

Optimization of Household Waste Management in Manado City

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Abstract

Garbage in Indonesia is a serious problem that has social, economic and cultural impacts. Waste management in almost all cities in Indonesia is experiencing problems, mainly due to the lack of Final Processing Sites (TPA). As a result, people often throw garbage in rivers, ditches, rivers and the sea. With a population that is in the top 10 in the world, Indonesia's waste production reached 65 million tons in 2016. Garbage causes various problems in society, including natural disasters such as floods. The lack of public awareness in disposing of waste in the appropriate place, as well as the lack of selection and recycling of waste, has an impact on natural disasters and damaged environment. The government needs to learn from the experience of the disaster and take preventive steps. The responsibility for waste management lies not only with the community, but also with the local government. The government needs to regulate and inform the public about proper waste management, as well as provide facilities that assist in waste management. The scale of waste management is carried out through the collection, transfer, processing and transportation of waste to the TPA. With population growth and regional development, the amount of waste generated is increasing. To maintain environmental sustainability, it is necessary to limit and reduce waste generation. Waste can also be turned into a resource through recycling and reuse. Therefore, the government makes national policies and strategies as well as guidelines for local governments in managing household waste and the like. Manado City refers to Regional Regulation Number 1 of 2021 in waste management. However, the volume of waste in Manado City continues to increase along with the rapid population growth. Limited garbage collection vehicles have caused some waste to go unmanaged and accumulate in rivers, drainages and other places. Lack of trash bins, delays in transporting waste from TPS to TPA, and poor TPA management are also problems. Research shows that there are several violations in waste management in Manado, such as a lack of public awareness in disposing of waste, the minimum number of garbage collection fleets, and delays in waste transportation. Garbage is still scattered in various corners of the city, including the coast and rivers. TPA management is also not optimal, causing public health and hygiene to be disrupted. Public awareness to dispose of garbage at the specified time is still lacking. In order to overcome this problem, it is necessary to increase public awareness, improve waste collection facilities and fleets, and improve the effective management of landfills. With these steps, it is hoped that waste management in Indonesia, especially in Manado City, can reduce its negative impact and become more sustainable.

Keywords waste, management, community, local government, environment

INTRODUCTION

Garbage in Indonesia is a very serious problem and is also a social, economic and cultural problem, almost all cities in Indonesia experience problems in managing waste. in the river. Not only in rivers due to the lack of Final Processing Sites, people also throw garbage into ditches, rivers and the sea. Indonesia is included in the top 10 countries with the largest population in the world. This does not rule out the possibility of causing a number of further problems, including the production of waste and its disposal. According to data from the Ministry of Environment and Forestry, Indonesia produced up to 65 million tons of waste in 2016 last year.



Garbage is often a problem in society. One of the consequences causes natural disasters such as floods. This is because people don't love the environment by continuing to throw garbage anywhere, both on the road and into the rivers. From these natural disasters, the government can learn so that in the future things like before will not happen again. Moreover, some people throw away all the trash without choosing it first, even though there are types of waste that can be recycled and reused so that waste generation is reduced. By treating waste properly, it can reduce land use and on the other hand it can have economic value, for example by recycling waste and then selling it for reuse. At that point, we cannot fully blame the community because the Regional Government also has a responsibility in managing this waste, such as making rules prohibiting littering and so on. According to Ehworm, the local government's responsibility in waste management is to regulate household waste, to be recycled or disposed of properly. In addition, the Regional Government also plays a role in informing or disseminating to the public that there are parties who can help manage waste, (J. Mantiri, 2018). The government's role in waste management can be carried out from all scales (city and environmental scale). From SNI 19-2454-2002 concerning Operational Technical Procedures for Urban Waste Management, government services for waste management are related to waste handling namely collection, transfer, processing and transportation. At these four stages, the government is tasked with providing services and facilities until the waste goes to the landfill and/or is processed accordingly.

As the population increases and the density of a rural or urban area increases, more and more waste is produced, including household waste and household-type waste. In the Regulation of the President of the Republic of Indonesia Number 97 of 2017 concerning "National Policy and Strategy for the Management of Household Waste and Waste Similar to Household Waste" Article 1 (1) explains that Household Waste is waste originating from daily activities in the household that are not including feces and specific waste, and Article 1 (2) explains that Household-like Waste is household waste originating from commercial areas, industrial areas, special areas, social facilities, public facilities, and/or other facilities. The regulation on waste management was made with the aim of preserving the environment and turning waste into a resource. As an effort to preserve the environment, this can be done by limiting waste generation and reducing waste so that the waste transported to the Final Disposal Site (TPA) is reduced. Furthermore, in an effort to make waste a resource, this can be done by recycling household waste or reusing waste (Regulation of the President of the Republic of Indonesia Number 97 of 2017 concerning "National Policy and Strategy for Household Waste Management and Household-like Waste," n.d.) . Then, from the Regulation of the President of the Republic of Indonesia Number 97 of 2017, the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.10 of 2018 concerning "Guidelines for Formulating Regional Policies and Strategies for the Management of Household Waste and Household Waste-like Waste". This Minister of Environment and Forestry Regulation was made as a basis for formulating Local Government Policies and Strategies in the Management of Household Waste and Household-like Waste in order to standardize the preparation of Provincial and Regency/City Regional Waste Management.

