

Waste Management Behavior Using the 3R Method (Reduce, Reuse and Recycle) by Residents Around the Ingramui Temporary Waste Disposal Site

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ARTICLE INFO

Keywords: Waste Management, Reduce, Reuse, Recycle

Received : 5 April

Revised : 23 Mei

Accepted: 23 Juni

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ABSTRACT

This study highlights the waste management behavior of communities around temporary waste disposal sites (TPS) that have not routinely implemented the 3R method (Reduce, Reuse, Recycle). Although officers clean the TPS every day, the location is still filled with garbage. A survey was conducted on 102 respondents from three sub-districts around the TPS. The results showed that 73% of respondents had not routinely implemented 3R. The proportion test proved that the majority were not consistent in 3R-based waste management. Age, education, number of family members, access to infrastructure, distance to TPS, knowledge, and income influenced this behavior, but only knowledge and income had a partial effect

INTRODUCTION

Waste management issues are environmental issues that remain in the spotlight in various regions. In 2024, Manokwari Regency will be the city with the highest waste production, namely 76,650 tons (West Papua Province DLHP, 2025) even though various regional regulations and regent regulations have been established, for example Regional Regulation Number 3 of 2002 concerning waste and sanitation services, and Regional Regulation Number 12 of 2011 concerning Waste/Cleanliness Service Retribution. In addition, there is also Regional Regulation Number 8 of 2016 concerning the Formation of Regional Apparatus Organizational Structures, which also regulates waste management.

As an implementation of this legal product, the Manokwari Regency government has issued a policy to create Temporary Waste Disposal Sites (TPS) in each sub-district and waste collection vehicles with the aim of helping the community manage household waste. However, the reality in the field shows that TPS is always full even after being lifted by cleaning officers. This shows that the current community waste management system is not yet efficient. One strategy that can be done to prevent this is to apply the concept of 3R waste management, namely Reduce, Reuse and Recycle (Iliná et al., 2023; Junaidi & Utama, 2023b). This system is not only a final disposal system but is a system where people's behavior is changed by reducing waste, reusing unused items and recycling waste. This study evaluates what factors influence the behavior of people around the Ingggramui TPS to manage waste using the 3R method.

LITERATURE REVIEW

Waste management using the reduce, reuse and recycle method is an effort to reduce waste both on a household scale and on a wider scale (Iliná et al., 2023; Yogini et al., 2020).

Individual or household behavior in managing waste is influenced by various demographic, socio-economic, and physical environmental factors. Several studies have shown that a combination of personal characteristics and external conditions play a significant role in determining the level of public awareness and compliance with sustainable waste management practices (Junaidi & Utama, 2023a; Kholil et al., 2018; Syahbani et al., 2023). Some of the main factors thought to influence this behavior include: age (Deshpande et al., 2024; Haq, 2024), level of formal education (Deshpande et al., 2024; Haq, 2024; Iliná et al., 2023), number of family members, availability of waste disposal facilities at home (Iliná et al., 2023), distance from home to TPS (Iliná et al., 2023; Junaidi & Utama, 2023c), Knowledge of Waste Management (Ediana et al., 2018; Mohammed et al., 2021) and Household Income (Deshpande et al., 2024). The hypothesis in this study is:

1. It is suspected that most of the community's behavior in waste management with the 3R method in the research area has not been done consistently
2. Variables of age, formal education, number of family members, availability of facilities, distance to TPS, knowledge and income affect waste management behavior

METHODOLOGY

This study uses a quantitative descriptive method with a survey technique using residents living around the Inggramui TPS which includes 3 sub-districts, namely Wosi, Iggramui and Udopi sub-districts, as many as 102 heads of families who were selected randomly. Data were obtained by interviewing respondents with the questionnaires provided. The results of the study were analyzed using descriptive statistics, followed by a proportion test to test hypothesis 1 and a multiple regression test to test hypothesis 2.

