Sanitation Management Chain Policy in Tangerang City

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ABSTRACT

The increasing population growth in Tangerang City impacts environmental management related to domestic wastewater. This research was conducted because previously, it was found that there were problems in wastewater management in Tangerang City. This study aims to analyze the policies in domestic wastewater management in Tangerang City. The problem of this research is analyzed by public policy theory, based on the content and actor approach of public policy. The method used in this research is qualitative research. The data was obtained from several sources, such as primary and secondary data. The primary data consists of interviews with informants, which a purposive technique has decided. The results of this study explain that the Tangerang City Government applies the SPALD-S and SPALD-T strategies in the sanitation management chain in Tangerang City. The existence of a service function is not optimal because the service orientation needs to try to maximize its function. Then, public access to information is separate from socialization and education programs. This study concludes that the sanitation management provided by the relevant agencies is still faced with several obstacles, such as service orientation that has not been maximized, the lack of public access to information on management services, and the infrastructure of the sanitation management chain, which is considered insufficient.

INTRODUCTION

This research examines the problem of wastewater management in Tangerang City. The reason for conducting this research is because, as stated by (Sugara et al., 2017), as a city that supports the Capital City of DKI Jakarta, Tangerang City is still faced with the problem of difficulty for residents to get access to clean water caused by the presence of water pollution. Tangerang City is one of the cities in Banten, Indonesia. This city is adjacent to the capital city of the Republic of Indonesia, namely Jakarta. The Regional Infrastructure Development Agency for the City of Tangerang explained that Tangerang is the largest city in Banten Province and the third largest in the Greater Jakarta area, after Jakarta and Bekasi, which is in West Java Province.

As one of the largest cities in the Greater Jakarta area, the population of Tangerang City continues to grow. The Tangerang City Regional Infrastructure Development Agency explained that in 2016 the population was 2,093 people. There are 706 people, 51.05% male and 48.95% female, with a population density of 20,073 people/km². Thus, Tangerang City is the most populous district/city in Banten Province, with Ciledug District being the most populous district, namely 20,504 people/km². Then based on these data, the Central Bureau of Statistics for the City of Tangerang explained that in 2016 the population growth for the City of Tangerang was 2.56%; in 2017 by 2.16%; in 2018, it was 2.46%; in 2019 of 1.63% with a population of 1,771,092 people (Badan Pusat Statistik, 2021)

Various potential environmental problems accompany the dense population. Environmental issues include urban waste management (Aryantie & Hidayat, 2019; Mulasari et al., 2016), water economy (Berbel et al., 2017), marine protection (Sardà et al., 2014), environmentally friendly technology (Yazdani et al., 2018), and waste management (Yudo & Said, 2018). Environmental policies set by the government play an important role in environmental health. Appropriate environmental policies can provide clear instructions for carrying out environmentally

friendly activities. The population density in Tangerang City is a big challenge for the Tangerang City Government in improving the quality of life of its people, one of which is realized through safe household sanitation. The Tangerang City Health Office 2021 will release the percentage of access to household sanitation in the City of Tangerang, which is as follows:

Table 1. Recapitulation of Domestic Wastewater Access Achievements for the City of Tangerang

No	System	Existing Service Coverage (%)
1	Secure Access	46,51
	Eligible Access (Excluding Secure)	
2	Individual Eligible Access (Excluding Safe)	50,69
3	Shared Eligible Access	2,24
4	Inadequate Access	0,56
	Closed BABS	
5	Open defecation	0,00
	Total	100,00

Source: Tangerang City Health Office, 2021.

Based on the table above, access to domestic wastewater in Tangerang City has reached 46.51% of households that have been served and can access safe sanitation. Then, some families have been done and can access proper sanitation (individuals) 50.69%. In addition, some households have been served and can access appropriate sanitation together, which is 2.24%. However, Tangerang City still has homes with inadequate sanitation access, 0.56% of the total households.

Tanggerang City Health Office (2021) explains that the scope of domestic wastewater services in Tangerang City consists of

safe access, appropriate individual access, shared proper access, inadequate access, and open defecation. Households with secure access are households that use their sanitation facilities, have a gooseneck toilet, have a septic tank that is emptied at least once every five years or use a Wastewater Treatment Plant (IPAL). Households with proper individual access are households that use their household sanitation facilities, have a gooseneck toilet, and have a septic tank that is not aspirated. Households with good, shared access share sanitation facilities with specific other households, have a gooseneck toilet and have a septic tank. Then, households with inadequate access are households that use sanitation facilities with holes in the ground, non-goose neck sanitation facilities, public facilities, or sanitation facilities that have a final disposal site for faeces in the form of a pond/rice field/river/lake/sea/beach/ fields/gardens and others (closed open defecation). Meanwhile, households with access to open defecation are households that do not have toilet facilities.