In general, Manado City's waste management policy refers to Regional Regulation Number 1 of 2021 concerning Waste Management, namely waste is collected, then transported and finally disposed of in a final disposal site (TPA). In Manado City, the volume of waste is increasing every year. The number of inhabitants is caused by population growth which continues to increase so that the volume of waste greatly affects the condition of the TPA. The waste generated in Manado City is 326,570 kg per day, and 10,123,670 kg is generated per month, so the waste generated in 2016 is 121,484,040 kg (Source: Department of Sanitation and Gardening of the City of Manado). The garbage fleet consists of 61 units of official and sub-district vehicles, while 20 units of external vehicles. The amount of waste transported to TPA is 60%, while 40% cannot be resolved, the unresolved amount of waste is in rivers, drainage, burned and others (Regional Regulation Number 1 of 2021 Concerning Waste Management, n.d.).

The results of research conducted by researchers found several violations in waste management in Manado, mainly because the community was not disciplined in disposing of waste in its place, the lack of provision of trash cans, the minimum number of motorbikes carrying garbage, the frequent delays in transportation from Temporary Shelters (TPS) towards the Final Processing Site (TPA), so that waste accumulates in TPS and pollutes the beauty of the city. Garbage is still scattered in the corners of the City and the coast, and the river is still a place for garbage and waste disposal. The fleet transport capacity available at the Manado City Sanitation Service is still minimal. The TPA has also not been managed and arranged properly so that it is not clean and disrupts the health of the people around the Sumompo Village, where the TPA is located. Public awareness to dispose of garbage at TPS according to predetermined hours (18.00-06.00 WITA) is also lacking.

METHOD

This research uses qualitative research because the objects in qualitative research are natural objects or natural settings. Natural objects are objects that are what they are, not manipulated by researchers. In this qualitative research, the instrument or research tool is the researcher himself, therefore the researcher as an instrument can also be validated to what extent the qualitative researcher is ready to carry out further research.

The reason researchers chose to use a qualitative approach is because a qualitative approach is an approach that is felt to be able to reveal every truth of what is the focus of the problem in this study, researchers can obtain any more in-depth information related to the situation experienced by carrying out any direct interaction or communication to people or participants, make every observation and analyze documents and notes in the field.

The qualitative research method is essentially a research method that is used or used to find out the actual situation or the natural state of a condition in an environment, in qualitative research the researcher is used as a key instrument or the main instrument in research, where the researcher must collect data by triangulation or a combination, analyzing data that is inductive and at the output of the research process which will put more emphasis on the meaning of generalizations (Sugiyono, 2017).



In conducting this research, the researcher used the descriptive analysis method, where in the qualitative research method there was one approach that was taken, namely the descriptive analysis method, because by using the descriptive analysis method the researcher was able to describe and present how the situation actually happened in a more structured way, so from Therefore, any problems that exist can be easily linked to the research being conducted. In this study, the problems are related to the implementation of the coastal border area policy in Bentenan Satu Village, Southeast Minahasa Regency.

RESULT AND DISCUSSION

Description of Research Data

In this study, it is necessary to describe the determinant factors and obstacles encountered in efforts to overcome the household waste problem. This can include internal factors such as lack of human resources, lack of budget, or lack of equipment and infrastructure, as well as external factors such as the level of public awareness about the importance of waste management and lack of support from the government.

In data analysis, the writer can use various techniques such as descriptive analysis, regression, factor analysis, and so on. This analysis will provide an overview of how effective the Manado City Environment Agency's strategy is in managing household waste and what factors influence the success or failure of this strategy.

In this discussion the author will describe the strategy of the Manado City Environmental Service in managing household waste in Manado City, North Sulawesi Province as well as the determinant factors and obstacles faced in an effort to overcome these obstacles.

Strategy for the City of Manado Environment Service

Based on the Strategic Plan for 2022-2026, the Manado City Environment Service, Manado City, in fulfilling its duties and functions based on the Manado City Vision and Mission, will carry out Mission 3 and Mission 4, namely:

- a. Infrastructure development, City arrangement, and expansion of connectivity.
- b. Sustainable regional development

From Mission 3 Manado City, the Manado City Environment Service has the following objectives: Realizing Manado, a Livable City, with 3 goals, namely:

1. Accelerating the improvement of accessibility and quality of decent housing and well-organized settlements.
2. Improving the quality of urban areas that are orderly and inclusive,
3. Better connectivity between regions within the city.

From Mission 5 Manado City, the Manado City Environment Service has the following objectives: Realization of City Development with Environmental Insight and Clean as well as Disaster Resilience and Adaptive to Climate Change, with 3 targets, namely:

1. Increased Capacity, Performance Accountability and Finance of the City Government of Manado;
2. Increasing the Quality of Waste Management;

3. Increasing the Quality of the Environment.

This meaning is based on Manado Mayor Regulation Number 47 of 2016 concerning Position, Organizational Structure, Duties and Functions and Work Procedures of the Manado City Environment Service Type A.

