

Marine Coastal Waste Management in the Coastal Area of Gresik Regency as an Effort to Maintain The Potential of Marine Resources

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Abstract. The general problem of waste is faced on average by urban areas in Southeast Asian countries, along with the increasing population, followed by economic growth, changes in consumption patterns, as well as urbanization and industrialization, resulting in an increase in the potential for per capita waste generation and various types of waste produced. Indonesia, with the fourth longest coastline in the world, is the most significant contributor to marine debris after China, at 187.2 million tons per year. This research was conducted using empiric juridical methods with a statute approach and literature studies reinforced by in-depth interviews. Waste management in coastal areas to preserve and maintain the cleanliness of the sea is critical. The implementation of governance cooperation between the community and the Government can be a solution to maintaining cleanliness and preserving marine resources. This form of collaboration requires strengthening through an umbrella act in Regency Regional Regulations and Regent's Regulations.

Keywords: Coastal waste; public government cooperation; utilization; district regulations

1 Introduction

Indonesia is an archipelagic state whose 60% of the area consists of waters with land clusters in the form of islands or so-called coastal areas [1]. Coastal areas are transitional areas between land and ocean, potential resources in Indonesia. However, marine debris is one of the biggest problems managing coastal areas and small islands. The consequence of Indonesia as the largest archipelagic country in the world is that it carries out national interests in the maritime sector. One form of this interest is an effort to overcome pollution due to plastic waste in the sea [2]. The general problem of waste is faced on average by urban areas in Southeast Asian countries, along with the increasing population, followed by economic growth, changes in consumption patterns, as well as urbanization and industrialization, resulting in an increase in the potential former capita waste generation and various types of waste produced [3]. The complexity of this coastal waste problem impacts coastal areas, especially organic waste (undergraduate), a significant issue that is increasingly not decreasing in number and tends to be ignored. This waste can be classified into several categories [4], namely:

1. Plastics include a wide range of synthetic polymeric materials, including fishing nets, ropes, buoys, and other fishing gear; everyday consumer goods, such as plastic bags, plastic

- bottles, plastic packaging, plastic toys, and tampon containers; diapers; items for smoking, such as cigarette butts, matches, cigar shoots; grains of plastic resin; microplastic particles;
2. Metal, including beverage cans, aerosol cans, foil wrappers, and disposable burners;
 3. Glassware, including bottles and light bulbs;
 4. Processed wood, including pallets, crates, and planks;
 5. Paper and cardboard, including cardboard, glass, and bags;
 6. Rubber, including tires, balloons, and gloves;

The movement of currents strongly influences the spread of marine debris in coastal areas. The movement of water masses or currents can carry waste in the waters a considerable distance. Marine debris is generally generated from anthropogenic activities, directly threatening marine habitats, human health, and maritime safety, resulting in severe socio-economic losses [5]. About 10% of all newly produced plastic will find its way into rivers and end up in the ocean. Indonesia, with the fourth longest coastline in the world, is the most significant contributor to marine debris after China, at 187.2 million tons per year [6]. The dominant type of marine waste is plastic waste. Conditional management and handling of marine debris in the style of plastic waste stated in the Government's program, namely the National Action Plan (RAN) for Plastic Waste Management in the Sea in 2017-2025¹. However, waste management and handling in coastal areas are still minimally involved in coastal communities².

The Environment Agency of the Gresik district does not yet have adequate technology. One area that also has a waste problem is the coastal area of Gresik Regency, which still uses manual methods to implement waste hygiene. Based on the background described in this Sub-Chapter, then is a limitation in the discussion of this study through the formulation of the problem as follows "Synergy of the authority of the government and coastal communities of Gresik in marine debris management based on local wisdom.

2 Research Method

This research uses an empirical method which, according to Zainudin Ali, is also called Field Research. Although field research, data processing uses norms and literature studies by being strengthened by in-depth interviews. The data is taken from secondary data from the Environment Agency and the Central Statistics Agency. The data used is, of course, data that supports the problems studied [7].

