

Analysis of the Relationship Between Implementation and Policy for Regional-Scale Waste Management in Garut District

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Abstract — Waste management is currently still a big challenge for all cities/regencies in Indonesia where there is still a lot of household waste that has not been managed and still relies on open dumping. This study aims to determine the relationship between the existence of a policy for the provision of regional-scale Waste Treatment Facilities with TPS 3R and its implementation in each village/sub-district in Garut District. The research method used is quantitative, and the data analysis used in this study is explanatory research which aims to explain whether or not there is a relationship between the independent variables, namely knowing the regent's instruction letter regarding the provision of regional-scale Waste Treatment Facilities with TPS 3R. The process of analyzing research data using the Fisher's Exact Test statistical test shows that the p -value is 0.158. Based on the applicable provisions, if the p -value is smaller than the significance level ($\alpha = 0.05$) then H_0 (null hypothesis) is rejected and H_1 (alternative hypothesis) is accepted. Therefore, it was found that the p -value is greater than the significance level ($0.158 > 0.05$) then H_0 is accepted, which means that there is no statistically significant relationship between knowing the policy of providing regional-scale Waste Treatment Facilities with TPS 3R with the implementation of the provision of waste treatment facilities. This means that knowledge of the existence of policies through the regent's instruction letter does not have a significant effect on the implementation of waste treatment in villages/sub-district areas, this could mean that there are other factors that have a greater influence on the implementation of waste treatment in villages/sub-districts.

Keywords: waste; waste management; policy implementation; waste treatment facilities; TPS 3R

I. INTRODUCTION

Waste is one of the problems faced in environmental management in districts and cities in Indonesia. Waste management is something that must be done by local governments. (Harmana et al., 2021). The increasing population tends to increase waste generation. In 2018, 62% of waste in Indonesia was generated from domestic waste or household waste (Wardani et al., 2020). In 2019, 175,000 tons/day or equivalent to 64 million tons/year were produced. To overcome the accumulation of waste, of course the waste management service system needs to be improved again. With good waste management, it can reduce environmental risks, waste production, and waste disposal through recycling, reuse and disposal in the right way (Bandht et al., 2023 in Rahmawati & Adinugraha, 2024). In general, the obstacle in implementing waste management is the lack of a strong commitment to holistic waste management, and technically waste management is still carried out with the old paradigm, namely that waste is collected, transported and disposed of at the Final Waste Disposal Site. Thus, waste management is highly dependent on the availability of facilities and infrastructure for collecting and transporting waste and land for Final Waste Disposal Site (Indrawati et al., 2021).

Garut District is one of the regencies that has a large area with a population of 2,716,950 people in 2024 (Garut District in Figures 2025). Good waste management is expected to be carried out by the Garut District Environmental Service because piles of waste can cause disasters such as the flood that occurred in 2011 in Banyuresmi District (Azizah, 2021). Garut District has a final waste processing or TPA, namely TPA Pasir Baging which functions to overcome the waste problem in Garut District (Alamanda et al., 2020). In 2022, of the 50 trucks available, only 60% were still operational. This is the basis for the need for collaboration between stakeholders so that waste management can be handled properly, at least reducing waste at the source.

One solution to solve the problem of waste management to be more effective and efficient is to build an integrated waste treatment facility on a regional scale so that waste transportation is not too far

to the landfill and has a benefit value from the cost of sorting waste so that it produces various products that can be sold so that it becomes income from the processed waste. The involvement of the government and the community in the Waste Treatment Facility with 3R (Reduce, Reuse, Recycle) or TPS 3R has a significant role in waste management on a regional scale. One of the activities that must be carried out by the community is able to reduce waste at the source before it becomes waste production. Reducing waste on a regional scale is the goal of the operational management of the TPS 3R, because it reduces the waste that needs to be processed directly at the TPA. (Ruhayat et al., 2023). This is considered to be one of the efforts to handle waste from its source, because when waste is not immediately transported, it has quite a large impact such as causing flooding, causing disease because the quality of the residential environment becomes slum, and there is no productive economic value from the results of waste that has been sorted. (Putri & Lina, 2019 in Abdillah & Kurniawan, 2024).

