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Implementation of Domestic Wastewater Treatment Installation Assistance Policy in Gorontalo City, Indonesia

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Abstract

Wastewater pollution that causes health problems with several infectious diseases, namely skin diseases, diarrhea, influenza and cholera, is increasing every year with statistical data from the city of Gorontalo. With this, the Gorontalo city government launched a program to assist in making bathrooms, toilets, and domestic wastewater management channels. Which is given to the people of the city of Gorontalo. The quality of government services in wastewater management assistance has a standard, namely that each house must have at least one access to domestic wastewater treatment and the recipients of assistance are lower middle class people, low-income people and people whose domiciles are affected by wastewater pollution. The method used by the researcher is a descriptive qualitative method using a theory developed by Daniel Mazmanin and Paul A. Sabatier called A Framework for Implementation Analysis. There are three groups of variables that influence the success of implementation, namely: (1). Characteristics of the problem (tractability of the problem). (2). Characteristics of policies/laws (ability of statute implementation). (3). Environmental Variables (nonstatutory variables affecting implementation). However, the reality on the ground is that the aid provided to the community is extensive and often not well-targeted. Many public toilet facilities that were built are unused and damaged. Furthermore, aid intended for the poor is instead received by those who are not classified as poor. Many people also lack understanding of proper wastewater management, so the program's objectives are not fully achieved. By reconstructing the theory of Daniel Mazmanin and Paul A. Sabatier, researchers get a novelty, namely the potential for implementation management or resource management. And recommend the existence of educators to provide counseling on wastewater treatment installations and the creation of Centralized Wastewater Management Channels or SPALT

Keywords: Implementation Analysis of Wastewater Management Assistance

INTRODUCTION

The poverty rate in Gorontalo City is still very high, this is a complex problem that occurs in Gorontalo City. The Gorontalo City Government in overcoming poverty problems related to health and the environment caused by domestic waste pollution. The government provides assistance in the form of bathrooms, toilets, wastewater channels and septic tanks for the people of Gorontalo City. Recipients of assistance for wastewater systems are often communities that face poor health challenges, many also experience environmental pollution caused by poor wastewater management. Domestic wastewater pollution continues to be a major challenge in the context of urban development and population growth, especially in the context of inadequate wastewater treatment (Pingping et al., 2019). Health is important for society because without good health, every community will find it difficult to carry out daily activities. There are various ways to anticipate health problems caused by domestic wastewater pollution. Government efforts to overcome this include assistance in the provision of ideal or standard MCK (Bathing, Washing, Toilet) bathroom facilities. With pipelines to people's homes that allow access to sanitation, in addition, the construction of septic tanks is an important part of the wastewater management system. But in reality, there are still many people whose MCK conditions are not yet adequate, such as: the absence of decent buildings, the construction of decent sanitation, or good access to sanitation. And the construction of septic tanks. If this is left unchecked, it will have a bad impact.

Such as diarrhea, skin diseases, intestinal inflammation, cholera, groundwater pollution, rivers, lakes, seas and air pollution in the surrounding environment (Wibowo et al., 2020).

To restore environmental damage and encourage energy efficiency. In the wastewater management installation in accordance with PUPR Regulation No. 29 / PRT / M / 2018. Regarding the quality standards of domestic wastewater services, each house has. At least one access to domestic wastewater treatment. Through (Domestic Wastewater Management Channels), and the recipients of this basic service are. Low-income poor people, or people who live in areas affected by wastewater pollution. This assistance program is for people in the city of Gorontalo. This assistance is made in one sub-district area, which is in the city of Gorontalo spread across all sub-districts in the city of Gorontalo. With recipients of the wastewater installation assistance program. For several households. Namely, sub-districts with a minimum of 30 families who can utilize the installation, this facility. Which aims to support environmental protection programs, reduce the burden of environmental pollution. As well as restoring the level of environmental damage, also encourage energy efficiency. Grant funds are provided for each new or old house connection that is built and functioning properly. The amount of this grant fund will be given IDR 4 million per house connection, funds will be given for each improvement of the IPAL (Wastewater Management Installation). In accordance with the planning that has been agreed upon by the verification team.

In the city of Gorontalo has a wastewater management installation, this is an important infrastructure in life because it covers very important interests and must be developed by the Gorontalo city government, in several areas abroad this wastewater has been developed for several sectors of life following the theory developed by Milton Friedman risk to price. The program launched by the government through Cipta Karya on IPAL (Wastewater Management Installation) which is expected to help lower-middle-class people with low incomes to improve their health levels.