Sanitation management is crucial because it involves the livelihood of many people. The World Health Organization explains that sanitation is a business that monitors several physical environmental factors that can affect physical development, health, and human survival (Lararenjana, 2020). Thus, sanitation matters are things that must be managed by the government so that there is a standard of sanitation feasibility that is used by every household so that the potential for disease transmission can be minimized and environmental conditions can be maintained from domestic wastewater (Sharma et al., 2020).

The Government of Indonesia, through Law no. 23 of 2014 concerning Regional Government, Article 12 Paragraph 1, explains that sanitation services are a regional authority and are mandatory matters relating to essential services (Miolo et al., 2020). So, it becomes the responsibility of local governments to manage sanitation in their respective areas. In addition, sanitation management is a very important service, so it will be closely related to the basic needs of every household, namely proper access to domestic waste, to avoid the bad consequences of domestic waste (Siregar, 2021). That the APBD is prioritized to fund government delegates who are required to provide essential services based on Minimum Service Standards (SPM) (Kuzairi et al., 2018). Therefore, sanitation management must be one of the local government's priorities so that every household can access safe sanitation. The government is obliged to continue to increase access to sanitation in every house, from access that still needs to be improved to access that is proper and then safe (Safitri & Maya, 2021; Willetts et al., 2020).

Sanitation management that the local government needs to pay more attention can cause the community to be uneducated and dispose of their domestic waste into drainage canals and rivers. Nazar et al., (2021) explain that the disposal of domestic wastewater directly into drainage channels and rivers occurs because there needs to be infrastructure and facilities for domestic wastewater management, as well as a lack of public understanding of water pollution caused by domestic wastewater. Another principal issue is the absence of a policy from the local government that regulates the implementation of domestic wastewater management policies referring to the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia No. 68 of 2016 regarding Domestic Wastewater Quality Standards. This research reinforces the importance of regional government regulations in following up on

the issue of domestic wastewater quality standards in their respective regions.

Then another problem in sanitation management in the regions is the need for larger funds. One example of research in Pekanbaru City from Mulyani & Isril, (2021) explains that limited funds and resources have resulted in centralized sanitation management policies being less than optimal. In addition, other problems related to the community's understanding of the implementation of the SPALD-T program resulted in conflict between the government and the community. Thus, the community's understanding of the issue of budget allocation for sanitation becomes one of the inhibiting factors for the implementation of sanitation policies in the regions.

Research from Mulyani & Isril, (2021) & Nazar et al., (2021) provides a common perspective that local governments need to make sanitation issues one of their regional development priorities. Development priorities must be embodied in written policies, such as regional regulations regulating sanitation management. The policy needs to handle at least within the scope of planning, implementation, and evaluation. In the planning context, matters related to budgeting are regulated. Then, in its performance, it is also necessary to control socialization programs that provide public education on the importance of managing domestic wastewater for the continuation of human quality of life.

The explanation above illustrates that sanitation issues are not only environmental issues but also policy issues. This study aims to analyze the sanitation management chain policy in Tangerang City. Thus, this research is analyzed using public policy theory from Agustino (2017) explains that policy is a series of actions or activities proposed by individuals, groups, or governments in a specific area that aims to overcome obstacles, difficulties, or to achieve goals. In addition, Wahab (2008) explains that policies have plans and are implemented as actions, either as a subject in government or in response to circumstances. This understanding of policy can have implications for individuals or groups and emphasizes that anyone can make policies for specific purposes.

Then, matters relating to the public constitute the public dimension so that the notion of policy is not only aimed at individual goals. However, it aims to address public problems or objectives. Agustino (2017) explains that public policy is a series of activities with specific objectives to be followed and carried out by a person or group. This understanding confirms that public policy is more concerned with public affairs. Furthermore, Subarsono (2012) explains that public policy is the government's choice to do or not do something. Thus, public policy in this context relates to the government's attitude in responding to a phenomenon that occurs in society.