Waste Management Strategy in Manado City

In order to get an overview of the Waste Management strategy in Manado City, the following is data from interviews with the Head of the Environmental Service. The results of an interview with the Head of the Environmental Service regarding the waste management strategy in Manado City revealed several important points. The following is a complete discussion regarding the results of the interview:

1. **Holistic Approach to Waste Management:** The city of Manado has adopted a holistic approach to waste management. This approach includes four main pillars, namely reduction, recycling, processing and safe disposal. This approach ensures that the entire waste management cycle is properly attended to.
2. **Reducing Waste:** One of the strategies undertaken by the City of Manado is to increase public awareness about the importance of reducing waste. This is done through educational campaigns, socialization in the mass media, and direct counseling to the public. In addition, the government also encourages the use of environmentally friendly products and cooperates with business actors to reduce the use of single-use packaging.
3. **Recycling:** The city of Manado has set up recycling centers in strategic locations. This recycling center accepts various types of materials such as paper, plastic, metal, and glass. In addition, partnerships with local entrepreneurs who use recycled materials in their production have been formed. Recycling waste collection programs are also held at various points in the city.
4. **Waste Management:** Waste that cannot be recycled or reduced in quantity in Manado City is properly processed to reduce its negative impact on the environment. An integrated waste processing facility using modern technology has been built. Organic waste is processed into compost or biomass energy, while non-organic waste is separated and processed according to its type.
5. **Disposal of Untreatable Waste:** The City of Manado has final disposal facilities that comply with environmental safety standards. Waste that cannot be treated safely is destroyed by appropriate methods, such as incinerators or properly managed landfills. This process is strictly monitored to ensure that the waste generated does not pollute the environment.
6. **Future Plans:** The City of Manado has future plans and programs in waste management. One of the programs being planned is the development of a smart waste collection system that is integrated with technology. In addition, the implementation of volume-based waste rates is also being considered, which could promote more efficient use and reduce waste.
7. **Final Message and Suggestion:** The Head of the Environmental Service invites all Manado City residents to play an active role in waste management. Every individual has



an important role to play in reducing, recycling and processing waste properly. Collaboration from all parties is expected to create a cleaner and more sustainable city of Manado for future generations.

Holistic waste management, including reduction, recycling, treatment and safe disposal, is an important strategy to achieve a clean and sustainable city. Through this effort, the City of Manado hopes to become an example for other cities in effective and environmentally friendly waste management.

Waste management in Manado City requires the right strategy to achieve the expected strategic plans, goals and objectives. One of the strategic goals of the Manado City Environment Service is to improve the quality of waste management of the Manado City Environment Service. Regarding Manado City Waste Management by the Manado City Environment Service, the responsibility and focus of the Manado City Environment Service are three things, namely:

1. Processing Site Management A
2. Waste Management (Sumompo Landfill)
3. Watershed Waste Management (DAS)
4. Coastal Waste Management.

The strategy of the Manado City Environmental Service is as follows:

1. Improvement and development of waste management in Manado City
2. Outreach to community-based waste management.
3. Improving the quality of the performance of apparatus resources in the service and waste management officers at the Manado City Environment Service.
4. Create a work program according to the applicable duties, principals and functions.
5. Improving infrastructure, as well as supporting facilities and infrastructure for waste management.

Inhibiting Factors and Supporting Factors at the Manado City Environment Service in Waste Management in Manado City

Based on information gathered from observations and interviews with whistleblowers, there are still obstacles in efforts to realize effective and efficient waste management in Manado City. The current constraints can be in the form of external and internal factors at the Manado City DLH, but there are also supporting factors that are expected to help achieve maximum waste management in Manado City.

Inhibiting Factors in Waste Management in Manado City

The inhibiting factors in waste management in Manado City which are identified based on the research results are as follows:

a. Limited budget and late realization of the Manado City Environmental Service budget.

Budgeting at the Manado City Environmental Service in waste management is of course very large because there are many factors that influence it. Therefore, the settlement

of waste management problems must be completed in stages, because not all budgets proposed by the authorities can be accepted, because they must be adjusted. in the Manado City Regional Budget (APBD). Implementation of the budget was delayed because it had to go through the existing SOP (Standard Operating Procedure) stages and was also constrained by an inefficient system where budget acquisition for several programs, including payment of salaries, was limited to waste management employees.

1. The main factor is the limited budget

The Secretary to the Environmental Office explained that the main factor in the limited budget allocated to the Environmental Service was the limited financial resources of the local government. Each year, the budget obtained is limited and not always sufficient to meet all planned needs and programs.

2. Impact of limited budget on the realization of programs and activities

The Secretary of the Office of the Environment stated that the limited budget affected the realization of programs and activities at the Department of the Environment in a number of ways. One of them is the limitation of the scale or scope of the planned program. Some activities that are considered less priority should be postponed or cancelled. In addition, limited budgets can also affect the quality of program and activity implementation, because insufficient resources can hamper the effectiveness and optimization of implementation.

3. Efforts to overcome the challenge of limited budget

The Secretary of the Environment explained several efforts made to overcome the challenge of limited budget and ensure timely budget realization. One of them is to carry out careful budget evaluation and planning to allocate resources as best as possible in accordance with the main priorities and needs. In addition, the Environmental Service also collaborates with related parties, seeks additional sources of funds through collaboration with non-governmental organizations or other partners, as well as increases efficiency and savings in the use of the existing budget.