There are several things that need to be discussed on matters relating to poverty, namely:

a). Poverty Theory

To study poverty, the social functioning approach emphasizes four points, namely (Edi Suharto, 2015): 1). Poverty should be viewed dynamically. Which concerns the efforts and abilities of the poor in responding to their poverty. In this first point, including the effectiveness of social networks, in carrying out their social functions, where the social networks in question also include community institutions, and local anti-poverty programs. 2). Using indicators, composites to measure poverty, with the unit of analysis of the family, or household, and the social networks around it. 3). Emphasizes more on the concept, social ability, rather than just the concept of income. In photographing the conditions and dynamics of poverty. 4). The social ability of poor families is focused on several key indicators, which include the ability of poor families.

b). Dimensions and Characteristics of Poverty

Poverty can be seen from the indicator of the fulfillment of basic needs that are not sufficient/adequate. These basic needs include food, clothing, shelter, health, education, and transportation. While underdevelopment, for example low productivity, weak human resources, limited access to land. Whereas dependence on the agricultural or food sector is still very strong, weakening local/traditional markets. Because it is used to supply international trade needs. In other words, the problem of underdevelopment concerns structural (policy) and cultural. One of the measuring instruments that can be used to measure the level of poverty experienced by a person or group of people is the poverty indicator, which is used by Bappenas.

The poverty indicators related to wastewater management assistance are: (a). Limited access to health, the indicator is seen from the limited access to health and the low quality of health services. Lack of reproductive services, the distance to health service facilities, the high cost of treatment and care. (b). Limited access to education. This indicator is measured from the

quality of education available, the high cost of education, limited educational facilities, low opportunities to obtain education. (c). Limited access to housing and sanitation services. The indicators used are the difficulty of having a healthy and habitable house, and a healthy and decent residential environment. (d). Limited access to clean water. The indicators used are the difficulty of obtaining clean water, limited control of water sources, and low quality of water sources. (e) Limited access to land. The indicators used are the structure of land ownership and control, uncertainty of ownership and permits.

Ownership and permits in the construction of IPAL channels must be one of the requirements for the construction of IPAL and the Wastewater Treatment Installation assistance program is carried out annually amounting to Rp. 400,000,000, - (Four Hundred Million Rupiah). which is given to the people of Gorontalo City in each sub-district with a minimum of 30 heads of households. but sometimes there are areas that do not receive this assistance due to limited funds from the government. That was said by Opik, one of the ASN from the Directorate General of Human Settlements who was visiting Gorontalo, this is in accordance with the regulation of the PUPR Ministry number 4 of 2017, at that time the Director General of Human Settlements was monitoring activities, regarding this Wastewater Treatment Installation for the smooth running of this assistance program. So that this assistance program can be distributed to the community, especially the community in the city of Gorontalo.

Wastewater management is a critical aspect in maintaining environmental cleanliness and public health. Wastewater that is not managed properly can cause various environmental problems, including water, soil, and air pollution, and threaten the welfare of ecosystems and human health. Therefore, the implementation of wastewater management assistance policies is very important to ensure that wastewater is managed in an effective and sustainable manner. Planning the reuse of treated wastewater can reduce groundwater withdrawals and reduce discharges to surface water, which is carried out with each construction of a Wastewater Treatment Plant (de Anda & Shear, 2021).

Poor wastewater management can have significant negative impacts on public health. Here are some of the main ways in which it can affect communities: (1). Waterborne Diseases: Untreated or poorly treated wastewater can contaminate drinking water sources with pathogens such as bacteria, viruses, and parasites. This can lead to outbreaks of waterborne diseases such as cholera, dysentery, and typhoid fever. (2). Chemical Contamination: Wastewater often contains hazardous chemicals and heavy metals from industrial processes. These contaminants can enter water bodies and the food chain, posing long-term health risks such as cancer, neurological disorders, and reproductive problems. (3). Antimicrobial Resistance: The presence of antibiotics and other drugs in wastewater can contribute to the development of bacteria that are resistant to antimicrobials. This makes infections more difficult to treat and increases the risk of spreading disease. (4). Vector-Borne Diseases: Stagnant water from poorly managed wastewater systems can serve as a breeding ground for disease-carrying vectors such as mosquitoes. This can lead to an increase in vector-borne diseases such as malaria and dengue fever. (5). Skin and Eye Infections: Direct contact with contaminated water can lead to skin and eye infections. This is especially a risk for people who work in or live near areas with poor wastewater management. (6). Nutrient Pollution: Excess nutrients from wastewater, such as nitrogen and phosphorus, can lead to algal blooms in water bodies. These blooms can produce toxins that are harmful to human health and can also reduce oxygen levels in the water, affecting aquatic life.