In addition Dunn (2003) explains that public policy can be interpreted as a policy system which is a reciprocal relationship between public policy, policy actors and the policy environment. Adds that the content of the policy is a list of choices or decisions about public affairs made by the government relating to various public issues in the economic, political, social, cultural, health, educational, and so on. Furthermore, policy actors are individuals or groups directly related to a policy, influencing, or being influenced by the policy, such as community groups, government agencies, and others (Dunn, 2003). In addition, the policy environment is an area or setting for implementing a policy, both policy actors and public policies that influence it. Meanwhile, Parsons (2011) explains that in policy implementation, it is

necessary to pay attention to the relationship between policymakers and policy implementers so that policy implementation can be carried out optimally.

Several studies have examined sanitation management, particularly regarding how management obtains clean water. However, research has yet to examine the sanitation management chain policy, especially in Tangerang. Several previous studies examined sanitation in Serang City concerning regional development (Widiastuti, 2019). Sanitation management of household waste in Kaliwates District, Jember Regency (Ningrum, 2013), environmental sanitation management strategy in implementing a healthy port in Duku Jamb (Alfitrah et al., 2018), sanitation management strategy to support tourism villages in East Lombok (Sugandi et al., 2020). From these studies, there has yet to be any research on sanitation management chain policies in Tangerang City, and this study intends to fill this research void.

This study analyzes the implementation of sanitation management policies in Tangerang City. Policies are analyzed based on one of the variables of the policy system, namely the content of policies and policy actors. Meanwhile, the policy environment was not used due to limited research, which did not analyze people's aspirations or opinions, and did not conduct a direct review of the environment. Thus, the theory of public policy used is based on the content and policy actors in implementing the sanitation management chain policy in Tangerang City.

METHOD

This research is a type of qualitative research using a descriptive method so that it can provide a clear and systematic picture. The explains that qualitative research does not use statistical procedures and quantification methods based on specific applications (Moleong, 2010). Then Arikunto (2011) explained that the descriptive approach was carried out because the data under study already existed, so it was not intentionally generated or created. This research was conducted in Tangerang City, based on data from the Health Office and the Tangerang City Housing, Settlement and Land Affairs Office. The two agencies were chosen because they are closely related to sanitation issues in the area as Hamdi (2016) explains that data collection in qualitative research is carried out by collecting relevant data, either by way of interviews, observation, documentation, literature study, and others. Sanitation problems are related to health and household issues, so the data from the two agencies can describe sanitation management in Tangerang City. In addition, the research data is supported by other secondary data obtained from journals, books, and mass media. Furthermore, the data that has been collected is reduced and presented in the form of narrative text and conclusions.

RESULTS AND DISCUSSION

Sanitation Management in Tangerang City

The Tangerang City Government implements a chain of sanitation management policy with an infrastructure system that is divided into several sub-systems, namely as follows: Transportation sub-system Domestic Wastewater Transportation System (SPALD)-Local; Sludge treatment (SPALD-Local); SPALD-Centralized service and processing sub-system.

First, the Tangerang City SPALD-Local transport sub-system has 13 units of faecal trucks with a capacity of 3 m³. The volume

of faecal trucks discharged to the Fecal Sludge Treatment Plant (IPLT) is 78 m³/day, a fleet of faecal trucks operating with asset status from the Unit Service Technical Implementation (UPTD), at least in being able to serve the disposal of faecal sludge as many as 26 households/day. The following is a data table for the Tangerang City SPALD-Local transportation sub-system:

Table 2. SPALD-Local Transportation Sub-System

No	Unit Description Quantity	Unit Description Quantity	Unit Description Quantity
1	Number of fecal trucks	Number of fecal trucks	13
2	Asset status	Handover or own purchase (UPTD)	
3	Stool truck capacity	m³	3
4	Volume of faecal trucks dumped into IPLT	m³/day	78
5	Number of faecal trucks disposing of sludge to IPLT	trucks/day	26
6	On average, RT are served by faecal sludge drainage	RT/day	26

Source: Tangerang City Housing, Settlements and Land Agency Office, (2021).

Based on the table above, the Municipal Government of Tangerang has several assets to support the transportation stage in sanitation management. The SPALD Local Transportation Subsystem is the first part of the sanitation management chain in Tangerang City. After this stage, it enters the second stage, namely the Fecal Sludge Treatment Sub System (SPALD-Local). The second chain is processed at the Bawang IPLT, which serves all domestic waste in Tangerang City. STP Bawang was built in 1979, can serve sludge treatment and operates with a capacity of 98 m³/day. The treatment process uses a receiving tub system, filters, grease traps, Imhoff tanks, anaerobic baffle reactors, facultative ponds, maturation ponds, sludge drying tanks, composting, and solid utilization. In addition, Bawang IPLT has adequate supporting facilities, such as water sources, barriers or fences, and good road access.