4. Steps to overcome delays in budget realization

The Secretary of the Environment explained that the steps taken to overcome delays in the realization of the budget included tighter monitoring and supervision of the process of using the budget. The Environmental Service strives to ensure that the budget is used according to a predetermined schedule. If there is a delay, they take corrective steps, such as negotiating with related parties or relocating the budget to programs or activities that are still possible to be realized in a shorter time.

5. Efforts to find alternative funding sources

The Secretary of the Environmental Office stated that the Environmental Service was making efforts to find alternative sources of funding outside the government budget. One of the ways is by cooperating with the private sector, donor agencies, or other partners. The



aim is to obtain additional support and funding from these parties in order to implement wider and higher quality environmental management programs and activities.

6. Last message or suggestion

The Secretary of the Environmental Office conveyed the message that it is important for local governments and other stakeholders to pay more attention and allocate an adequate budget for environmental management. He emphasized that a healthy and sustainable environment is very important for our lives. By prioritizing and allocating sufficient resources, environmental management programs and activities can be implemented properly and provide real benefits to society and our environment. The interview provides an overview of the challenges of limited budgets and the efforts made by the Manado City Environment Agency in dealing with them.

b. Lack of public awareness and knowledge about trash

The high volume of waste generated by the community can be measured by the volume of waste that goes to the TPA. From time to time, the volume of waste from each sub-district in TPA continues to increase due to a lack of public knowledge of the 4 principles of waste management, namely Reduce, Reuse, Recycle and Replace. Public awareness also about littering is still lacking, this is evidenced by the amount of waste in water disposal sites or ditches, trash in rivers and on sea coasts is still quite high.

In the interview, the researcher asked questions about the level of public awareness of the waste problem in the surrounding environment. The people interviewed acknowledged that the level of awareness is still low in their environment. They observe that many people still litter without regard to the impact on the environment. In addition, there are rarely efforts to sort and recycle waste, and reduce the use of single-use plastics. This shows that people still do not understand the importance of good waste management.

Next, the researcher asked the factors that caused the lack of public awareness about waste. The people interviewed mentioned two main factors. First, the lack of education and information conveyed to the public about the importance of good waste management. Many people are not aware of the negative impact of littering. Second, limited access to adequate waste management facilities is also an obstacle. The lack of landfills provided by the government makes it difficult for people to dispose of waste properly.

The researcher also asked about the efforts or initiatives that had been made to increase public awareness and knowledge about waste. The people who were interviewed mentioned several efforts that had been made, including campaigns on waste management and outreach by non-governmental organizations and the local government. They educate the public about the importance of sorting waste, recycling, and reducing the use of single-use plastics. In addition, several communities have also formed environmental care groups that are active in cleaning the environment and educating the surrounding community.

Finally, the researcher asked for suggestions or expectations from the community to increase awareness and knowledge about waste. The people interviewed hope that the government can improve education programs on waste management, especially for the

younger generation in schools. They stressed the need for continuous efforts to provide a better understanding of the importance of managing waste properly. In addition, the government is also expected to increase accessibility to adequate waste management facilities and strengthen supervision of illegal waste disposal. By having a comfortable place to dispose of waste and seeing the positive impact of good waste management, the community is expected to increase their awareness.

c. There is no Socialization Program on Waste Management.

The importance of routine socialization of the Waste Management program to the community is very much needed. Educating the public about the 4R principles in waste management is the right thing to be part of the government's social approach to the community. Communities who are able to understand the 4R principles are not only able to minimize the volume of waste, they can also be able to benefit materially. However, the limited budget of the Manado City Environment Service focuses more on a technical approach, namely overcoming the technical limitations of waste management, so that there is no routine urban waste management program, even though the agency always asks for any agenda regarding the importance of waste management to the community, but remain ineffective unless they have a special social program.

d. Unsupported infrastructure

The problem is that the Manado City Environmental Service does not have a TPA. The Garbage Bank is an important institution to make people aware that waste can also have economic value. The Environmental Service asked the waste bank to promote waste management as much as possible because the waste that is usually placed in the waste bank is persistent waste. A waste bank is needed to support waste management activities at TPA, coastal waste, and watershed waste.

e. Lack of Innovation in Waste Management

Sumompo TPA waste management continues to use the open disposal method, where waste that has arrived at the TPA is immediately disposed of to the TPA without waste segregation. Even though there are currently innovations, namely the Control Landfill method and the Sanitary Landfill method. With existing technology, waste disposal can be controlled and has neater supervision and can reduce pollution and reduce pollution. a smell and cleanliness of the existing environment.

f. Waste Management in Regions that is not yet effective and efficient The ineffective and efficient waste

Management in areas is seen when TPS in certain areas are neglected. Waste management in the area actually has to be effective and efficient because it is directly handled by the sub-district and kelurahan governments, however there is still a lot of garbage scattered around the TPS and the irregular hours for waste disposal have had an adverse impact. Indeed, there are areas where waste management has been well managed, but there



are still areas which have not been able to control it properly, so these areas are unsightly because the waste is out of control.