3 Result and Discussion

3.1 Gresik District Profile

Gresik Regency is located northwest of Surabaya City, the capital of East Java Province, with an area of 1,191.25 km² divided into 18 sub-districts, 330 villages, and 26 urban villages. The northern Java Sea borders Gresik Regency; the Madura Strait and Surabaya City border the east. Lamongan Regency connects Sidoarjo Regency and Mojokerto Regency, bordering the

¹ Lpsplsorong, What's wrong with Marine Garbage? in <https://kkp.go.id/djprl/lpsplsorong/article/22801-ada-apadangan-sampah-laut>, accessed on January 28, 2022, at 22:10 WIB

² The definition of coastal communities according to Fatmasari (2012) Coastal communities are groups of people who work as fishermen, namely people who actively carry out fishing activities, either directly or indirectly as their livelihood.

south, and the west. Geographically, Gresik Regency is located between 112° to 113° East Longitude and 7° to 8° South Latitude and is a lowland with a height of 2 to 12 meters above sea level, except for Panceng District, which has a height of 25 meters above sea level. Some areas of Gresik Regency are coastal areas extending from Kebomas, Gresik, Manyar, Bungah, Sidayu, Ujungpangkah, and Panceng Districts Sangkapura and Tambak Districts which are located in Bawean Island.

Some coastal areas of Gresik Regency are developing very rapidly as a center of business and tourism. The port in Gresik, a seaport in Pulopancikan Village, Gresik District, has been thriving since the 11th century AD during the Majapahit Kingdom through the leadership of Sultan Airlangga.³ The glory of this port continues in the present century with the construction of a port in the Java Integrated Industrial Port, and Estate (JIPE) integrated industrial area in Manyar District, Gresik Regency. Not only the port but Gresik also has a tourist charm in the coastal zone, namely the Charm of Dalegan White Sand Beach, which is located in Ujungpangkah Village, Gresik Regency, which when the analysis was carried out, the field became thriving in the neighboring villages of white sand tourism. Based on the potential possessed, the average per capita expenditure of Gresik residents is in the following table:

Table 1. Average Daily Calorie Consumption per Capita by Food Commodity Group and Expenditure Group (per Kkal), 2021

Commodity Groups	Expenditure Groups			Average Expenditure
	40% Lowest	40% Middle	20% Highest	
1. Grain	58 983	65 719	64 355	62 751
2. Tubers	3 032	6 319	8 199	5 307
3. Fish/shrimp/squid/shell	39 021	62 870	105 805	61 910
4. Meat	22 115	34 376	68 529	36 298
5. Eggs and milk	20 121	46 320	77 559	42 081
6. Vegetables	35 534	59 342	79 470	53 838
7. Legume	11 616	17 737	20 379	15 815
8. Fruit	15 140	35 305	76 535	35 479
9. Oil and coconut	11 275	16 763	21 468	15 507
10. Beverages	11 625	19 221	26 412	17 619

3.2. Marine Debris

Marine debris is a persistent solid object produced by humans directly or indirectly by being disposed of or left in the sea. The amount of marine debris is increasing, and almost 60-80% of marine debris consists of plastic waste [8]. According to the Annex to Presidential Regulation Number 83 of 2018 concerning Handling marine debris, sea amp is garbage from land, water bodies, and coasts that flow into the sea or garbage from activities at sea. At the same time, plastic waste is waste that contains polymer compounds [9]. This plastic waste has become the most significant component of marine debris. Marine debris is present in all marine habitats, from densely populated areas to remote locations that humans unspoil, from coastal and shallow-water areas to deep-sea troughs [10]. However, the density of marine debris varies from