After going through the sludge treatment process in the second chain, the following chain is the Centralized SPALD Service and Treatment Sub System. The third chain uses a Wastewater Treatment Plant (WWTP), one of which is the Tanah Tinggi WWTP which was rehabilitated in 1992. Households in Tangerang City are connected to urban WWTPs by 0.72%, then 4 are connected to regional IPALs by 33%, and those connected with residential WWTP as much as 0.03%.

The stages of the sanitation management chain in Tangerang City can be categorized into two functions, namely SPALD-S and SPALDT. Infrastructure in Tangerang City has supported the operation of SPALD-S and SPALD-T services. Based on research observations and researcher analysis, infrastructure functions that support sanitation management can be presented in the following table:

Table 3. Analysis of the Functioning of Domestic Wastewater Infrastructure

Infrastructure SPALD-S	Persentase (%)
IPLT usage capacity	100,00
Stool truck usage capacity	66,67
The transport capacity of IPLT (design)	79,59
Stool truck capacity to total households (RT)	7,86
IPLT capacity to total households (RT)	9,88
SPALD-T	
Residential SPALD-T usage capacity	100,00
Regional SPALD-T usage capacity	100,00
Urban SPALD-T usage capacity	100,00

Source: Processed by researchers (2021)

Based on the table above, the IPLT usage capacity in Tangerang City reaches 100.00%, which shows the actual operating capacity of IPLT following the total design capacity. Furthermore, the use capacity of faecal trucks is 66.67% indicating that the actual transport capacity of faecal tracks recorded at the IPLT is lower than that of faecal trucks. The transport capacity of the faecal trucks is 79.59% of the total IPLT design capacity. Based on their transport capacity, faecal trucks can serve 7.86% of the total households in Tangerang City. At the same time, IPLT, based on its total design capacity, can serve 9.88% of the total households in Tangerang City.

Then, the percentage of the population that collects wastewater in SPALD-Local, both communal and individual, is 92.3% of the population in Tangerang City who can access proper sanitation. Furthermore, 0.6% of the population in Tangerang City still needs access to proper sanitation, and 0% of the population in Tangerang City practice open defecation. In the SPALD-S sub-system, through local processing, 41.8% of the population routinely despatches faeces. Furthermore, 41.8% of the population treats wastewater (transportation and treatment of sludge) in IPLT to safely dispose of up to 100% of the total wastewater (none seeps into the ground). Meanwhile, the percentage of the population of Tangerang City that collects wastewater in Centralized SPALD is approximately 5.3%. Furthermore, around 3.4% of the population in Tangerang City stores wastewater in SPALD-T through service sub-systems, collection/transportation, centralized treatment, to safe disposal.

Analysis of Sanitation Management Chain Policy in Tangerang City

In general, the City of Tangerang has exemplary domestic wastewater service achievements. In fact, in 2020, households with access to proper sanitation reached 99.44%, including access to safe sanitation at 46.51%. The National Medium-Term Development Plan targets that local governments must reach 90% of households with access to proper sanitation, which includes 15% with access to safe sanitation by 2024. Thus, Tangerang City has exceeded the RPJMN target of 90% of households with access to proper sanitation, including 15% of households with access to safe sanitation. However, there are other reasons to continue improving the quality and service of sanitation management in Tangerang City.

This study analyzes gaps that can be improved in the proper sanitation component. In 2021, the Tangerang City RPJMD targeted to increase access to proper sanitation by 0.34%, while the 2023 RPJMD target is 0.37%. Thus, achieving this target requires innovation and improvement so that in 2023 this target can be achieved. Apart from that, another problem is that 0.56% of households still have inadequate access to sanitation, so it is necessary to pay attention to the Government of Tangerang City.

Sanitation management policies in Tangerang City are more inclined towards aspects of sanitation infrastructure services and management. As explained in the explanation above, the Tangerang City Government, through the Housing, Settlement and Land Affairs Office, provides various links in the sanitation management chain through the SPALD-S and SPALD-T facilities. Meanwhile, Parsons (2011) explains that the critical thing in policy implementation is the relationship between policymakers and implementers. Based on this opinion, the Tangerang City Government needs to transform the chain of management policy so that the RPJMN or RPJMD targets can be achieved and government services in sanitation management can continue to be improved.

Tangerang City, which is the most populous City/Regency in Banten Province, needs assistance in environmental management. Statistical calculations from year-to-year show that population growth continues. Thus, environmental issues become important because they involve the livelihoods of many people in this most populous City in Banten Province.

