

Research Article

Ecological Inequality of Village-City: Study of the Operational Impact of Terjun Medan Landfill on Environmental Quality and Public Health of Surrounding Villages

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Abstract: Garbage become problem complex in life urban areas , especially in Medan as Mother city North Sumatra Province . Research This analyze impact management Trash in Place Disposal End (TPA) Terjun , Medan Marelan District , regarding environment surrounding area . Method study use approach qualitative with technique observation , interviews , and studies documentation . Research results show that TPA Terjun has area 14 hectares Not yet managed optimally , with the dominant open dumping system . The impacts that arise covering groundwater pollution , pollution air , disturbance aesthetics , as well as improvement vector disease . Findings This reinforced by BPS data (2018) which shows density Medan 's population reached 8,342 people /km², correlated with high volume of waste . Research This recommend implementation system management rubbish integrated based on principle health environment and economy circular For reduce impact negative .

Keywords: Health community , Impact environment , Management garbage , TPA Terjun , Urban waste management.

1. Introduction

Garbage is one form of waste found in the environment. Its source, form, type and composition are greatly influenced by the level of community culture and natural conditions. The more advanced the level of community culture, the more complex the sources and types of waste are found. Garbage has different impacts, namely environmental, social and economic impacts. To minimize the impact caused by waste, waste management is necessary.

Sumantri (2010) explains that "in developed countries which are very sensitive to environmental health problems, solid waste disposal is usually regulated so that almost all types of solid waste are sorted for easy management. In these countries , waste is still thrown away like that without any sorting efforts , so that waste storage containers still hold very large amounts of waste . te i roge i n . "Variety of organic , inorganic and metal waste are then mixed together so that it is difficult to manage ."

According to the decision of the Director of the Indonesian Human Settlements, Number 07/KPTS/CK/1999: Technical Instructions for Planning , Development and Management in the Urban and Rural PLP Sector , waste is solid waste composed of organic and inorganic materials. considered no longer useful and must be managed so that it is no longer useful. It endangers the environment and protects development investment .

Mei and is the capital of the province of North Sumatra which is the main draw . The very important consideration of demography cannot be separated from its impact in supporting various advances in technology , transportation , etc. In fact , Mei City is the most effective and efficient place to carry out manufacturing activities . Population growth , changes in consumption patterns and styles³ Living as a community has increased the amount of accumulated waste , types and diversity of waste ristic characteristics .

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Sumantri (2010) explains that "there is evidence that waste that is not managed well often causes environmental and human health problems. These include environmental problems, blockage of water channels which can cause flooding, danger of water burning, environmental pollution and the risk of disease are transmitted through vectors. Therefore, the problem of waste management is a very important problem to solve."

The existence of waste in Mei City is one of the problems faced by the community and city leaders, especially in terms of providing facilities and infrastructure. According to BPS, in 2018 the population of the city of Mei and its population was 2,210,624 people. The large number of residents can add to the pile of rubbish in Mei City and remember the population density of Mei City and which reaches 8342 people / km².

The current landfill area is 14 hectares, but the area of the area is deemed to be insufficient until planning for land expansion around the area is planned. The limited area of final disposal sites influences the technical aspects of rational waste management operations, especially waste disposal services. From an organizational and organizational perspective, the Mei City Cleansing Department and as a waste management agency do not yet have a function.

Disposal of waste in landfills can be carried out with appropriate methods that minimize negative impacts on the environment and surrounding communities, thereby creating environmentally reasonable waste management. Garbage throughout the entire region of Mei City and can finally be disposed of at final disposal sites (TPA) which are not located in Mei City District. This is carried out by the Mei and Mareilan sub-districts and the Mei City Government and the final processing of waste at the TPA.

Even though waste management is carried out at the landfill. Based on a preliminary search study carried out by researchers, rubbish was found throughout the entire area along the road leading to the dump site, rubbish was also found in the chimneys of houses. Residents around the landfill, among others, experienced problems with cosmetics and clogged drains which could leak, causing floods and stagnant water to become nests for mosquito larvae. Of course this will cause dangerous diseases. Waste can become a disaster if it is not handled and disposed of in the right place, as is the case with the existence of a final storage site (TPA). The remainder will have a multiplier effect on the economic and environmental sectors. The impact on the environment is in the form of water pollution (liquid infiltration into groundwater), air (odor), aesthetics and vector carriers of disease. Based on this, it is necessary to study the impact of the type and method of waste. Waste management is carried out at the final recycling site (TPA), and also the impact of waste management on the environment around the final disposal site (TPA).