Therefore, currently the Garut District Government has created a waste management policy through the Garut Regent's Instruction Letter No. 600.1.17.3/4116/DLHK concerning the Provision of Regional-Scale Waste Treatment Facilities with TPS 3R which was issued in August 2023. The regent's instruction letter was distributed to all villages in Garut District. The purpose of this study is to see the relationship between policy directions on regional-scale waste management and the implementation of these policies in villages/sub-districts of Garut District. The expected results from the existence of the regent's instruction letter are the active involvement of the community and local leaders at the regional scale to support the implementation of regional-scale waste management.

In the policy implementation process, an important factor in dealing with the problem at hand is how to quickly handle the waste problem. Implementation is stated in the policy as a basis for processing the continuation of the policy design so that it is carried out by individuals or community groups who aim to achieve the set targets. The policy implementation process is carried out by government administration from the village, sub-district to district/city levels. The parties involved (stakeholders) can influence social, political, and economic forces in the implementation directly or indirectly, so in terms of the concept of policy implementation, including consistency where good policy implementation is the implementation of policies that consistently adhere to the planned strategy and the prevailing culture in the public environment; Transparency where all information related to the policy must be true, open, reliable, easy to understand, and easy to access, the information must have the freedom to be consumed by the public who have an interest in the policy itself; Accountability where the authorities and parties related to the implementation of the policy must be responsible for all its implementation both administratively and substantively; Justice where it symbolizes goodness and truth that are binding in nature, justice in policy is implemented in the form of public service activities that are not tolerant, where the

services provided must not be discriminatory. The services provided must also be in accordance with existing service standards, where this service can be said to be good if it meets the standards; Participatory where the involvement of individuals or groups in a phenomenon to resolve the phenomenon. In policy, the community becomes an important part in its implementation regarding supervision and aspirations, because in general policies are made from phenomena that arise in people's lives. So indirectly the community has participated since the birth of the phenomenon, so that policy implementation is expected to be participatory; Effectiveness in which in every policy, effectiveness is an important point, where a policy can be called effective if its implementation runs according to the planned procedures. The effectiveness of a policy implementation is measured by how successfully the goals and objectives of the policy are achieved based on previous planning, where the effectiveness is correlated with the technical rationality aspect and is measured from the units of goods produced and services provided; Efficiency in which to achieve success in policy implementation, the use of resources must be sufficient and appropriate to achieve effectiveness. The factor that becomes the benchmark for efficiency is by utilizing the resources needed to achieve policy objectives (Ramdhani 2017 in Fauzan, 2021).

Policy implementation is the next step after the completion of decision making carried out by an actor who has an impact on policy implementation to achieve optimal results. According to Nugroho (2017: 779), policy control, including its implementation, consists of three dimensions, namely: monitoring, evaluation, and reward. The implementation of public policy is a very important sequence in the entire policy process, because only with implementation can the goals and results to be realized (output and outcomes) be realized. Furthermore, when a public policy is implemented, it cannot be left alone and expected to automatically occur and be realized as expected. To ensure that its implementation is truly effective, it must be continuously monitored by carrying out control in the form of monitoring, evaluation and rewarding (Sutmasa, 2021)

The national waste management target policy refers to Presidential Regulation Number 97 of 2017 concerning the National Policy and Strategy for Household Waste Management and Household-like Waste. In addition, there is a directive from the Indonesian Minister of Environment for the national waste management policy based on the Letter of the Minister of Environment/Head of the Environmental Control Agency Number: S.62/A/G/PLB.2/B/12/2024 dated December 24, 2024 concerning the Acceleration of Completion of National Waste Management. From the Minister's policy, the direction of the village-scale waste management policy at the source of waste focuses on efforts to prevent and manage waste from the source, which includes households, markets, and public facilities. The following are the policies: a) Transforming behavior to all elements of society through communication, information and education, counseling and intensive assistance to the community regarding waste sorting and management at the source;