RESULTS

Respondent Identity

The results of the study regarding respondent identity are presented in Table 1 below:

Table 1. Respondent Identity

Respondent Identity	Mea n	Media n	Modu s	StDe v	Mi n	Ma x
Age (X1)	39	38	40	9	20	65
Formal Education (X2)	13	12	12	3	6	18
Number of Family Members (X3)	4	4	3	2	1	11

Source: Primary Data, 2024

Table 4 presents descriptive statistics of three respondent identity variables: Age (X1), Formal Education (X2), and Number of Family Members (X3). The following is the interpretation of each variable based on the statistical values given: Age (X1). The mean is 39 years, which means the average age of respondents is 39 years. The median is 38 years, which means half of the respondents are under 38 years old and half are over 38 years old. The mode is 40 years, which means that the age of the most respondents is 40 years old. The standard deviation (StDev) of 9 years means that there is quite a large variation in the ages of the respondents. The minimum value of 20 years indicates that the youngest respondent is 20 years old, and the maximum value of 65 years means that the oldest respondent is 65 years old.

Formal Education (X2). The mean level of formal education of respondents is 13 years, which means that the average respondent has received education equivalent to a diploma one level. The median of formal education data is 12 years, which means that half of the respondents have education below 12 years and half have education above 12 years. The mode of the respondent's formal education level of 12 years means that the most common education that respondents have is 12 years, which is generally equivalent to high school. The standard deviation (StDev) of the respondent's formal education level of 3 years means that there is variation in the length of the respondent's formal education. This is indicated by the respondent's minimum value or lowest education for 6 years or only completing formal education for 6 years (equivalent to elementary school) and the maximum value or highest formal education of the respondent is

18 years or equivalent to Strata 1. This condition illustrates that all respondents in this study have reading, writing and arithmetic skills. Number of Family Members (X3).

The data in the table shows that the average (Mean) is 4 people, which means that the average number of respondents' family members is 4 people. The median of 4 people means that some respondents have families of less than 4 people, and half of them have more than 4 people. The respondents' family members consist of nuclear families and extended families. Families that have many family members are caused by extended families also living together in one house. The extended family in question is parents and nephews who are studying (high school and college) in the city of Manokwari. The mode of 3 people means that the most common number of family members found is 3 people. The standard deviation (StDev) of the data on the number of family members is 2 people, which means that there is variation in the number of family members ranging from 1 person (minimum value) to 11 people (maximum value).

Waste Management Behavior (Y)

The research variable for waste management behavior (Y) is measured by 3 variables, namely reduce (Y1), reuse (Y2) and recycle (Y3). Variables Y1, Y2 and Y3 are each measured by 5 indicators. Indicator Y1 is avoiding the use of products that produce a lot of waste (Y11), using shopping bags (Y12), buying environmentally friendly products (Y13), buying quality goods (Y14) and using goods with refillable packaging (Y15).

Based on the research results, waste management behavior by reducing products that produce a lot of waste (Reduce) is presented in the following table:

Table 2. Waste Management Behavior based on the Behavior of Each Indicator

Behavior (Y)	Y11		Y12		Y13		Y14		Y15	
	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)
Always	19	18,63	6	5,88	9	8,82	13	12,75	32	31,37
Often	43	42,16	13	12,75	21	20,59	16	15,69	27	26,47
Seldom	34	33,33	27	26,47	43	42,16	43	42,16	33	32,35
Sometimes	5	4,90	15	14,71	16	15,69	21	20,59	7	6,86
Never	1	0,98	41	40,20	13	12,75	9	8,82	3	2,94
Total	102	100,00	102	100,00	102	100,00	102	100,00	102	100,00

Source: primary data, 2024

Table 2 shows that indicator Y15 is the most dominant behavior with 31.37% of respondents stating that they always use refillable items, and 26.47% stating that they often do so. This indicates that most respondents have shown high awareness of the importance of reducing waste through reuse of packaging. This may be driven by the availability of more easily accessible refillable products or because of established habits.

Conversely, indicator Y12 shows the lowest behavioral tendency. As many as 40.20% of respondents never use shopping bags, and only 5.88% always do so. This finding indicates that the behavior of bringing your own shopping bag has not become a common habit, even though this step is one of the simplest ways to reduce plastic waste.

Meanwhile, indicator Y11 shows that the majority of respondents (42.16%) often avoid products that produce a lot of waste, and another 18.63% do so consistently (always). This indicates a relatively good level of awareness, although there is still room for improvement, especially for those in the rare category (33.33%).

In indicator Y13, most respondents (42.16%) admitted to rarely buying environmentally friendly products, and only 8.82% always do so. This shows that although there is awareness of the importance of environmentally friendly products, their implementation is still limited – possibly due to price, access, or lack of product information.