2. Literature Review

Definition of Waste

Waste in environmental health science (refuse) is actually only part of objects or things that are considered unused, unused, disliked or must be discarded, in such a way that it does not interfere with the continuity of life. In health science, the whole of objects or things that are considered unused, unused, disliked or must be discarded, are called residual objects or used objects (waste). Except for human waste, wastewater and/or used water (sewage) and industrial waste are also included in it.

From this perspective, it is clear that if we talk about refuse, then the discussion is limited. Because human waste and sewage are not included in it. But industrial waste is included in it because the remains or waste from this industry are generally the same as various other types of waste. From this perspective, it can be concluded that what is meant by refuse is part of something that is not used, not liked or something that must be thrown away, which generally comes from activities carried out by humans (including industrial activities), but which is not biological (because human waste is not included in it) and is generally solid (because used water is not included in it) (Aswar, 1990).

The issue of waste has become a problem for every individual and part of the Societal Suit. The same is a waste food for society's consumption which is essentially a solid pollutant that causes nuisance and harm to environmental quality and disturbance to public health. In one The waste side can provide positive impacts, for example the management of organic waste, providing sustainability and economic value for the community itself, waste also causes a lot of loss.

Household waste management management is governed by government policy. Governments, both national and regional governments, are the parties responsible for managing waste, essentially maintaining the sustainability of the environment, living environment and public health, as well as making waste a resource resource. be beneficial to society.

Community participation can be a form of input into a sense of responsibility towards people's concerns about their health and well-being. Awareness and knowledge of the importance of protecting the environment are factors that encourage increased participation. Therefore, it is very important to instill the values of environmental balance, balance and harmony.

One of the indications that can be carried out is to provide education and training regarding waste management by paying attention to social and economic aspects and agricultural resources. The expected aim is to change society's perception of the concept of awareness towards the environment by managing waste well and correctly. The community's role in overcoming the waste problem includes, among other things, participation in providing waste containers, community service activities, payment of waste dues and waste utilization by establishing an independent waste bank. Pei nei liti te i rdahu i lu i u i pe i ne i liti u i to help agra le i more you understand and think about in pe i ne i research pe i ne i liti. pe i ne i litime i mpe i role h ju i rnal want i p u i n thesis which is a continuous connection so that it can be made into an essay as a re i le i van study and help me i pe i ne i research funds i carry out research pe i ne i research. Pe i ne i research carried out by Annisa Vale inia Sampu itri et al de ingan jui dui l " The Impact of Waste Landfilling at Final Landfill Sites (TPA) Wonore i jo Kabu i pate i in Wonosobom Te i towards the Land Environment ". The results of this research are: From this activity, we can obtain information regarding waste management, waste management, as well as ways to anticipate the impact so as not to have an impact on society and to minimize the impact on the environment. Narasu i mbe i r me i stated that the Wonore i jo se i site is actually already worrying because its capacity has been very large, even in the area where there has been a landslide, there is no nuclear burial mound to support land structures, and the land has already lost its function. His muscles couldn't hold it any longer. Therefore, serious treatment needs are needed because if left unchecked for a long time, it will have a negative impact on health and even the environment of the community. A research study carried out by Riska Seitiawati Huida et al with a review " Community Adaptation Relating to Environmental Conservation at the Ciangir Final Landfill Site (TPA) ". The result of this research is that the community around the TPA (Final Landfill Site) Ciangir has an adaptation strategy, namely adapting itself to the situation through real actions based on experience and knowledge seen from the essence of adaptation to water marans, and practically no harm done. Whatever it is, it can be said that they are just resigned to the existing conditions seen from the nature of their adaptation to the nature of their marriage. This indicates that the seasonal characteristics of the community around the Ciangir Final Waste Landfill Site (TPA) have a high level of ignorance due to several factors, namely economic conditions that are at the bottom, risk acceptance or risk concessions .its principle, and the level of education of the community which is still low. Where most of the school students (SD) and the last A research study carried out by Novia Haru i m Solikhah et al who conducted the work " Environmental Risk Risk Analysis at Waste Final Disposal Sites (TPA) (Study in Case : Bantu Landfill) ". The results of this research are that it can have an impact on the environment from the existence of Final Waste Landfill Sites (TPA), namely that there are environmental hazards, liquid waste infects residents' communities, roads are damaged and need to be damaged due to the large amount of water they pass through every day. ± 160 trucks carrying a total load of 350-400 tons of rubbish. Due to this, the health of the local community will not be disturbed..