b) Requiring every home, business and/or activity to sort and process waste at the source; c) Strengthening the role of the Waste Bank as a facility for managing waste with the 3R principle (reduce, reuse recycle) as part of education for behavioral change in waste management and the implementation of a circular economy; d) Forming at least 1 (one) Unit Waste Bank in each household environment and 1 (one) Main Waste Bank in each Sub-district, and optimizing other upstream Waste Treatment Facilities such as TPS 3R; e) Making a mapping of the needs of Environmental Extension Functional Officers and environmental educators in each region; f) Increasing the capacity and competence of socialization actors periodically; g) Integrate the substance of waste management into the education curriculum in each region; h) Require and assist each Waste Bank to routinely report periodically the results of its waste management activities through the Waste Bank management information system at the Ministry of Environment; i) Provide guidance and assistance to the community with the aim of increasing the collection rate of the Waste Bank (reactivating inactive waste banks, optimizing existing Waste Banks, and establishing new Waste Banks); j) Actively involve community leaders such as cadres at the household level and involve non-governmental organizations in the environmental sector to assist local governments in implementing assistance; k) Carry out the obligations of producers in reducing waste as regulated in the Regulation of the Minister of Environment and Forestry Number P.75 of 2019 concerning the Roadmap for Waste Reduction by Producers, especially producers in the following business fields food and beverage services including hotels, restaurants, eateries, cafes, and catering services andetail including shopping centers, modern shops, and traditional markets.

This is done by implementing a ban on the use of several types of single-use plastics, including plastic shopping bags, plastic straws, foam plastic containers, and plastic eating/drinking utensils consisting of plates, spoons, forks, and glasses.

From the policy of the Minister of Environment, for village-scale waste management downstream focuses on the collection, processing, and disposal of waste that has been separated at the upstream level. In this section, the main attention is given to the management of waste that has been collected, here is the policy:

- a. Increase waste collection and separate waste transportation that reaches all areas in the region and distributes it to waste treatment facilities.
- b. Build a waste processing industry that is managed professionally through the existence of waste treatment facilities that apply environmentally friendly and low-emission technology.
- c. Organize TPA operations so that they are managed using the sanitary landfill method or at least controlled landfill and only accept residue. Referring to Law Number 18 of 2008 concerning waste management, it is explained in its articles as follows:
 - Article 29 paragraph (1) letter f: everyone is prohibited from handling waste by open dumping at the final waste processing site

- Article 44 paragraph (1): The regional government must make a plan to close the final waste processing site that uses an open dumping system no later than 1 (one) year from the enactment of this Law
- Article 44 paragraph (2): The regional government must close the final waste processing site that uses an open dumping system no later than 5 (five) years from the enactment of this Law
- Law No. 18 of 2008 has expressly mandated that landfills managed by open dumping should no longer be operated in Indonesia. However, based on data from the Ministry of Environment, there are still 306 provinces/regencies/cities that operate their landfills using open dumping.

- d. Waste management in TPA with the Open Dumping method will not be counted as part of the waste management achievements in the National Waste Management Information System (SIPSN) and will be included in unmanaged waste.
- e. Carrying out control for illegal waste disposal and open burning of waste
- f. Improving waste management governance in the regions including strengthening regulations and law enforcement, improving institutions and supporting funding for waste management of at least 3% of the regional budget and income, especially in the waste management sector.

II. METHODS

This study uses quantitative methods to process data from the results of an in-depth interview survey in 2024 in Garut District. This study collected data and information through in-depth interviews with representatives of village governments in Garut District to understand the level of knowledge regarding the existence of the Garut Regent's instruction letter for regional-scale waste management and the implementation of regional-scale waste management policies as well as the challenges faced in implementing existing waste management policies. This aims to obtain an overview of waste management policies and practices implemented in villages, including the roles and responsibilities of village governments in supporting the success of regional-scale waste management.