Indicator Y14 also shows a similar trend, where 42.16% of respondents rarely buy high-quality goods to make them last longer, and only 12.75% always do so. This shows that the strategy of reducing waste by purchasing more durable goods has not been fully implemented, perhaps due to economic considerations or a lack of long-term information regarding the benefits of sustainability.

Overall, these data show that although there are several indicators with high levels of positive behavior (especially Y15), the majority of respondents still show inconsistent behavior in applying the principles of reduce. Therefore, a sustainable education strategy is needed as well as policy-based interventions and incentives to encourage more significant and comprehensive behavioral changes in efforts to reduce household waste.

The results of the research on reuse (Y2) are shown by 5 indicators, namely using items that can still be used (Y21), repairing damaged items so that they can be reused (Y22), storing and reusing plastic bags (Y23), donating suitable clothing to those in need (Y24) and using reusable food containers (Y25). The following are the results of the research on the 5 indicators.

Table 3. Waste Management Behavior with the Reuse Method

Behavior (Y)	Y21		Y22		Y23		Y24		Y25	
	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)

Always	20	19,61	7	6,86	14	13,73	14	13,73	11	10,78
Often	48	47,06	25	24,51	27	26,47	27	26,47	17	16,67
Seldom	29	28,43	43	42,16	34	33,33	34	33,33	42	41,18
Sometimes	2	1,96	13	12,75	9	8,82	9	8,82	10	9,80
Never	3	2,94	14	13,73	18	17,65	18	17,65	22	21,57
Total	102	100,00	102	100,00	102	100,00	102	100,00	102	100,00

Table 3 illustrates the reuse behavior of goods in household waste management based on five main indicators, namely: using goods that can still be used (Y21), repairing damaged goods (Y22), saving and reusing plastic bags (Y23), donating clothes that are still usable (Y24), and using reusable food containers (Y25). In indicator Y21 (using goods that can still be used), the majority of respondents showed positive behavior. As many as 47.06% of respondents stated that they often do this, and 19.61% stated that they always do this. Only a small portion rarely or never do it. This shows a fairly good awareness of the community in utilizing goods that are still usable to reduce waste and waste production. On the other hand, indicator Y22 (repairing damaged goods) shows a worrying trend. As many as 42.16% of respondents stated that they rarely do it, and 13.73% stated that they never do it. Only 6.86% stated that they always repair goods. This shows that the behavior of extending the service life of goods through repairs has not become a common habit. This is most likely influenced by cost factors, ease of access to new items, or lack of repair skills.

Indicator Y23 (saving and reusing plastic bags), shows a fairly even distribution of behavior. As many as 33.33% of respondents admitted to rarely, while those who often and always did so were 26.47% and 13.73%, respectively. Although there is initial awareness of reusing plastic bags, encouragement is still needed so that this behavior becomes more consistent. Almost the same thing can be seen in indicator Y24 (donating used clothes), where most respondents are in the rarely (33.33%) and often (26.47%) categories, while only 13.73% always do it. This shows that the practice of reusing plastic bags and sharing or recycling clothes has not been fully internalized as part of a sustainable lifestyle.

The last indicator, Y25 (using reusable food containers), shows a lower level of behavior than the other indicators. As many as 41.18% of respondents stated that they rarely, and 21.57% stated that they never do this action. Only 10.78% stated that they always use reusable food containers. This low figure indicates that the use of disposable containers is still dominant, and that education and easy access to alternative containers need to be improved.

In general, the findings from this table indicate that reuse behavior is still not evenly distributed in the daily lives of respondents. Although the reuse of goods (Y21) shows a positive trend, other indicators, especially repairing

damaged goods (Y22) and reusing food containers (Y25), indicate the need for further intervention. Strategies such as awareness campaigns, simple repair training, and the provision of facilities and incentives can be solutions to increase the consistency of the application of the reuse principle in household waste management.