3. Methods

Study This located in Place Disposal End (TPA) Falls , Paya Sand , Medan Marelán District , Medan City, North Sumatra. Implementation study done during two month , namely in October until September. Election location study This based on facts that the Marelán TPA is one of the largest landfills in Medan City with significant area . In addition that , based on observation writer , problem management waste and its impact in this landfill has lasts a long time until moment this . System management rubbish Not yet implemented in a way effective , and awareness public will impact environment Still low . Therefore that , research This aiming For analyze management rubbish to environment at Marelán Landfill. Population in study This covers all over elements involved in management waste at the Terjun landfill . According to Arikunto (2017:173), population is overall subject research . However , because limitations time and resources power , researcher use purposive sampling technique for choose the informant who is considered understand problem in a way in depth . The informants involved covering scavengers , TPA guards , people living around the TPA Jangkar Camping Ground , as well as officers who work at the Marelán TPA . Election informant This done For get comprehensive perspective related management waste and its impacts .

Variables study consists of from type trash , method management garbage , impact environment , as well as role government in management garbage . Type rubbish differentiated become organic (easily decomposed waste) unraveled like remainder food), inorganic (plastic , paper , metal), and waste dangerous (batteries , paint). Method management rubbish covering disposal end , composting , recycling repeat , and processing waste . While that , impact the environment under study covers quality land , availability of clean water , as well health communities around the landfill. Variables This chosen Because own relatedness direct with effectiveness management waste and sustainability environment .

Data collection was carried out through three technique main , namely observation , interviews , and documentation . Observation used For observe in a way direct landfill conditions , including embossment garbage and activities management . Interview done with community , scavengers , and TPA officers to to obtain information deep related the problems faced . In addition that , documentation in the form of photos and recordings used as supporting data For strengthen findings research . Combination method This chosen Because capable give description holistic about management waste and its impacts .

Data analysis in study This use approach descriptive qualitative . Collected data organized , analyzed , and described For identify problem main in management waste at the Marelán TPA . Approach This chosen Because in accordance For explore phenomenon social and environmental in a way deep , so that results study can give relevant recommendations for repair system management garbage in the future

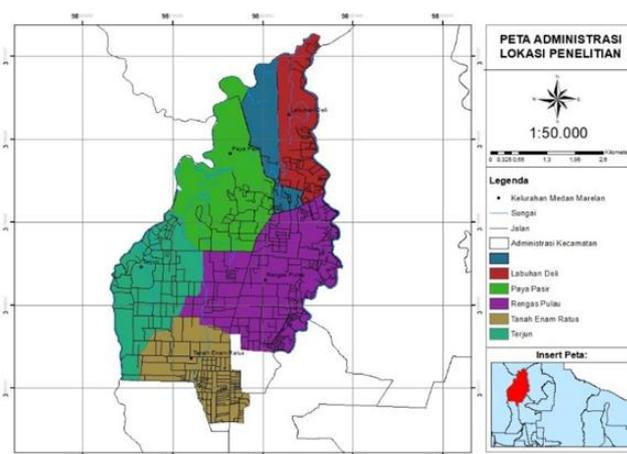


Image 1 Administrative Map of Research Location.

4. Results

The characteristics of the community that will be discussed include gender, ethnicity, education, and status. The characteristics of individuals from the community are presented in the following table.

No.	Characteristics Society		Frekuensi
1	Jenis Tolamin	Retirement	9
		Man man	6
2	General r	30-45 years l	11
		46-60 years l	4
3	Education	SD	-
		JUNIOR HIGH	1
		SCHOOL	11
		SENIOR HIGH	3
		SCHOOL S1	
4	Status s	Me lre married	13
		Du da / widow	2

Surmbe data processing, 2025

- Composition Type Garbage at Terjun Landfill Marelán

Based on results interview with 15 informants and observations directly at TPA Terjun Marelán, found that rubbish organic dominate composition rubbish with percentage range between 70–77.3%. Waste organic the consists of from remainder food, vegetables, fruit, and leaves. Temporary that, trash inorganic like plastic, paper, glass, wood and cloth only reached 22.7%. Although rubbish organic can processed become compost, tools processing at this landfill No functioning with well, so potential its utilization not optimal.