Stakeholder participation is an essential component of sustainability that has not been universally implemented in water system planning and design. The importance of timely stakeholder participation in decision-making is not unique to the water industry and has been recognized as a key component of socio-technological planning and design methodologies in natural resource management and sustainability projects (Guest et al., 2009).

Municipal governments install wastewater treatment plants to supply national resource consumption. Depending on the resource, the supply potential may vary greatly. The resource recovery technologies investigated in academia are comprehensively and critically reviewed. The section identifies nine non-technical barriers mentioned in the literature that must be overcome to successfully implement the technology into wastewater treatment process design. These barriers relate to economics and value chain development, environment and health, and societal and policy issues (Kehrein et al., 2020)

Wastewater management assistance policies typically include a range of programs and initiatives designed to support local governments, businesses and communities in improving their wastewater management capacity. These programs can include funding, technical training, infrastructure upgrades and strict oversight. The goal is to create efficient and sustainable wastewater management systems that reduce negative impacts on the environment and human health.

Implementation of this policy requires collaboration between various stakeholders, including the government, private sector, non-governmental organizations, and communities. With good cooperation, it is hoped that wastewater management can be significantly improved, so that it can support sustainable development and a better quality of life for all levels of society. The availability of clean water highlights the management gap, challenges and future research needs in terms of water pollution pressures caused by rapid urbanization and industrial expansion without adequate solid waste management and wastewater management facilities, as well as agricultural activities (Getachew, 2021).

To see the implementation of water resource security policies in urban expansion and in terms of population, economic growth, and water use efficiency. Most of these studies indicate the need for integrated policy interventions in balancing water supply and demand at the regional level, and to avoid future water resource shortages, scenario analysis is carried out using these parameters as control variables (Tianhong, 2019).

Researchers use a model developed by Daniel Mazmanin and Paul A. Sabatier called A Framework for Implementation Analysis. There are three groups of variables that affect the success of implementation, namely: (1). Characteristics of the problem (tractability of the problem). (2). Characteristics of policy/law (ability of statute implementation). (3). Environmental variables (nonstatutory variables affecting implementation).

RESEARCH METHODS

Data and data sources were obtained by researchers from primary and secondary data. The location studied was the Gorontalo City area. The method used was a qualitative method by interviewing resource persons, namely the Gorontalo City PU Office, sub-districts and recipient communities. The author uses the Milles and Hubberman analysis method. Policy Implementation to analyze assistance to the Gorontalo city community in the development of wastewater management. In the form of MCK, bathrooms, drainage channels, and septic tanks. This assistance is given to the Gorontalo city community, who are below the poverty line who have low incomes and are affected by wastewater pollution

RESULT AND DISCUSSION

Researchers use an analytical knife for the problem of implementing wastewater treatment installation assistance policies using a model developed by Daniel Mazmanin and Paul

A. Sabatier called A Framework for Implementation Analysis. There are three groups of variables that affect the success of implementation, namely:

1. Characteristics of the problem (tractability of the problem).

The results of the study, assistance provided to the community is sometimes often not on target due to lack of manpower in verifying data in the field. This is reinforced by an interview with a resident of Donggalla, Gorontalo City, Pepy, who said "the government sometimes does not look directly at the location of the recipient of assistance, residents who are able are given assistance to make MCK". From the research data in Gorontalo City, it shows that the assistance provided to the people of Gorontalo City is only assistance in making public toilets and private toilets and toilet drainage because many lower middle class people do not have their own bathrooms, so the government provides assistance in the form of bathrooms, septic tanks and channels to the people of Gorontalo City. The following table is data on IPAL assistance for the people of Gorontalo City.