The results of the study on waste management behavior using the recycle method are indicated by five activities, namely: Separating organic and non-organic waste (Y31), Recycling waste (Y32), making crafts from used food / beverage packaging (Y33), Participating in waste recycling training programs (Y34), and Making compost from leftover food / dry leaves (Y35). The following are the results of research on the five things as follows:

Table 4. Waste Management Behavior with the Recycle Method

Behavior (Y)	Y31		Y32		Y33		Y34		Y35	
	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)	Amount (Soul)	Ratio (%)
Always	17	16,67	17	16,67	11	10,78	11	10,78	11	10,78
Often	10	9,80	10	9,80	17	16,67	17	16,67	17	16,67
Seldom	34	33,33	34	33,33	42	41,18	42	41,18	42	41,18
Sometimes	27	26,47	27	26,47	10	9,80	10	9,80	10	9,80
Never	14	13,73	14	13,73	22	21,57	22	21,57	22	21,57
Total	102	100,00	102	100,00	102	100,00	102	100,00	102	100,00

Based on the data in Table 4, indicator Y31 (separating organic and non-organic waste) shows that the majority of respondents (33.33%) stated that they rarely do it, while only 16.67% do it consistently (always). This reflects that awareness of waste separation has not yet become a habit that is inherent in the community.

Indicator Y32 (recycling waste) also shows a similar pattern to Y31. As many as 33.33% of respondents stated that they rarely do it, and only 16.67% always do it. This shows that recycling activities have not become a routine practice in the community, although the level of participation "sometimes" is quite significant (26.47%).

Indicator Y33 (making crafts from used packaging) shows that 41.18% of respondents stated that they rarely do it, and only 10.78% do it consistently. This shows that creativity in managing packaging waste is still very low and requires improvement in terms of education and empowerment.

In Indicator Y34 (participating in waste recycling training), the highest proportion is also in the “rarely” category (41.18%), while the “always” and “often” categories are only 10.78% and 16.67% respectively. This indicates limited access or interest in formal training on waste management.

Fifth, in indicator Y35 (making compost from food scraps or dry leaves), the data distribution pattern also shows a dominance in the “rarely” category (41.18%), while the level of active participation (always and often) is only 10.78% and 16.67% respectively.

Overall, the general pattern that emerges from all indicators is the dominance of “rare” behavior in recycling-based waste management, with the highest percentage always in the range of 33–41%. The level of active participation is still relatively low and shows that most people have not made waste management part of their daily habits. This finding emphasizes the importance of more intensive interventions through environmental education, practical training, and local policy support to encourage more sustainable recycling practices in the community.

The results of the waste management behavior research using the 3R method are presented in Table 5 below.

Table 5. Waste Management Behavior (Y)

Behavior	Amount (Soul)	Ratio (%)
Never	4	3,92
Seldom	24	23,53
Sometimes	47	46,08
Often	20	19,61
Always	7	6,86
Total	102	100,00

Source: Primary Data, 2024 (Processed)

Table 5 presents data on community behavior in managing waste based on the principles of reduce, reuse, and recycle (3R). Of the total 102 respondents, the majority showed suboptimal waste management behavior. Most respondents, namely 47 people (46.08%), stated that they sometimes manage waste according to the 3R principle. This shows that awareness and consistency towards waste management practices are still relatively low.

A total of 24 respondents (23.53%) stated that they rarely manage waste, while 4 respondents (3.92%) even stated that they never do it. Thus, more than half of the respondents (73 people or 71.53%) showed a frequency of waste management behavior that was classified as low to very low. On the other hand, only 20 respondents (19.61%) stated that they often implement the 3R principle, and even fewer, namely 7 respondents (6.86%), admitted to always doing it. This finding shows that positive behavior towards waste management has not become a deep-rooted habit in the respondent community.

In general, these data reflect the still weak implementation of the 3R principle in people's daily lives. Therefore, it is necessary to carry out more intensive education, counseling, and community empowerment efforts to

increase awareness, commitment, and active participation in 3R-based waste management.

Hypothesis Test 1

To test hypothesis 1 which states: It is suspected that most people's behavior in waste management with the 3R method in the research area has not done it consistently, so the proportion test was chosen because it is seen as the right test. Based on Table 5, 75 people do not consistently manage waste with the 3R method while 27 people do it consistently.