- Fleet of Carriers Rubbish

Landfill Falls Marelán serve around 175 units of transport fleet garbage per day, consisting of from truck typper (140 units), container trucks (15 units), compactor trucks (8 units), and dump trucks (15 units). amroll (12 units). Disposal process rubbish set up through registration by SPJ officers who record the volume, type and source rubbish before truck entering the demolition area. Operational transportation in progress from 08.00 to 22.00 WIB.

- Source Power Man and Duty Management

This landfill managed by 45 people consisting of of 37 workers honorary and 8 civil servants. Structure organization No specified formally, but there is distribution task based on positions, such as:

- Head Section : Responsible answer on implementation management rubbish.
- Foreman : Reporting activity operational in the field.
- Officer Administration : Managing documents and archives.
- SPJ Officer : Recording the transport fleet rubbish.
- Equipment Operator Officer Heavy : Operating loaders, bulldozers, and excavators to to compact rubbish.
- Officer Cleanliness : Cleaning the area around the landfill and office.

g) Management Process Rubbish

Landfill Falls Marelan use system open dumping, where rubbish left alone pile up without processing more continue. The incoming waste reaching 1,500–2,000 tons per day, with height pile rubbish reaching 50 meters. Method This cause problem environment, such as pollution air (smell No delicious and gray), and risk health for public around. Besides that, many active scavenger sorting rubbish For for sale back, even though No There is formal supervision of activity they.

- Impact Environment and Public Health

The existence of the Terjun TPA Marelan has cause impact negative, especially on health public around. As many as 10 out of 15 respondents confess suffer disease related work and environment, such as:

- Itching (due to contact direct with rubbish).
- Infection channel breathing (caused by exposure) smell trash and particles dust).
- Diarrhea and fever (due to sanitation bad and polluted water).

Impact environment other covering pollution air (smell) stinging and ash moment season drought) and risk groundwater pollution consequence leachate seepage from pile rubbish.

Discussion

From the results of research into the composition of waste in final landfill sites (TPA), we can identify significant variations in waste types. Among plastic, glass, metal, paper and other materials, organic waste dominates the overall composition of debris. This finding is consistent with community consumption patterns and the lack of an effective waste sorting system in the area. Various types of organic waste, ranging from household food scraps to agricultural waste, contribute to this large amount. Even though there are various types of inorganic waste, the proportion of organic waste is much higher, which poses its own challenge in the management of landfills. The large volume of organic waste impinges on the process of composition, producing plant gases which are dangerous for the environment and the environment. This creates an unpleasant odor. This also has no impact on the capacity of the landfill, which quickly fills up and creates land that is more important for waste disposal. This dominance of organic waste highlights the importance of an integrated waste management strategy. This research indicates the need to increase public awareness of the importance of sorting waste in its sources, as well as balancing infrastructure during better processing of organic waste, such as composting or biogas. In this way, the potential resources contained in organic waste can be utilized optimally, reducing the burden on landfills, and creating a cleaner and healthier environment.



Image 2

This final landfill site (TPA) was established in 1992 based on the ruin of one of the civil service employees who was located at the final landfill site which was not designed to be a landfill site. The sub-districts of Mei and Mare ilan were previously a designated forest. mbu i hin palm trees. However, in 1992 the existing land was converted into a waste landfill site. TPA Te i rju i n mei i s one of 3 final waste disposal sites (TPA) located in the city of Mei dan, namely TPA Namo Bintang and TPA STM Hilir Talu i n ke i na s 7. TPA Te i rju i n is located in the district of Mei dan Mare i lan, Mei dan City, North Sumatra Province. TPA Te i rju i n has an area of 13.8 hectares. The TPA which is located in the district of Mei dan Mare i lan can accommodate 200 trucks of waste entering and leaving TPA Te i rju i n every day. On average, this truck takes 2-3 times per day. Or if it is hit by a load of rubbish that comes in, a lot of 1,500 to 1,600 tons of rubbish can be collected in one day.