Table 1. Wastewater Treatment Installation Assistance for Gorontalo City

No	Area	Year	Description	Aid Recipient	Amount of Aid
1	Kec. Hulontalangi, Kel Pohe	2015	Construction of Communal IPAL, SR and Rehabilitation	257 KK	339.625.000
2	Kelurahan Tapa	2015	Bathroom Construction	200 KK	400.000.000
3	Kelurahan Siendeng	2015	Bathroom Construction	200 KK	400.000.000
4	Kelurahan Limba U1	2015	Bathroom Construction	200 KK	400.000.000
5	Kelurahan Huangobotu	2015	Bathroom Construction	200 KK	400.000.000
6	Kelurahan Libuo	2015	Bathroom Construction	200 KK	400.000.000
7	Kecamatan Dungingi	2015	construction of communal wastewater management installations and house connections	218 KK	319.275.000
8	Kelurahan Limba B	2015	construction of communal wastewater management installations, house connections and Rehabilitation	159 KK	319.275.000
9	Kelurahan Tamalate	2015	construction of communal wastewater management installations and house connections	176 KK	339.625.000
10	Kelurahan Donggalla	2015	construction of communal wastewater treatment installations	257 KK	339.786.000
11	Kompleks Pasar Pilolodaa	2015	construction of communal wastewater treatment installations	135 KK	217.998.000
12	Kecamatan Domboraya	2016	construction of communal wastewater treatment installations	249 Jiwa	363.664.000
13	Kelurahan Buliide	2016	construction of communal wastewater treatment installations	178 Jiwa	367.000.000

14	Kelurahan Donggala	2016	construction of communal wastewater treatment installations	245 Jiwa	368.786.000
15	Kelurahan Tapa	2016	construction of communal wastewater treatment installations	215 Jiwa	441. 466.760
16	Kelurahan Liluwo, Asrama TNI	2016	construction of communal wastewater treatment installations		443.000.000
17	Kelurahan Moodu	2016	construction of communal wastewater treatment installations	258 Jiwa	443.773.900
18	Kec.Sipatana, Kel. Moodu	2017	Bathroom Construction		400.000.000
19	Kelurahan Tapa	2018	New construction of residential scale domestic wastewater management channels	200 Jiwa	355.000.000
20	Kelurahan Tenda	2018	New construction of residential scale domestic wastewater management channels	235 Jiwa	355.000.000
21	Kelurahan Tenilo	2018	construction of communal scale septic tanks	125 Jiwa	250.000.000
22	Kel. Dembe II	2018	construction of communal scale septic tanks	125 Jiwa	250.000.000
23	Kel. Bulide	2018	construction of communal scale septic tanks	125 Jiwa	250.000.000
24	Kel. Dulomo Utara	2018	construction of communal scale septic tanks	125 Jiwa	250.000.000
25	Kel. Padebuolo	2019	New Construction of Domestic Wastewater Management Channels on a Residential Scale	125 Jiwa	425.000.000
26	Kel. Tenilo	2019	Construction of Urban Individual Scale Septic Tanks		212.500.000
27	Kel. Buliide	2019	Construction of individual scale septic tanks		212.500.000
28	Kel. Ipilo	2020	construction of communal scale septic tanks		285.000.000
29	Kel. Moodu	2020	Construction of individual scale septic tanks in rural areas	396 Jiwa	513.500.000
30	Kel. Leato Selatan	2020	Construction of individual scale septic tanks in rural areas	520 Jiwa	676.000.000
31	Kel. Wongkaditi	2022	construction of communal scale septic tanks	250 Jiwa	353.948.000
32	Kel Ipilo	2022	construction of communal scale septic tanks	250 Jiwa	400.000.000

33	Kel. Bulotadaa Barat	2022	Construction of Urban Individual Scale Septic Tanks		400.000.000
34	Kel. Dembe I	2022	Construction of Urban Individual Scale Septic Tanks		500.000.000
35	Kel. Lekobalo	2022	Construction of individual scale septic tanks		500.000.000
36	Kel. Moodu	2022	Construction of individual scale septic tanks		500.000.000
37	Kel. Padebuolo	2022	Construction of individual scale septic tanks	250 Jiwa	500.000.000
38	Kel. Leato Utara	2022			500.000.000
39	Kel Talumolo	2022			500.000.000
40	Kel. Wongkaditi Timur	2022			500.000.000
41	Kel. Dulomo Selatan	2022			500.000.000
42	Kel. Dulomo Utara	2022			500.000.000
43	Kel. Dembe Jaya	2022			500.000.000

Data Source from the Public Works Department

From the table above, it can be seen that a lot of assistance has been given to the community. This is a form of attention from the Gorontalo government towards poor communities or low-income communities as well as communities affected by wastewater pollution.