The in-depth interview questionnaire for village government officials included 6 (six) questions:

- a. Are you aware of any instruction letter from the District Head regarding the provision of regional-scale waste processing infrastructure with 3R TPS?
- b. How is the implementation of waste processing infrastructure provision carried out?
- c. What are the challenges faced in providing waste processing infrastructure?
- d. Are you aware that the Village Budget (APBDes) can be used for waste management activities?

- e. How is the implementation of waste management budgeting through the APBDes?
- f. What are the challenges faced in waste management budgeting?

The research sample was determined using a cluster sampling technique, where each sub-district is considered a cluster of villages. The sample size recorded represents 42 sub-districts in Garut District. The target respondents for the in-depth interviews, representing the sample in this study, used a purposive sampling technique, selecting respondents who met the criteria (as part of the Village Government) and were accessible for interview during the survey. This resulted in a sample size of 39 eligible respondents.

Furthermore, the interview method in this study has the advantages of generating in-depth and contextual data/information, being flexible (questions can be adjusted), being able to uncover social, cultural, and institutional factors, and capturing the real perceptions of village implementers. However, it also has disadvantages: answers can be biased/subjective, requiring interviewer skill, requiring more time and effort, and being difficult to generalize to the wider population. The analysis of the interviews in this study played a role in providing an in-depth understanding of the processes, obstacles, and perspectives of implementers in the field regarding waste management implementation at the village level.

The study using a quantitative approach used is explanatory research through statistical analysis test used is the Chi-Square test. If the data does not meet the requirements of the Chi-Square test, then the alternative is to use the Fisher's Exact Test. Fisher's exact test is used to test the relationship between two categorical variables in a 2x2 contingency table, especially when the sample size is small ($n < 30$) or there is an expected frequency < 5 . For example, we have a table group and category contingencies can be seen in Tabel 1.

Table 1. Group and Category Contingencies

	Category 1	Category 2	Total
Group A	a	b	a+b
Group B	c	d	c+d
Total	a+c	b+d	n

The probability (p) of the table is calculated as:

$$p = \frac{(a+b)!(c+d)!(a+c)!(b+d)!}{a!b!c!d!n!} \quad (1)$$

where:

a,b,c,d = frequency of observations in a 2x2 table

$n = a + b + c + d$ = total sample

! = factorial

The statistical analysis above aims to explain whether or not there is a relationship between the independent variable, namely knowing the Regent's Instruction Letter concerning the Provision of Regional-Scale Waste Treatment Facilities with TPS 3R with the dependent variable, namely the

implementation of the provision of waste treatment facilities. Decision making in this study is based on the p-value, if the p-value is smaller than the specified significance level ($\alpha = 0.05$) then H_0 (null hypothesis) is rejected and H_1 (alternative hypothesis) is accepted. This indicates a significant relationship between the two variables.

The use of Fisher's Exact Test in this study has the advantages of being accurate for small samples, not relying on distributional assumptions, providing exact results, and being suitable for testing relationships between variables. However, its disadvantages include being limited to categorical data, not indicating the direction or magnitude of influence, being computationally demanding for large data sets, and limited interpretation. However, the Fisher's Exact Test in this study provided quantitative evidence for the presence or absence of relationships between variables (significant or not).

III. RESULT AND DISCUSSION

From the results of the survey and interviews, variations were found in the understanding and implementation of the regent's instruction letter that had been stipulated in Garut District. In several villages, some had known about the regent's instruction letter and implemented it, some knew about it but did not implement it, some did not know about it but had implemented it, and some did not know about it and did not implement it. As many as 10 villages or 26% of the total villages surveyed had known about the regent's instruction letter and had successfully implemented it. This shows that there are some villages that have understood and are committed to implementing the policy in accordance with existing provisions. Most villages, namely 23 villages or 59% of the total villages, stated that even though they knew about the regent's instruction letter, they had not implemented it. This shows that information about the regent's instruction letter has arrived, but these villages have challenges in implementing the policy, such as lack of resources or coordination problems between related parties. There are 6 villages or 15% of the total villages that do not know about the regent's instruction letter and do not implement the policy. This ignorance is most likely due to the lack of socialization or effective communication from the village so that these villages are not aware of the existence of the policy and have not implemented the policy. In the end, there were no villages or 0% of the total villages that did not know about the regent's instruction letter but had implemented the policy. This shows that there are no local habits or practices that independently carry out regional-scale waste management in line with the regent's instruction letter policy. Interview results on the relationship between knowledge of the existence of waste management policy in the regent's instruction letter and its implementation at the village scale in Garut District can be seen in Figure 1.