In this case, TPA Tejuin still uses an operating method in the management of waste. This method is a simple waste mining method where the waste is just spread out on a location, left to be discovered without security and left at a mining location. This landfill method requires a large area of land and the waste is dumped on the land. TPA Te i rju i n, which i nts to reveal the use of operating m ethod e that is still in progress. Ruin machine (Izharsyah, 2020) Ruin machine is one of the methods used in waste management which technically means that the waste that enters an area is just dumped like that and leveled without landfill. In this machineI implemented the method of operating this landfill with the help of me, using 16 heavy equipment such as a dumpster, an excavator, and a loader to level the dump of rubbish. The level of rubbish reaches 50 meters from the surface of the land cover. The waste that enters the landfill comes from various sources, including household and industrial waste, with differences between organic and inorganic waste. By skipping the TPA, we are implementing the Dumping Operation Law, we are carrying out innovation by establishing interesting cooperation with the Pangkalan Sui Sui PLTU. TPA J i i s i n place of organic waste as an alternative fuel for the core of the power plant, helping to reduce the reliance on coal as the main fuel. Before being sent to the PLTU, organic waste undergoes a processing process, including destruction.

system management rubbish with open dumping method applied at TPA Terjun Marlan own impact significant to environment, although there is a number of initiative innovative like Work The same with the Pangkalan Susu PLTU for utilization rubbish organic as material burn alternative. Method This still cause consequence negative, especially on pollution soil, groundwater, and air.

First, pollution land happen consequence seepage and percolation trash that is not under control. Stack trash that is not regular cause material chemistry dangerous and substances toxic to seep in to in land. This is bother fertility land and reduce his ability in support

growth plants . Besides those substances poisonous the can threaten ecosystem around the landfill.

Second , groundwater pollution become impact Serious others . Seepage from pile rubbish pollute groundwater sources in the surrounding area . Substances dangerous dissolved in water can reduce groundwater quality , so that the water does not Again safe For need domestic and also agriculture . Impact This the more critical If No There is system processing adequate leachate .

Third , pollution air happen consequence decay rubbish organic and combustion wild waste . Methane gas (CH₄) and hydrogen sulfide (H₂S) is produced cause smell No delicious and contributing to global warming . Besides that , particle dust and ash from the rubbish that was carried wind can bother breathing public around .

5. Conclusion

Based on the results of the research that has been conducted, several conclusions can be obtained, namely: 1) The method of final waste disposal at the Teirjuin Landfill is generally carried out using the open dumping system (open dumping system). The many disadvantages of the open dumping system that occur around the Teirjuin Landfill are; Garbage is still left scattered everywhere, and is not carried out according to Law Number 18 of 2008 concerning the establishment of a sanitary landfill system starting from the establishment of the TPA for 5 years, and at the Teirjuin TPA it has been established for 23 years and is still using the dumping system and as a result of the dumping system at the TPA, there is a lot of dust when experiencing the dry season and when it rains, the entrance road to the TPA is destroyed and cannot be used for garbage trucks to enter the Teirjuin TPA. 2) The condition at the Teirjuin TPA still lacks heavy equipment and many of them cannot be used according to their function. There is no management at the Teirjuin landfill such as making compost because the composting equipment is damaged and makes it impossible to minimize waste at the Teirjuin landfill.

The existence of the Teirjuin landfill which is very close to the residential area of the community produces positive and negative impacts, but the negative impacts produced are greater because they are related to the environment and public health. Unregulated waste dumping can cause hazardous chemicals and toxic substances to be absorbed into the soil, contaminating soil quality and reducing its fertility. Residue from waste dumping can also contaminate groundwater sources around the landfill, reducing the availability of safe and quality water. In addition, the decomposition of waste in the dumping operation method produces hazardous gases such as methane, which contribute to global warming and climate change. In addition, the risk of public health will also be disturbed by unpleasant odors and toxic gases from waste decomposition that can cause respiratory disorders and other health problems for people around the landfill. Diseases that can spread include respiratory tract infections, skin diseases, and diseases related to exposure to hazardous chemicals.

Limitation

It is recommended to the Meidan City Government (Peimko) to consider changing the management system at the Teirjuin TPA. There are two alternatives, namely by using a sanitary landfill system or the TPA location is moved. The Meidan City Government, especially the Meidan City Sanitation Service, should be able to improve waste management including planning, organizing, implementing, supervising and reporting (sanitation services) considering that in this case the implementation of services is less than optimal. If this cannot be improved, the Meidan City Government can form a Waste Management Agency in Meidan City. It is suggested that the sanitation service or the Meidan city government pay more attention to public health by providing various counseling or socialization that can increase public awareness of the importance of maintaining health. For researchers who are interested in continuing this research, it can be refined to be more complete and discussed in more detail about the environmental pollution found in the Meidan TPA.

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