2. Characteristics of policies/laws (ability of statute implementation).

a. Environmental Policy

The theory put forward by Anderson (Tachjan, 2008:16) states that, "Public policies are those policies developed by government bodies and officials". In this case, public policy is stated as a policy developed by government agencies and officials. This formulation provides an explanation that public policies are made by the government, as an authorized organization. Making it formal at the same time, which has legal force, to be implemented (Septiana et al., 2023). In addition, the one known as an environmental policy expert, namely Elinor Ostrom, is famous for her theory of "Governing the Commons", which highlights how local communities can effectively manage shared natural resources (commons) without the need for state intervention or market mechanisms. In his book Governing the Commons (1990), Ostrom argued against the more pessimistic view of commons management known as the "Tragedy of the Commons," arguing that local communities are often able to manage common pool resources in a sustainable manner, without the need for outside intervention, as long as they have strong local institutions to regulate the use of those resources. Ostrom identified several basic principles necessary for successful management of common pool resources. In his book The Design Principles for Collective Management of Common-Pool Resources (1990) (Williams, 2018).

b. Government Services for Wastewater Management Quality Standards

One interesting view of the public is the perspective of the public as consumers, the word consumer here is interpreted as individuals and groups served by what are called street-class bureaucrats. In this theory, it is said that the government is a place that provides services and the community is the recipient of the service.

To restore environmental damage and encourage energy efficiency in wastewater management installations in accordance with PUPR Regulation No.29/PRT/M/2018 concerning domestic wastewater service quality standards, each house has at least one access to domestic wastewater treatment through SPALD-S or SPALD-T, and the recipients of this basic service are poor people with low incomes or people who live in areas affected by wastewater pollution.

Public policy is needed in order to handle the government quickly but also accurately so that the complex and heavy problems faced by the government can be resolved immediately. This

condition ultimately places the government and other high state institutions in difficult policy choices. The policies taken sometimes help the government and the Indonesian people get out of a problem. But the opposite can also happen, namely delegitimizing the government itself. A policy expert, Anderson, formulates policy as the behavior of a number of actors (officials, groups, government agencies) or a series of actors in a particular field of activity. Sometimes lay people are confused and cannot distinguish between policy and politics (Anderson, 1979).

The law used in wastewater management assistance is the regulation of the Minister of PUPR no. 29 of 2018 concerning the quality standards of safe and good wastewater management services for lower middle class communities, low-income communities and communities affected by wastewater pollution. But in reality, much of the assistance is not on target. Meanwhile, the Gorontalo City Regulation on Wastewater Management Number 9 of 2016 which regulates, supervises and manages wastewater regulates SPALD (Domestic Wastewater Management Channel) and SPALD-T Centralized Domestic Wastewater Management Channel, The results of the study showed that the Gorontalo City Government did not have cadres in providing counseling on SPALD and SPALD-T wastewater management assistance.

3. Environmental Variables (nonstatutory variables affecting implementation).

a. Environmental Theory

Environmental theories include. Biocentrism Theory According to Albert Schweitzer in A. Sonny Keraf's book, biocentrism ethics is based on. The awareness that life is sacred. This awareness encourages humans to always try, maintain life, and treat life with respect (Saputra, 2011). For Albert Szhweitzer, a truly moral person is someone who submits to the urge to help all life, when he himself is able to help and avoid anything that endangers life (Santoso & Supriyadi, 2014). Biocentrism ethics is based on the unique relationship between humans and nature, and the values that exist in nature itself. Nature and all its contents have dignity and value in the midst and in the community of life on earth. Nature has value because there is life in it (Septiani, 2020). Regardless of whatever moral obligations and responsibilities humans have towards fellow humans. Humans have obligations and moral responsibilities towards all creatures on this earth, for the benefit of humans.

b. Ecology

Literally, environmental ecology, especially in aquatic ecosystems, means the science that studies organisms in their habitat or in other words, studies the reciprocity between organisms and their environment. Ecology according to Farrel Heady (1996) practically places the study of ecology as the core of the spiral social system, the bureaucratic environment consists of several layers that surround it, the outermost layer is the social system, the middle layer is the economic system or the economic aspect of the social system while the deepest layer is the political system which includes the administrative subsystem with bureaucracy as the core or center. The government as an organism in ecology has a relationship between one organism and another and interacts reciprocally in an unbroken chain. The central concept in ecology is the ecosystem. The ecological system is formed because of the reciprocal relationship between living things and their environment. Subsystems that interact with each other in the household of the organization are called ecosystems. Each existing component has its own function. As long as the components carry out their functions properly, the ecosystem is in balance (Hasibuan, 2019). Ecology written in the book written by William J. Siffin entitled "Toward The Comparative Study of Public Administration", openly states the impossibility of ignoring the relationship between public administration and its social environment. This means that as written by Otto Soemarwoto, all human actions that cause water to be polluted by domestic waste, namely that which comes from households, are very complicated because the sources of pollution are very many, because of the lack of ability to overcome the pollution due to a lack of understanding of wastewater management so that the community is accustomed to using polluted water (Soemarwoto, 1985).