Supporting Factors in Waste Management in Manado City

The inhibiting factors in waste management in Manado City which are identified based on the research results are as follows:

a. Waste Management Is 1 of the Mayor's 3 Main Programs

Manado The Mayor of Manado as the head of the local area has made this waste management program a big thing so that it has received special attention from the mayor. The Mayor of Manado's main programs are garbage, traffic accidents and crime. The development of waste management is directly controlled by the mayor who has established a plan for monitoring waste management sites such as the Sumompo TPA, coastal areas and waterways as well as waste management. In every call and delivery from the mayor, the emphasis is on all ASN being pioneers in waste management in the city of Manado.

b. Central and Regional Government policies that support waste management.

Law number 18 of 2008 where the government and regional governments are tasked with ensuring the implementation of good and environmentally sound waste management. needed for human life and resources are in a safe population range, and in parallel increase the ability of natural resources to contribute to the national economy. The 2 legal products above regulate how waste is managed in Indonesia to ensure a clean environment. The mayor's regulation number 47 of 2016 regulates Position, Organizational Structure, Duties and Functions and Work Procedures of the Manado City Environment Service Type A and Regional Regulation number 1 of 2021 concerning environmental management and protection. These things are supporting factors for the implementation of waste management that need to be maximized by the environmental office of the City of Manado.

c. Waste management in the Region by District and Kelurahan Governments

Mayoral regulation number 33 of 2018 which regulates area-based waste management, namely that the sub-district government and sub-district government are responsible and have full authority over waste management in the region. The waste management carried out by the sub-district and sub-district governments is certainly a supporting factor for the waste management of the Manado City Environment Service where the agency can focus on waste management in landfills, coastal areas and watersheds while still coordinating with the sub-district and sub-district governments if there are problems that occur in the area. .

d. The potential for waste to be an investment value

Environmental services use disposal options, in this case renewable and recyclable waste. The environmental service opens the widest possible possibilities for third parties who want to cooperate in waste management, either by promoting the existence of a polluted place bank, etc. This can make it easier for scavengers to sell waste with economic value to attract buyers at the expected price.

The Efforts of the Manado City Environment Service in Overcoming Constraining Factors in Waste Management in the City of Manado

The efforts made by the Manado City Environment Service to deal with the inhibiting factors of Waste Management as disclosed by the Manado City Environmental Service Head are:

1. Provide input through research or verbally to the Regional Head as a policy maker regarding budget constraints and limitations at the Manado City Environmental Service regarding waste management that occurs in the Field.
2. Carry out direct monitoring and evaluation in the field where waste management is located, both at the Sumompo TPA, coastal areas and watersheds and assess the performance of officers in the field by finding out the constraints on existing facilities and infrastructure.
3. Facilitating gradual socialization services to the community about good waste management with the 4R system in stages.
4. Carry out optimization of waste management cooperation with sub-district and regional governments to control waste management constraints in areas including TPS, waste disposal hours, and waste fees for regional cleanliness
5. Collaborate with parties outside the organization to get profit on waste that can still be recycled and is efficient as a product from private companies
6. as well as entrepreneurs in the waste recycling sector. The potential for waste to be an investment value.

Strategy in SWOT analysis

In formulating a predetermined strategy, it is carried out using SWOT Analysis to analyze existing strategies optimally. SWOT analysis is a systematic identification of various factors to formulate company strategy. SWOT analysis is useful to help find steps that can be taken in planning activities or prioritizing strengths and opportunities and minimizing weaknesses and threats that exist in the environment. Several approaches in SWOT analysis are Strengths, Weaknesses, Opportunities, and Threats.

1. Strengths

Based on the research results and also through the information collected which has been discussed in the Obstacles and Supporting Factors of the Manado City Environment Service in Waste Management in Manado City, North Sulawesi Province, are as follows:

a. Government Policy Supporting Waste Management.

There is full support from the central and regional governments in efforts to improve waste management in Manado City. This can be seen from the existence of several policies or regulations related to waste management stipulated by the Regional Head which can encourage improvements to the existing system. So that it can have a positive impact on the community and state apparatus and all parties can support the waste management program in Manado City to create an environmentally sound area. There is a leadership commitment



to support waste management and establish policies that can be implemented easily by existing apparatus and officers.

b. Improved performance at the Manado City Environment Service

The Manado City Environment Service has reformed the organizational structure of DLH institutions to achieve performance in accordance with the policies and regulations set by the local government.

c. Adequate human resources

In total there are 52 Civil Servants of the Manado City Environment Service and 18 freelance workers as performance support in the Manado City Environment Service. The education level of the state civil apparatus at the Manado City Environment Service can be said to be adequate because out of a total of 70 people, 50 of them graduated from strata 1, 14 graduated from high school and 6 graduated from strata 2. Each ASN is also placed according to their respective areas of competence and ability respectively.

d. Infrastructure improvement and supporting facilities

Optimizing land use at the Sumompo TPA by building roads by stockpiling soil on waste that has previously been carried out by forming a road shoulder which is then coated with sand and stone aggregate so that garbage does not occur again in certain areas. The existence of 4 heavy equipment namely 2 bulldozers and 2 excavators also optimizes waste management so as to minimize land use. As well as the existence of three-wheeled vehicles that carry garbage in the watershed area plus a fleet of speedboats and 5 units of garbage-carrying boats in coastal areas.