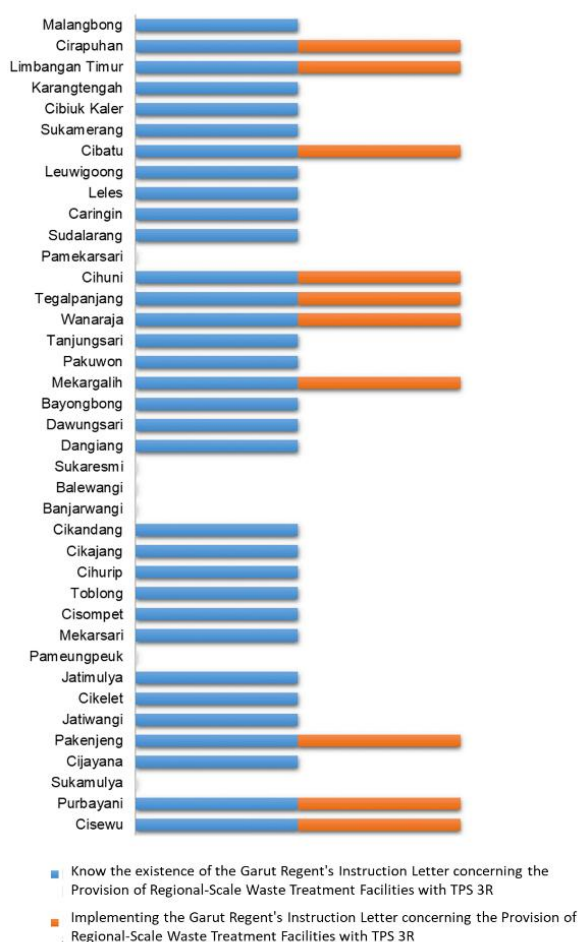


Figure 1. Interview Results on the Relationship between Knowledge of the Existence of Waste Management Policy in the Regent's Instruction Letter and Its Implementation in Garut District.

In order to evaluate the effectiveness of the implementation of the policy stated in the regent's instruction letter regarding the provision of regional-scale Waste Treatment Facilities with TPS 3R, a statistical analysis was conducted to see the extent of the village's knowledge regarding the existence of the instruction letter so that it affects the implementation of waste management in the village.

3.1 Fisher's Test Analysis of Regent's Letter

If the expected frequency value is less than 5 (Expected Count), then the Fisher test is performed. The following is a description of how to recognize instruction letters * a more complete implementation of cross tabulation can be seen in table 2 below.

From the table above, it means that knowledge about the regent's instruction letter does not have a significant effect on the implementation of the provision of regional-scale Waste Treatment Facilities with TPS 3R, this could mean that there are other factors that were not measured in this study which turned out to have a greater influence on the implementation of the provision of regional-scale waste treatment facilities, for example the availability

of funds, the availability of facilities, support from the village government or awareness of the local community for waste management.

Table 2. Knowing the Instruction Letter * Crosstabulation Implementation

		Implementation		Total
		No	Yes	
Knowing the Instruction Letter	No			
	Count	6	0	6
	Expected Count	4.3	1.7	6.0
	% within Knowing the Instruction Letter	100%	0.0%	100%
	Yes			
	Count	22	11	33
	Expected Count	23.7	9.3	33.0
	% within Knowing the Instruction Letter	66.7%	33.3%	100%
Total	Count	28	11	39
	Expected Count	28.0	11.0	39.0
	% within Knowing the Instruction Letter	71.8%	28.2%	100%

The following is an analysis table using the Fisher value of 0.158 and Chi-Square Tests, which can be seen in Table 3.