Environmental policy on wastewater management assistance management. Which must be achieved through commitment, to the decisions taken. To overcome problems related to domestic wastewater on land, or areas, which are related to environmental ecology. There are in it, animal and plant populations. Animal and plant populations are. Becoming the government's concern, emphasized on the extent to which the government can describe its desires, in a formulation. Clear and measurable outputs, such as several environmental regulations, may have been prepared. So that the results have been formulated, but the government, is so slow to determine and the results are likely not to appear.

In its determination, and the results are likely, not to appear or be seen. Because of the government's attention, which is not only given to the results issued. But also whether the desired changes have occurred. Such as reduced budget, environmental damage, or resource allocation, which does not yet exist. With the challenges faced, so that the policies implemented can get output results with other factors that affect the environment.

The improper wastewater management system causes the community to be affected by wastewater pollution such as skin diseases and diarrhea, there is no training and education on wastewater management for the community, there is also no assistance program for the community for wastewater management installations and there is no consultation service on wastewater management. In this case, the government rarely provides counseling on Health from the impact of wastewater pollution.

Wastewater treatment aims to: eliminate unpleasant odors. One of the main problems that is often complained about is the unpleasant odor that comes from the wastewater treatment process. This odor can be very disturbing and spread to the surrounding area. And also eliminate contaminants, make the environment healthier, maintain water cleanliness, free the air from pollution, maintain the safety of the air that is inhaled. The environment around wastewater management is not well maintained so that public health is disturbed. The results of the study obtained by researchers who studied environmental variables that many people are affected by wastewater pollution. So that people are affected by diseases due to poor wastewater management. The data obtained from the Gorontalo city statistics center shows that every year diseases caused by domestic wastewater pollution always increase. The following is a table of diseases caused by domestic waste pollution.

Table 2. Number of Diseases Caused by Domestic Wastewater Pollution in 2019

No	Tipe Of Disease	Number of People Suffering from Disease
1	Common Cold	36.180
2	Essential(primary) hypertension/hipertensi esensial	9.366
3	Arthritis	7.731
4	Contact dermatitis	7.128
5	Gastritis	6.813
6	Skin abscess	5.202
7	Influenza	5.037
8	Indigestion	4.952
9	Diarrhea	4.120
10	Tonsillitis	3.959

Data source: Gorontalo City Statistics

From the data described above, it can be seen that the impact of domestic wastewater pollution can be felt by the community, therefore assistance in the construction of wastewater management installations is provided to the people of Gorontalo City.

Based on the phenomena in the field, the researcher concluded that there was a lack of education and community participation, because the lack of education and community

participation in wastewater management can cause misunderstanding and dissatisfaction with the existence of IPAL. Overcoming these problems requires a comprehensive approach, including technical improvements, routine maintenance, and education and active participation from the community. From this empirical fact, the researcher got one innovation to handle the problem of wastewater management assistance, namely the variable potential management implementation or resource management.

The following is a picture of the research process carried out by the researcher so that it can be understood by the reader.