³ Based on the book written by W P Groeneveldt in Historical Notes on Indonesia and Malaya Compiled from Chinese Sources adapted and published on the weblink <https://www.goodnewsfromindonesia.id/2022/03/12/kejayaan-pelabuhan-gresik-sebuah-permata-from-east-Java>, accessed on June 10, 2022

place to site, influenced by human activities, water or weather condition, the structure and behavior of the Earth's surface, entry points, and the physical characteristics of the waste material.⁴

One of the waste problems in the Gresik District area is Campurejo Village, Sedayu SubDistrict, Gresik District. The Village Secretary (Pak Carik), Mr. Zaim, said there was a waste problem in Campurejo Village. Campurejo Village has an area starting to wear out, so reclamation is carried out. After the reclamation, several areas became no man's land. With mutual agreement by the Community of Campurejo Village, one of the lands is used as a temporary dump. It is an effort by the Village Head of Campurejo to reduce the waste that is wasted and intentionally disposed of by residents. It has also begun to invite protests from non-governmental organizations engaged in the field of love (free nature observers). Until this research was conducted, the problem was still not resolved.⁵



Fig. 1. The problem of waste disposal disputes in Campurejo Village, Sedayu SubDistrict, Gresik Regency.

Based on the Hygiene Management of Gresik Regency's data, it is reported that the Sidayu sub-district area only has 2 Temporary Disposal Sites for waste.⁶ Therefore, it leads to uneven distribution of shelters, considering that the space between these areas is extensive. Based on the abovementioned problems, cooperation between the Government and the community is needed to carry out waste management such as the abovementioned problems. Still, in the waste management data report, the waste that arises in Gresik Regency has the following composition:

⁴Directorate of Utilization of Management of Small Islands, Marine Debris (Marine Debris), in <https://kkp.go.id/djprl/p4k/page/1994-sampah-laut-marine-debris>, accessed on January 28, 2022, at 23.14 WIB

⁵ Based on consultation during Extension of Village Apparatus as Mediator in Resolving Disputes in the Village Area. The activity was carried out on July 13, 2022.

⁶ Profile of Waste Management in the Sector of Cleanliness Management of the Environment Agency of Gresik Regency in 2021

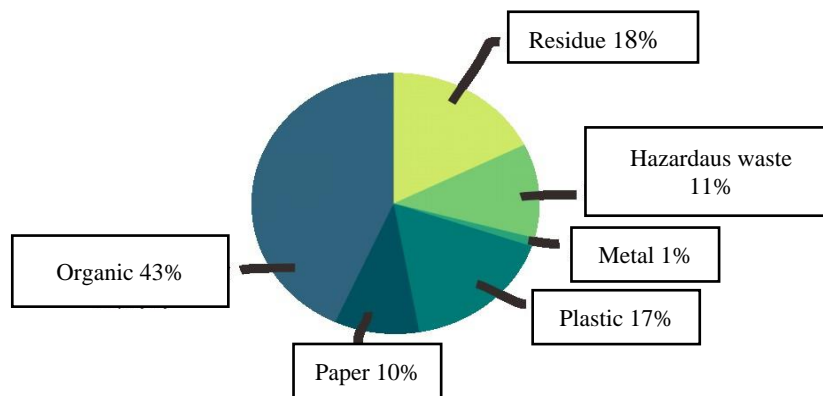


Fig 2. The composition of 28% Stall Waste consists of

Waste management for further reuse and recycling has been running in the Surabaya City area, a city area bordering Gresik Regency. It will reduce the burden on the Government in managing waste in its administrative area. However, especially for the use of reducing, it is the responsibility of the Gresik Regency government in its management. It is essential to collaborate in waste management between the community and the Government, especially coastal communities so that waste management is carried out in a 3R way, namely Reduce, Reuse, and Recycle.