One such environmental issue is sanitation management; with the number and density of the population in the City of Tangerang, the domestic wastewater it produces is in line with the number of people living in the City. The explains the importance of looking at the contents of policies and policy actors in a public policy system. The contents of the policy in this context must be oriented towards solving sanitation problems in the City of Tangerang so that the problem of domestic wastewater can be managed properly, and the community has access to ideal sanitation (Ayuningtyas, 2014). Then, the policy actors, in this case, are the Tangerang City Government through related agencies or agencies that deal with sanitation issues, as well as communities or households that are the object of the policy, need to understand each other's roles so that the objectives of the sanitation management policy in Tangerang City can be achieved.

The Tangerang City Government's policy regarding the domestic wastewater management chain through the implementation of the SPALD-S system, SPALD-S Sludge Treatment, and SPALD-T has enabled the City of Tangerang to meet the RPJMN target. However, based on the previous explanation, several things can still be evaluated and improved to improve sanitation services and management in Tangerang City. First, related to the gap in the use of transport trucks which has reached 66.67% and has served 7.86% of households in Tangerang City. Meanwhile, its capacity can accommodate more than that figure, which is 79.59%, so that it can serve 9.88% of households in Tangerang City.

The problem of optimizing the haul truck service can be seen from internal and external aspects. The internal context relates to services provided by related agencies or institutions to the community. The non-optimal use of the capacity of haul trucks can be due to information on services that have yet to be known by the public, so these services need to be informed more broadly. Then, in the external context, the non-optimal use of these facilities can be caused by the need for more public knowledge regarding access to these services and the importance of domestic wastewater extraction, which is carried out at least once in five years.

Second, the issue of access to information on sanitation services, both SPALD-S and SPALD-T. This goes hand-in-hand with community knowledge about sanitation management so that this is not only related to aspects of SPALD-S and SPALD-T infrastructure services, but the government needs to conduct outreach and education about the importance of access to proper sanitation and transformation of proper sanitation towards access to safe sanitation. Thus, this relates to policy implementing actors, if the sanitation management infrastructure has been managed by the housing, settlement and land offices, it is necessary to form a Regional Technical Implementation Unit, which regulates socialization and public education regarding sanitation management services and the importance of providing sanitation. Safe in every household. Apart from that, the issue of 0.56% of households with access to inadequate sanitation must be an essential concern for the Government of Tangerang City. Access to inadequate sanitation still uses earthen pits to dispose of domestic wastewater or toilets that are not goose necks. Then, inadequate access to sanitation can also be interpreted when households dispose of their domestic wastewater into ponds/rice fields/rivers/lakes/sea/beaches/ fields/gardens and others.

Such household behavior can pollute the environment and increase the potential for the spread of disease, disrupting the survival of the community and the environment in general. Therefore, this issue is not only related to the agency that regulates the domestic wastewater management chain but also relates to public health knowledge and the ability of the community to achieve access to a decent life, so that it is related to the agency that regulates health affairs and achieves a good quality of life worthy.

CONCLUSION

The Municipal Government of Tangerang implements a chain of sanitation management policy by implementing SPALD-Local infrastructure, SPALD-Local Fecal Sludge Treatment, and SPALD-Centralized. This policy resulted in the achievement of the Government of Tangerang City in meeting the RPJMN target in managing sanitation in the area, with access to proper sanitation for households reaching more than 90%. However, from the various facilities and infrastructure owned by the Tangerang City Government in carrying out the sanitation management chain, there are still facilities that could be more optimal, including haul trucks.

The sanitation management policy needs to be supported by optimizing various infrastructure tools owned by the government. However, the problem of sanitation management is related to infrastructure and the orientation of the services provided by related agencies so that they can maximize their functions. Then, access to public information on sanitation management services is essential in improving sanitation management quality and services in Tangerang City. In addition, a sanitation management chain infrastructure needs to be improved to overcome the inadequate sanitation rate. Socialization and education programs are needed regarding the importance of sanitation management and other programs encouraging every household to access safe sanitation.

Based on the conclusions above, the following suggestions can be formulated: (1) The Tangerang City Government needs to maximize its assets in providing services for sanitation management in Tangerang City; (2) The government needs to have socialization and education programs related to increasing public understanding in accessing safe sanitation through the Regional Technical Implementation Unit (UPTD) to manage City sanitation, and; (3) The government needs to have a development assistance program in procuring access to proper sanitation, for households that have inadequate access to sanitation.

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