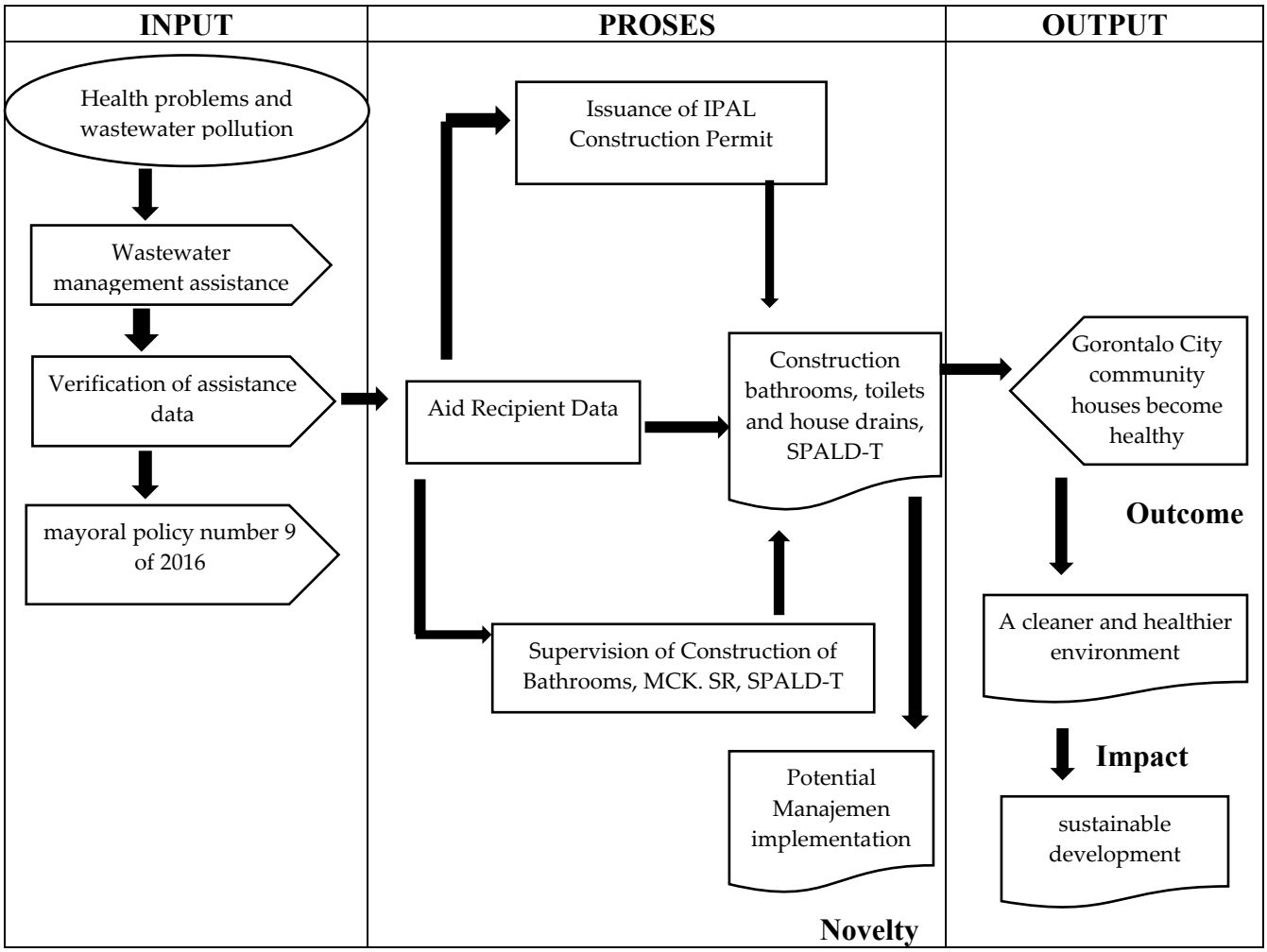

Image. Research Process

From the picture above, it can be seen that the importance of Awareness and rationality between agents and structures, namely between the structure of the place and community awareness, is very much needed in relation to wastewater management assistance activities provided to the people of Gorontalo City, who have complete permits and are domiciled in that place, so that the construction of IPAL can run according to the verified data. This is a factor in the construction of communal IPAL and SPALD-T.

CONCLUSION

The conclusion that can be drawn from the problem of Wastewater Treatment Installation Assistance (IPAL), in the provision of assistance that is not on target, the location for the manufacture of SPAD-T is not given permission because of the risk of pollution and others. There

has not been much education provided by the government to provide counseling on wastewater management assistance, resulting in many things in the health sector and effects on the environment that are very disturbing to the people of Gorontalo City.

The implementation of the Wastewater Treatment Plant (WWTP) Assistance program in Gorontalo City faces several serious challenges, including targeting accuracy, public understanding, and regulatory and educational support. To address this wastewater assistance issue systematically and constructively, the Gorontalo City Government can take the following steps: Improve recipient selection. The government needs to establish a more accurate and transparent verification system to ensure assistance reaches those truly in need. Improve cross-sectoral coordination involving the Health, Environmental, and Social Services departments to develop an integrated policy that considers health, social, and environmental aspects. Revise the Wastewater Treatment Plant (WWTP) location policy by conducting a comprehensive review of the wastewater environment to ensure safe and non-polluting locations.

Community education includes the formation of an education team consisting of educators and field counselors to provide an understanding of the importance of wastewater management and how to utilize WWTP facilities. The team's work includes creating educational modules and local campaign media, infographics, and short videos to convey information easily and engagingly, especially to low-educated communities.