Weakness

Weakness factors are things that certainly become an obstacle for an agency in carrying out its work program, as discussed in the Inhibiting Factors and Supporting Factors of the Manado City Environment Service in Waste Management in Manado City, North Sulawesi Province, as follows:

a. Limited budget Manado City Government

In carrying out programs and activities in one organizational unit, a budget is needed to support the main tasks and functions that have been determined. DLH Manado City needs a strategy in addressing the problem solving of cleanliness and environmental management in Manado City which uses it efficiently and effectively against budget constraints. Likewise, the budget disbursement process is slow due to a bureaucratic system that still has a lot of spans of control in other units that take care of regional financial disbursements.

b. Not Maximal Socialization Program

The importance of knowledge about waste and its management is very much needed in supporting waste management by the Manado City Environmental Service. The community as the main factor in waste production must have knowledge of how to manage

waste properly in the waste management outreach program.

However, the Manado City Environment Service as the state administrator in the environmental sector has the duty and authority to provide information about solid waste to the public, and still does not have a specific program to socialize waste management to the public, such as the Manado City Environment Service. public. must apply waste and succeed in reducing waste production in society.

c. Inadequate infrastructure

A waste bank is one of the necessary infrastructure in waste management. The Manado City Environmental Service does not yet have a waste bank, so that many of the waste that has been collected and disposed of from other areas has not been sorted and goes straight to final disposal which can make the Sumompo TPA land fill up quickly. Then there is no infrastructure used for the composting process of organic waste so that everything is immediately disposed of in the final disposal.

d. Lack of Innovation in Waste Management

Innovation is ideas, ideas and practices that have expectations in the future that require innovation in waste management. Waste management innovation at the Sumompo TPA is still not maximized because it still uses the Open Dumping method, has not used the control landfill or sanitary landfill methods which are better methods for waste management. This is also based on the limitations that the manager has, namely the Manado City Environmental Service but must be able to improve in the future to achieve even better waste management.

Opportunities

From the results of the study there are several factors that include opportunities for DLH Manado City in waste management in Manado City, namely:

a. The potential for waste to be an investment value

Currently there are many private companies engaged in the field of recycling waste into usable products. This makes waste that is considered as useless used goods of economic value. This opportunity must be utilized by the Manado City Environmental Service, which is in charge of the Sumompo TPA, to be able to sort waste that can still be recycled to become an economic value for final disposal.

b. Technology advances

The development of the times requires everyone to develop also in terms of technology and communication. Technological advances must be able to be utilized by the Manado City Environment Service in supporting Waste Management in Manado City. Each program can be made easier with the development of technology so that it is hoped that this opportunity will be utilized to achieve common goals.



c. Manado Mayor Regulation number 33 of 2018

Area-based waste management in accordance with the law product Perwal number 33 of 2018 is an opportunity in waste management. Subdistricts and kelurahans are given the responsibility for managing waste in their administrative work areas, this creates opportunities that can facilitate the performance of the Manado City DLH.

d. Demography bonus

In every program and policy made by the government, the demographic bonus factor is very important in its implementation. Innovative and productive community support is an opportunity in terms of waste management in the City of Manado. Therefore, the Manado City Environment Service must take advantage of this opportunity by providing opportunities for creative and innovative public education about waste and its management.

Threats

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In every program and policy made by the government, the demographic bonus factor is very important in its implementation. Innovative and productive community support is an opportunity in terms of waste management in the City of Manado. Therefore, the Manado City Environment Service must take advantage of this opportunity by providing opportunities for creative and innovative public education about waste and its management.

SWOT Analys Matrics

From the strengths, weaknesses, opportunities and threats that have been studied by analyzing these factors, so that appropriate and innovative alternative strategies can be obtained in waste management in Manado City with the SWOT Matrix above. So that based on the SWOT matrix above, alternative strategic formulations can be identified as follows:

a. SO Strategy

- (1) It is a strategy that uses power to take advantage of opportunities, internal environmental factors that exist in the City of Manado DLH. The SO strategy formulation is:
- (2) Performance Effectiveness and Efficiency of Apparatuses in carrying out their duties and functions based on applicable regulations The need for effectiveness and efficiency of task forces in carrying out their duties and functions or service personnel who have quality competence in order to respond to global challenges and changes in the fluctuating internal and external environment, including quality of human resources and natural resources to make a visionary policy to improve services, in this case to improve the quality of waste management in Manado City
- (3) Application of Information and Technology (IT) in Improving Waste Management It is necessary to develop models of waste management that are more attractive and can be carried out efficiently, such as developing a waste-based application that connects both waste managers who are the duties and responsibilities of the department at TPA Sumompo, regional coastal areas and watersheds as well as waste management in the region. This can help efficiently measure the volume of waste produced each day and make it easier for waste workers to work effectively.
- (4) Utilization of Collaboration with Other Organizations and Other Parties The existence of regional regulations governing area-based waste management in the City of Manado should be a strategy that helps improve maximum waste management. This makes it easier for the Environmental Service in waste management by being able to coordinate effectively and efficiently so that it becomes an advantage not an obstacle. Collaboration with entrepreneurs or communities who are willing to become facilitators in managing waste into marketable and useful materials can have a good impact on increasing the selling value of waste that can be recycled. As for collaboration with activists and environmentalists that can be done to improve the quality of waste management in Manado City.

