereby polluting and clogging waterways, and causing flooding. Garbage is solid waste consisting of organic and inorganic substances which are considered useless and must be managed so as not to harm the environment (Zhang et al,201). Waste is goods that have no economic value that is wasted or disposed of from sources originating from human and natural activities (Abdel-Shafy, & Mansour, 2018). Waste can be classified into the following categories: 1) Organic/wet waste consists of plant and animal components collected from nature or produced from an agricultural, fishery, or other activities; 2) Inorganic/dry waste, namely waste originating from non-renewable natural resources such as minerals and petroleum or industrial processes. Some of these materials do not occur in nature such as plastic and aluminum. some substances cannot be completely decomposed by nature, while others can only decompose in a long time. Types of waste at the household level, for example, glass bottles, plastic bottles, plastic bags, metal, iron, cans, plastic, rubber, and others that cannot decompose naturally; and 3) B3 waste, namely wastes containing hazardous and toxic compounds, either directly or indirectly, because of the type or concentration. Batteries, mosquito repellent bottles, used syringes, and other items. In big cities in Indonesia, household waste consists of 60-70 percent of organic waste that can be composted. The remaining 30-40% is inorganic waste, most of which can be recycled. The current growth rate of urban waste accumulation (2–4% per year) which is not accompanied by the availability of adequate waste infrastructure and facilities has an impact on environmental pollution which continues to increase from year to year, especially in big city areas.

Disposing of garbage indiscriminately is ingrained in society, both in rural and urban areas. Without realizing that piles of garbage can cause various kinds of impacts on the environment and living things, one of which is Lindi. The leachate produced by piles of garbage in the TPA is liquid waste generated from outside water that enters the landfill. The source of leachate disease is a nest or breeding ground for disease vectors, if it cannot be managed effectively without proper processing, it can harm the environment, including the emergence of unpleasant odors and sources of disease carriers. In addition, the bad impact of landfilling is the practice of burning waste which has become so commonplace that it is very difficult to prohibit it. That chemical synthetic waste, such as plastic, rubber, styrofoam, metal, glass, and so on, currently dominates the type of waste. If waste is burned, it will release gases that are harmful to human health and reduce the quality of the air environment. Burning plastic waste produces dioxin gas which is 350 times more dangerous than cigarette smoke. When dioxin enters the human body, especially the nerves and lungs, it is highly toxic and carcinogenic, irritates the nervous and respiratory systems,

and causes cancer. Burning Styrofoam produces CFCs, which are toxic to humans and can affect the ozone layer.

Not only threatening the land environment, waste pollution that is not managed can also have an impact on the marine biota environment because waste that ends up in the sea is the result of land waste that is not managed properly. Law No. 11/2020 concerning Job Creation, explains that marine pollution is the entry or inclusion of living things, substances, energy, and or other components into the marine environment by human activities so that it exceeds the quality standards of the marine environment that have been set. The mass of plastic in the oceans is estimated to accumulate up to one hundred million metric tons. This condition is very bad and very difficult to decompose by bacteria. The source of plastic waste in the sea also comes from fishing nets that are intentionally discarded or left on the seabed. Plastic production is increasing as a result of the increased use of plastics in various human activities. Indonesians produce 0.8 kilograms of waste per person per day, bringing the total daily waste to 189 thousand tons. Plastic waste accounts for 15% of this total, for a total of 28.4 thousand tons of plastic waste every day. Plastic waste is produced in large quantities as a result of the excessive use of plastic. Synthetic plastic waste accounts for 90% of total global output. Marine debris, especially inorganic waste, is the main enemy that will not decrease and its existence will continue to be avoided. Because of the impact caused by this type of waste on the living biota found in the waters. According to Law No. 11/2020 concerning Employment Creation explains the systematic and integrated Marine Environmental Protection which is carried out to prevent pollution and/or environmental damage in the Sea which includes marine conservation, marine disaster management, pollution prevention, and control, as well as damage and disasters. Inorganic waste becomes the main enemy whose existence is increasingly not being realized. About 10% of all new plastic that will be produced goes into rivers and ends up in the ocean. Marine debris, especially inorganic waste, is a major enemy that has not diminished and is still being neglected. Plastic waste comes in various sizes, shapes, and compositions. Mega plastic waste (> 100 mm), macro plastic waste (> 20-100 mm), mesoplastic waste (> 5-20 mm), and microplastic waste (0.3-5 mm) were the size categories used to identify marine debris. In addition to well-known plastic products, the most common types of plastic waste are bits, films, pellets, lines, fibers, filaments, and granules.

The best approach to processing waste using the 3R concept is to adopt an integrated waste management solution (reduce, reuse, and recycle). Reduce, Reuse, and Recycle: 1) Minimize (Reduce) the commodities or materials that we use as much as possible. The more materials we consume, the more waste we produce; 2) Reuse; Choose as many reusable items as possible. Warning about single-use items (one-time use, throw away). This can extend the amount of time the product remains in use before being disposed of; and 3) Recycling: Items that are no longer useful can be recycled as much as possible. Although not all commodities can be recycled, many non-formal businesses and households have recycled waste into new products.

The Role of the Government and Society in Environmental Management is stated in the provisions of Article 28 H paragraph (1) of the 1945 Constitution of the Republic of Indonesia which has recognized that "Everyone has the right to live in physical and spiritual prosperity, to have a place to live, and to have the right to a life that is good and healthy. environment and the right to health services". Based on these provisions, citizens have the right to a good and healthy environment. The form of its realization is guaranteed by the right to a good and correct environment in Law No. 11 concerning the Creation of Job Opportunities concerning the Protection and Management of the Environment. In

Article 70 paragraph (2) the role of the community in environmental protection and management can be in the form of Social supervision; Providing suggestions, opinions, proposals, objections, complaints; Submission of information and/or reports. Meanwhile, Article 70 paragraph (3) states that the role of the community is carried out for 1) Awareness-raising in environmental protection and management; 2) Increasing independence, community empowerment, and partnerships; 3) Community capacity building and pioneering; 4) Growing and developing an immediate response from the community to carry out social surveillance; and 5) Maintenance and preservation of local culture and wisdom in the context of preserving environmental functions. Therefore, community participation in creating the environment is also closely related to the obligation to protect the environment itself. In this case, community participation is necessary to create a healthy living environment.

Everyone comes from the community and the community has the same rights, obligations, and roles in environmental management, regardless of rural, remote, or urban communities, because the scope is not only in certain places but throughout the Unitary State of the Republic of Indonesia. To achieve the common goal of preserving the environment and the balance between nature and people. So that it takes the participation of all relevant parties, namely the Government as making rules and policies as well as the community and all parties having a share in carrying out these policies and regulations to create an environment that cares about waste. If awareness of good waste management becomes part of the culture of human life, the balance between nature and humans can be maintained

CONCLUSION

To protect and realize the right to a good and healthy environment, the Government has implemented various environmental economic instruments. Environmental legal instruments that function as a means of preventing environmental pollution. Where basically everyone is part of the environment and every human being has the same rights, obligations, and roles in environmental management without Village, Remote, or City communities, because the environment is within the scope of the Unitary State of the Republic of Indonesia. It takes the participation of all relevant parties, namely the Government as making rules and policies as well as the community and all parties having a share in implementing these policies and regulations to create an environment that cares about waste. If awareness of good waste management becomes part of the culture of human life, the balance and sustainability between nature and humans can be maintained.

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