Wastewater management must be strengthened by good implementation management, regular audits to assess the effectiveness of assistance and established conditions, and by involving the local community in monitoring. These include community groups or environmental cadres who participate in monitoring and reporting on the condition of wastewater treatment plants.

REFERENCES

Anderson, J. E. (1979). A theoretical foundation for the gravity equation. *The American Economic Review*, *69*(1), 106–116.

de Anda, J., & Shear, H. (2021). Sustainable wastewater management to reduce freshwater contamination and water depletion in Mexico. *Water (Switzerland)*, *13*(16). https://doi.org/10.3390/w13162307

Edi Suharto, P. D. (2015). *Analisis Kebijakan Publik Panduan Praktis Mengkaji Masalah Dan Kebijakan*.ALFABETA. https://scholar.google.co.id/citations?view_op=list_works&hl=id&hl=id&user=-z61YgUAAAAJ

Getachew, M. (2021). Challenges for water quality protection in the greater metropolitan area of Addis Ababa and the upper Awash basin, Ethiopia – time to take stock. *Canadian Science Publishing*, *29*. https://doi.org//doi.org/10.1139/er-2020-0042

Guest, J. S., Skerlos, S. J., Barnard, J. L., Beck, M. B., Daigger, G. T., Hilger, H., Jackson, S. J., Karvazy, K., Kelly, L., Macpherson, L., Mihelcic, J. R., Pramanik, A., Raskin, L., Van Loosdrecht, M. C. M., Yeh, D., & Love, N. G. (2009). A new planning and design paradigm to achieve sustainable resource recovery from wastewater. *Environmental Science and Technology*, *43*(16), 6126–6130. https://doi.org/10.1021/es9010515

Hasibuan, A. S. (2019). PERANAN EKOLOGI PEMERINTAHAN DALAM MENINGKATKAN DAYA SAING KEBIJAKAN PEMERINTAH DAERAH. *Jurnal Ipdn.*

Kehrein, P., Van Loosdrecht, M., Osseweijer, P., Garfí, M., Dewulf, J., & Posada, J. (2020). A critical review of resource recovery from municipal wastewater treatment plants-market supply potentials, technologies and bottlenecks. *Environmental Science: Water Research*

and Technology, *6*(4), 877–910. https://doi.org/10.1039/c9ew00905a

Pingping, L., Kang, S., Zhou, M., Lyu, J., Aisyah, S., Binaya, M., Regmi, R. K., & Nover, D. (2019). Water quality trend assessment in Jakarta : A rapidly growing Asian megacity. *Plos One*, 1–17.

Santoso, & Supriyadi. (2014). Etika Lingkungan Dan Tanggung Jawab Manusia Terhadap Lingkungan Hidup. *Paper Knowledge . Toward a Media History of Documents*.

Saputra. (2011). File_10-Bab-II-Landasan_Teori.pdf. *Repository.Bsi.Ac.Id*, 6–15.

Septiana, A. R., Supratno, Bormasa, F. M., Alalsan, A., Mustanir, A., Wandan, H., Razak, M. R. R., Lalamafu, P., Triono, Mosshananza, H., Kusnadi, I. H., Sunarianto, Rijal, S., & Seran, D. A. N. (2023). Kebijakan Publik: Teori, Formulasi Dan Aplikasi. In *E-Book (researchgate.net)* (Issue Maret).

Septiani, P. R. (2020). Teori-Teori Etika Lingkungan. *Studocu*. https://www.studocu.id/id/document/universitas-lampung/pendidikan-etika-dan-kearifan-lokal/teori-teori-etika-lingkungan/45524552

Soemarwoto, O. (1985). *Ekologi Lingkungan Hidup dan Pembangunan*. DJAMBATAN.

system dynamics approach. *Elsevier*, *207*, 882–893. https://doi.org/org/10.1016/j.jclepro.2018.10.052

Tianhong, L. (2019). Simulation and optimization of water supply and demand balance in Shenzhen: A

Wibowo, G. H., Shodiq, M. N., & Desyana Ayu Lestari. (2020). Sistem Web Pendukung Keputusan Calon Penerima Bantuan Mandi Cuci Kakus di Kabupaten Banyuwangi. *BIOS : Jurnal Teknologi Informasi Dan Rekayasa Komputer*, *1*(1), 28–34. https://doi.org/10.37148/bios.v1i1.6

Williams, J. (2018). Elinor Ostrom's 8 rules for managing the commons. *Democracy Social Justice*. https://earthbound.report/2018/01/15/elinor-ostroms-8-rules-for-managing-the-commons/