Table 3. Statistical Test with Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.786 ^a	1	.095		
Continuity Correction ^b	1.383	1	.240		
Likelihood Ratio	4.391	1	.036		
Fisher's Exact Test				.158	.115
Linear-by-Linear Association	2.714	1	.099		
N of Valid Cases	39				

Notes: a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.69; b. Computed only for a 2x2 table

At the beginning of the test, the statistical test used was the Chi-Square test, but the Chi-Square test could not be carried out because it did not meet the

requirements, namely there was an expected frequency value of less than 5, so the Fisher's Exact Test was chosen as an alternative to the Chi-Square test. The results of the Fisher's test showed a p-value of 0.158. Based on applicable provisions, if the p-value is smaller than the significance level ($\alpha = 0.05$) then H_0 (null hypothesis) is rejected and H_1 (alternative hypothesis) is accepted. From the results of the analysis, it was found that the p-value was greater than the significance level ($0.158 > 0.05$) then H_0 was accepted, which means that the results of the study showed that there was no statistically significant relationship between knowing the regent's instruction letter regarding the provision of regional-scale Waste Treatment Facilities with TPS 3R with the implementation of the provision of waste treatment facilities

3.2 Analysis of Waste Management Policy Implementation

One of the research results looking at the implementation of waste management in Garut Regency according to Pupung Pundenswari, Raesalat, R., Septiani Nur Haliza, & Safta Rijalul Sidiq. (2023) namely there needs to be dialogue between stakeholders, building trust that has been established by the government through the Kang Raling and PUDING programs, fostering the community intensively, providing a shared understanding between related stakeholders so that they have a good shared vision, and fostering the community by Experts from the DLH in processing their waste independently.

The existing conditions in the implementation of the policy of providing TPS 3R waste treatment facilities on a regional scale are Wanaraja Village which does not have a temporary waste storage area, Sudalarang Village which has not proposed a budget for waste management from the Village Budget and there is no land area for the construction location for TPS 3R. In addition, most villages said that the main obstacle faced was the aspect of waste management budgeting where this condition is quite diverse in each village in Garut District, such as Pakenjeng Village stating that the Village Budget is still used for other purposes such as the construction of integrated health posts and in Bayongbong Village there is no budget for the procurement of special land for TPS 3R. In addition, some villages also do not know that budgeting through the Village Budget can be used for waste management such as Jatiwangi Village, Mekarsari Village, Pamekarsari Village, Bagendit Village, Limbangan Timur Village. The results of interviews with respondents in each village provided some information that some respondents were not aware of the policy from the regent's instruction letter so they had not carried out waste management in the village. Waste management conditions in Bayongbong Village can be seen in Figure 2.



Figure 2. Waste Management Conditions in Bayongbong Village

However, there are also efforts that have been made by the village for regional scale waste management as directed by the regent's instruction letter, one of which is in Cihuni Village which has a waste bank in Kp. Pasar Kolot where the existence of the waste bank increases active community participation in waste management and creates a healthy environment. In addition, the implementation of waste management policies in villages uses the APBDes (Village Revenue and Expenditure Budget) budget for waste facilities and infrastructure such as purchasing waste wheels and trash bins. The garbage carts purchased through the APBDes in Cihuni Village can be seen in Figure 3.



Figure 3. The Garbage Carts from APBDes in Cihuni Village

Several other villages also have similar potential for providing Waste Treatment Facilities with TPS 3R, this can be seen from the community initiative that has started to sort waste from its source, such as separating organic waste such as food scraps, leaves, and twigs processed into compost fertilizer which is useful for local agriculture or plantations and non-organic waste such as glass bottles, cans, or plastic items that are used as handicraft materials or high-value products, which can help increase community income.