b. ST Strategy

It is a strategy that uses the strengths of the organization to overcome threats. The aim is to identify internal environmental factors that exist in Manado City DLH by matching internal facts. As for the ST strategy formulation are:

- (1) Improving the Quality of Apparatus Resources Increasing the productivity of service performance in the field of investment is determined by the quality factor of good and adequate apparatus resources, especially in the mastery of science and technology. Every employee in the Government environment has their own main duties which have been arranged according to the position held. Therefore, the need for TRAINING for



every employee, so that they have qualifications in their field of work. So as to improve the quality of the apparatus.

- (2) Improving the realization and control of waste management in an even manner Increasing waste management accompanied by sectoral regional equity, taking into account the importance of forming groups concerned with waste and the environment in society to support the improvement of waste management. Thus, waste management in a region can develop more advanced and better, not limited to the Manado City Environmental Service but also waste management in the region.

c. Strategy WO

This strategy is obtained based on the utilization of opportunities by minimizing weaknesses. This strategy analysis is intended to find out how to obtain a strategy that is able to overcome the internal weaknesses of DLH Manado City in increasing regional investment by taking advantage of external opportunities to achieve goals. As for the ST strategy formulation are:

- (1) Technology-Based Garbage Bank Management Manado City Environment Service seeks to collaborate with third parties for waste bank management as an investment vehicle for the community by optimizing technological advances by creating a waste bank application that connects DLH, third parties and the community. DLH Manado City has the function of overseeing the distribution of 4R principles to third parties and the community. This is certainly able to support the improvement of the quality of waste management in the city of Manado.
- (2) Improving Modern Waste Management Innovation The rapid development of the times along with advances in technology has made everything easier with technology. Innovation is needed by government agencies to improve the quality of the institution. Currently, with the times, the Manado City Environment Service can increase innovation on a technology basis. Waste management technology using the sanitary landfill method can already be applied at the Sumompo TPA by utilizing better tools. The application of technological developments can also help manage waste in the region for the better.
- (3) Conduct Socialization in Collaboration with Regional Governments Socialization in the context of educating the public about programs or policies is an important matter in supporting government. The existence of policies set by the government that regulate waste management by DLH and regional governments is an opportunity for collaboration to utilize and coordinate which facilitates socialization of community-based waste management.
- (4) WT Strategy WT strategy is intended to find out how to create strategies that are able to overcome weaknesses to face external environmental threats. As for the formulation of the WT strategy are:
- (5) Improving Waste Management which is not yet effective and efficient. Conducive waste management will improve a clean living environment and have implications for a better community life. Waste management can be influenced by policy, institutional, apparatus

resources, infrastructure, and the community. Improving waste management with good consistency will improve people's quality of life.

Concept of Waste Management

From the results of the analysis of waste management by the Manado City Environmental Service through SWOT analysis, the results were studied using the concept of solving waste management problems with three factors, namely:

1. Social Approach

The social approach process carried out by the Environmental Service has not been maximized as seen from the lack of public awareness of the importance of community-based waste management with the 4R principle. This can be seen from the still high production of waste and the high volume of waste. Socialization to the community by the government must be further enhanced by optimizing technological advances to educate the public because the current socialization is not optimal.

2. Technical Approach

Technically, the waste management from the waste containers in the area to the final disposal of the waste at the Sumompo TPA is better than before, although it is still not effective and efficient. The arrangement of the Sumompo TPA is starting to experience improvement from before and will continue to be improved step by step. The obstacle that occurs is the innovation of waste management at the Sumompo TPA which has not been maximized because it still uses the Open Dumping system. Waste management in the regions is also still experiencing obstacles because not all sub-district and sub-district governments are able to work effectively and efficiently on waste management.

3. Economic Approach

The high production and volume of waste in the community indicates that the potential for waste that has economic value has not been achieved either by the community or the government. The Manado City Environmental Service is trying to collaborate with third parties to manage the waste bank as a means of investment for the community with technological advances through the creation of a waste bank application that connects DLH, third parties and the community. DLH's role is more focused on the supervisory function through the distribution of 4R responsibilities to third parties and the wider community by fostering creativity and investment innovation in waste management in Manado City.

Discussion of Research Results

Waste management by the Environmental Service is actually quite difficult, but with hard work all parties are starting to be under control. However, the obstacles that occur in waste management by the Department are that the budget realization by the government is still late and the budget constraints are so that sometimes it is the agency officials who have to deal with urgent budget issues first. Furthermore, the limitation of the scope of the Office's duties with the existence of Mayor Regulation No. 33 of 2018 concerning waste management



based on sub-districts and sub-districts, namely that all sub-districts and sub-districts have not been optimal in waste management in their respective regions. Abandonment of TPS in the area due to the lack of discipline by the waste transporters in the area so that a lot of waste is still scattered around the disposal area. The Department of the Environment cannot do more because of limited budgets that are only sufficient for programs within the agency, moreover waste management in the region has a policy of withdrawing waste fees from the community by the sub-district and urban village governments.