3.3. Management of Coastal Zone and Small Islands

Definition of Management of Coastal Zone and Small Islands according to the Law concerning Management of Coastal Zone and Small Islands is the coordination of planning, utilization, supervision, and control of coastal resources and small islands carried out by the Government and Regional Government between sectors. For example, between terrestrial and marine ecosystems and between science and management to improve people's welfare.⁷

The definition of a coastal area is a transitional area between land and sea ecosystems that are affected by changes in land and sea. The purpose of a small island is to have an island with an area smaller than or equal to 2,000 km² (two thousand square kilometers) along with the unity of its ecosystem⁸

Especially in the Gresik Regency area, coastal area management is based on the provisions of the Gresik Regency Regent Regulation Number 10 of 2010 (Coastal Regulation) concerning the Management of Coastal Areas in the Gresik District. In addition, the management of the coastal community of Gresik District through community participation is regulated explicitly in Article 15, which stipulates that Community participation in the management of coastal areas in the form of:

- a. providing information in the planning, utilization, supervision, and control of coastal resources;
- b. provide input in determining the direction of planning and management of coastal areas;
- c. carry out activities for the use of coastal resources based on customary law that does not conflict with national law;

⁷ Law of the Republic of Indonesia Number 1 of 2014 concerning Amendments to Law Number 27 of 2007 concerning Management of Coastal Areas and Small Islands, Article 1 point 1. 12 Ibid., Article 1 point 3

⁸ This is a news page published by the Ministry of Environment via the weblink http://ppid.menlhk.go.id/siaran_pers/browse/1595 which was published on October 30, 2018. Accessed on June 10, 2022.

- d. maintain and improve efficiency and effectiveness, as well as the preservation of environmental functions in coastal areas;
- e. submit reports and complaints on losses incurred in connection with the implementation of coastal area management;
- f. report any pollution and damage to coastal areas that are detrimental to environmental sustainability

Based on the above provisions, in Gresik District, there is no specific regulation for community participation in waste management. However, it is implied in Article 15 point d, which stipulates that the coastal community participates in maintaining, maintaining, and improving the efficiency and effectiveness and preserving environmental functions in coastal areas. Through these provisions, based on the discussion of Sub-Chapter 2.1 above, it is necessary to carry out collaborative waste management (along with its disposal and utilization through 3R).

Using this 3R way learns from using As explained by Mayor Tri Rismaharani (Bu Risma) when she was still Mayor of Surabaya (now Minister of Social Affairs) said that Surabaya had utilized waste by processing it into a compost house, Garbage Bank, Surabaya Bus, Urban Farming, Community Wastewater Treatment Plant (IPAL)⁹. Based on the preceding, it would be appropriate if the collaboration between the Government and the community, especially the coastal Community of Gresik Regency, was carried out to reduce marine debris and empower the coastal community.

This management is done officially through village institutions so the community can feel the impact of environmental maintenance from waste and waste management and its utilization. Private institutions that can be formed in this management are Village-Owned Enterprises using village funds and Corporate Social Responsibility of several high-waste producing companies, AKR Migas, Teluk Lamong, and Smelting (mining product refining companies). It is also essential to be directly supervised by the Regent of Gresik to synergize cooperation between the Government and the Community through Gresik Regency Regional Regulation. At least Gresik Regent Regulations with supervision and supervision under the Industry and Trade service and the Environment Agency (which also concerns the Duties and Functions of waste).

4 Conclusion

Waste management in coastal areas to preserve and maintain the cleanliness of the sea is essential. For some regional areas that have not yet reached all of their administrative areas, they can take advantage of governance cooperation between the community and the Government. One example of this effort by looking at the results of this research, which limits the scope of the coastal area of Gresik Regency, it can be seen that it is essential for the Government to collaborate with the community in managing waste as an effort to maintain the cleanliness and preservation of natural resources in the coastal area. Form for this cooperation to have high consistency and commitment. It is necessary to strengthen it through the regulatory umbrella in Regency Regional Regulations and Regent's Regulations.

⁹ This is a news page published by the Ministry of Environment via the weblink http://ppid.menlhk.go.id/siaran_pers/browse/1595 which was published on October 30, 2018. Accessed on June 10, 2022.

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