Figure 4. TPS 3R in Sukajaya Village

Several other villages, for example in Sukajaya Village, have efforts to provide Waste Treatment Facilities with TPS 3R. This is supported by community initiatives that have started to sort waste from its source, such as separating organic waste such as food scraps, leaves, and twigs processed into compost that is useful for local agriculture or plantations, while non-organic waste such as glass

bottles, cans, or plastic items is used as handicraft materials or high-value products, which can help increase community income. The following are the conditions of TPS 3R in Sukajaya Village which can be seen in Figure 4.

The implementation of the community-based TPS 3R waste management policy in Garut Regency needs to consider 6 influential variables, where according to Krisnawansyah, Y. (2021) the obstacles encountered are 1) standards and policy objectives that are not yet fully good; 2) insufficient financial support and human resources; 3) Communication between implementing agencies has not been established properly; 4) the characteristics of implementing agencies have not been formed properly; 5) the attitude of the implementers is still not professional and 6) social, environmental, economic and political aspects that have not been managed properly. The success of implementing waste management policies is not only determined by human resources but also needs to be supported by the availability of a budget for waste management on a regional scale. The source of the budget for waste management can come from the national revenue and expenditure budget or APBN, Village Funds. Based on the results of other studies, it shows that funds sourced from the regional revenue and expenditure budget or APBD are also used for the construction of TPS 3R and the operation of waste service activities so that they can improve waste management services that reach all existing areas (Kusuma & Adhiyana, 2024). In addition, the role of regulation and community participation is very strong in influencing all variables in the waste management system, so that policies that support sustainability must focus on implementing regulations and increasing community participation. This is in accordance with the concept of TPS 3R as a community-based waste management program (Nopriani et. al, 2022). In relation to the willingness and ability of the community to participate in waste management, it is necessary to motivate the community to always play an active role in waste management, one of which is by providing financial benefits to the community (Utari et. al, 2022).

IV. CONCLUSION

The results of the research that has been conducted on waste management at the village level through the existence of the Garut Regent's Instruction Letter No. 600.1.17.3/4116/DLHK concerning the Provision of Area-Scale Waste Treatment Facilities with TPS 3R issued in August 2023 that from the results of the survey from interviews that have been conducted as many as 26% of the total villages surveyed have known the regent's instruction letter and implemented it, then as many as 59% of the total villages surveyed have known but did not implement it, there are also as many as 15% of the total villages surveyed who did not know the regent's instruction letter and did not implement it.

From the statistical analysis of the Fisher's Exact Test as an alternative to the Chi-Square test, it has

shown that the expected frequency value with crosstabulation gives the result that knowledge of the regent's instruction letter does not have a significant effect on the implementation of the provision of area-scale Waste Treatment Facilities with TPS 3R. Furthermore, the Fisher's Exact Test as an alternative to the Chi-Square test provides a p-value of 0.158 where the p-value is greater than the significance level ($0.158 > 0.05$) then the results of the study indicate that there is no statistically significant relationship between knowing the regent's instruction letter regarding the provision of regional-scale Waste Treatment Facilities with TPS 3R with the implementation of the provision of Waste Treatment Facilities.

This research has limitations where it was conducted in only a select number of villages across all sub-districts of Garut District. Data obtained solely from surveys and interviews, thus relying heavily on the honesty and understanding of respondents, potentially leading to biased responses. Furthermore, the research variables only examined the relationship between knowledge of the District's Instruction Letter and the implementation of the TPS 3R, excluding other potentially influential factors (e.g., community involvement, technical support, or village head motivation).

Recommendations for further research include involving more village representatives in Garut Regency, even comparing results with other regencies, to ensure more representative and generalizable results. A broader analysis of variables should be conducted, considering factors such as village human resource capacity in waste management, community participation, the availability of infrastructure (TPS 3R, vehicles, land) and the role of community leaders or village institutions.

Steps need to be taken to increase the effectiveness of waste management in Garut District through a strong commitment from the Regent to provide clear direction to all Village Heads so that waste management can be a priority in the village budget. Budgeting for waste management from the APBDes is very important so that there are sufficient funds to build adequate waste management infrastructure, such as waste sorting places, waste transport vehicles, and education programs for the community.

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