Waste management is a serious problem that must be handled properly by all parties, especially the Department of the Environment. However, it cannot be denied that waste management by the agency is quite difficult. Nevertheless, with hard work from all parties, waste management can be controlled.

However, in practice, there are still obstacles that need to be overcome. One of the obstacles that often occurs is the delay in the realization of the government's budget and the limitations of the existing budget. This resulted in that sometimes service officials had to tackle urgent budget issues in advance. Therefore, efforts are needed to increase the budget allocation for waste management so that waste management can run optimally.

Apart from that, the limited scope of the Dinas' duties is also an obstacle in waste management. With Mayor Regulation No. 33 of 2018 concerning waste management based on sub-districts and sub-districts, all sub-districts and sub-districts have not been optimal in managing waste in their respective regions. Therefore, there needs to be good coordination between the Environment Agency and the sub-district and village administrations in waste management.

Furthermore, the neglect of TPS in the regions is also an obstacle in waste management. This is due to the lack of discipline by waste transport officials in the area so that a lot of waste is still scattered around the disposal area. Therefore, there needs to be an effort to improve the discipline of waste transport officers and improve waste disposal facilities and infrastructure.

Apart from that, the Environment Agency is also experiencing budget constraints which are only sufficient for programs that are in the service. This makes waste management in the region have a policy of withdrawing waste fees to the community by the sub-district and urban village governments. Therefore, there needs to be an effort to increase public awareness in waste management so that it can help reduce the burden on waste management by the Environment Agency.

In overcoming these obstacles, it is necessary to have good cooperation between the Environmental Service and related parties, such as the sub-district, urban village, and the community. In addition, there needs to be efforts to increase budget allocations and improve the waste management system so that it can run better and more effectively. Thus, waste management in the region can be controlled and run well.

CONCLUSION

The conclusions that can be obtained from the research that has been carried out and the discussion that has been described regarding the Strategy of the Manado City

Environment Service in Waste Management in Manado City, North Sulawesi Province, include the following:

1. Strategy of the Manado City Environment Service in Waste Management.
 - a. Improvement and development of waste management in the City of Manado, among others, is carried out with internal and external cooperation in order to create conditions for optimal waste management.
 - b. Dissemination of community-based waste management as a whole by involving all civil servants as the main movers.
 - c. Improving the quality of Resources and Apparatus and waste officers in the waste management service system with competence based on information technology (IT) and knowledge of the conditions faced in improving performance d. Creating a performance program that is in accordance with the main tasks and functions with various innovations and creativity of the City of Manado DLH
 - d. Improve infrastructure, facilities and infrastructure to support waste management, and find solutions to improve the quality of waste management.
2. Inhibiting Factors and Supporting Factors for Waste Management
 - a. Inhibiting factors consist of:
 - Limited budget and late realization of the Manado City Environment Agency budget
 - Lack of public awareness and knowledge about waste. Lack of public awareness and knowledge about waste
 - There is no Socialization Program on Waste Management
 - Unsupported infrastructure
 - Lack of Innovation in Waste Management
 - Waste Management in Regions that is not yet effective and efficient
 - b. Supporting Factors consist of
 - Waste Management is 1 of the 3 Main Programs of the Mayor of Manado
 - Central and Regional Government policies that support waste management
 - Management of waste in the Region by District and Kelurahan Governments
 - Waste potential to be an investment value
3. Efforts made to deal with inhibiting factors.
 - a. Provide input through research or verbally to the Regional Head as a policy maker regarding budget constraints and limitations at the Manado City Environmental Service regarding waste management that occurs in the field.
 - b. Carry out direct monitoring and evaluation in the field where waste management is located, both at the Sumompo TPA, coastal areas, and watersheds and assess the performance of officers in the field by finding out the constraints on existing facilities and infrastructure.
 - c. Facilitating gradual socialization services to the community regarding good waste management with the 4R system in stages.



- d. Carry out optimization of waste management cooperation with sub-district and regional governments to control waste management constraints in areas including TPS, waste disposal hours, and waste fees for regional cleanliness.
 - e. Collaborate with third parties to benefit from recycled and efficient waste as a product from various parties that focus on recycling waste into investment value.
4. Strategy Formulated Using SWOT Analysis for Waste Management in the City of Manado
- a. StrategySO
 - Apparatus Performance Effectiveness and Efficiency in carrying out duties and functions based on applicable regulations
 - Application of Information and Technology (IT) in Improving Waste Management
 - Utilization of Cooperation with Third Parties
 - b. StrategyST
 - Improved Quality of Aperature Resources
 - Improving the realization and control of waste management evenly.
 - c. StrategyWO
 - Technology-Based Waste Bank Management.
 - Improvement of Modern Waste Management Innovation
 - Carry out socialization in collaboration with regional governments
 - d. StrategyWT
 - Improving Waste Management which is not yet effective and efficient

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