If

p_1 = population that is categorized as never, rarely and sometimes manages waste with the 3R method = 75

p_2 = population that is categorized as often and always manages waste with the 3R method = 27

then

$H_0 : p_1 = p_2 = 0,50 ; Z_{hit} < Z_{tabel}$

$H_1 : p_1 > 0,50 ; Z_{hit} > Z_{tabel}$

$$\hat{p} = \frac{p_1}{N} = \frac{75}{102} = 0,7$$

$$z = \frac{\hat{p} - p_1}{se_0}$$

$$se_0 = \sqrt{\frac{p_1(1-p_1)}{N}}$$

$$se_0 = \sqrt{\frac{0,7(0,5)}{102}} = 0,06$$

$$z = \frac{\hat{p} - p_1}{se_0} = \frac{0,7 - 0,5}{0,06} = 0,35 / 0,06 = 7$$

$Z_{table} = Z_{0.05} = 1.645$, so if $Z_{hit} = 7$, it means that $Z_{hit} > Z_{Table}$, it means that H_0 is rejected and H_1 is accepted. In other words, the number of residents who have not consistently managed waste with the 3R method is greater than 50%.

Hypothesis Test 2

Based on the regression analysis with the help of SPSS Version 22 software (Tables 16-17), the following results were obtained:

Table 6. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501 ^a	.251	.195	2512.33065

a. Predictors: (Constant), x7, x1, x3, x6, x5, x4, x2

Table 6, shows that R Square = 0.251 which means that only 25% of the diversity of waste management variables is explained by the studied X variables, while 75% of the diversity is influenced by other variables that are not studied such as motivation, local culture and others.

The results of the simultaneous test are presented in Tables 7 and 8 below:

Table 7. Simultaneous Test Results

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	198924784.617	7	28417826.374	4.502	.000 ^b
	Residual	593309696.873	94	6311805.286		
	Total	792234481.490	101			
a. Dependent Variable: Y						
b. Predictors: (Constant), x7, x1, x3, x6, x5, x4, x2						

Table 8. Regression Coefficients and Partial Tests

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	9385.295	2177.658		4.310	.000
	x1	-27.997	28.856		-.970	.334
	x2	-40.038	94.263		-.425	.672
	x3	115.688	148.668		.778	.438
	x4	-259.392	277.762		-.934	.353
	x5	.233	1.765		.132	.895
	x6	386.095	81.138		4.759	.000
	x7	31.973	16.838		1.899	.061

a. Dependent Variable: Y

Table 7, shows that simultaneously, the seven independent variables (age (x1), education level (x2), number of family members (x3), availability of facilities (x4), distance from home to TPS (x5), knowledge of waste management with the 3R method (x6) and income (x7)) have a significant effect on the dependent variable (Waste management behavior). This can be seen from the significant value (p) of 0.000 which means it is smaller than alpha (0.01) because the level of confidence used in this study is 90%.

Based on the regression test, the hypothesis that states: variables of age, formal education, number of family members, availability of facilities, distance to TPS, knowledge and income have an effect on waste management behavior is accepted.

Meanwhile, the results of the partial test in this study are presented in Table 8. Table 8 shows that not all independent variables have a significant effect on the dependent variable (Y). The variables that have a significant effect on Y partially are variables that have a p value of less than 0.01. Based on Table 6, only the variables of knowledge of waste management with the 3R method and income. Meanwhile, other variables such as age, education, number of family members, availability of trash bins and distance to TPS do not affect the 90% confidence level. The knowledge variable has the most significant influence, indicating that the higher the community's knowledge of the 3R concept, the greater the possibility of them implementing environmentally friendly waste management behavior. This finding is in line with the theory (Ajzen, 1991) in the Theory of Planned Behavior, which states that knowledge is one of the determinants of attitudes and intentions that influence individual behavior.

In addition, income also has a significant partial effect, indicating that people with higher incomes tend to have greater access and capacity to participate in effective waste management.

Other variables such as age, formal education, number of family members, availability of trash bins, and distance to TPS do not show a significant partial effect. This indicates that in the context of this study, internal factors such as knowledge and economic conditions are more dominant in shaping waste management behavior than demographic or infrastructure factors alone.

Based on the simultaneous test, it can be concluded that the research variables X1 - X7 will have a significant effect on management when other variables are present together. On the other hand, when there is only 1 variable without other variables, then there are only 2 influential variables, namely knowledge about waste management with the reuse, reduce and recycle method and income. Based on the test results, the following regression equation is obtained:

$$y=9385,3-28x_1-40x_2+116x_3-259x_4+0,2x_5+386x_6+32x_7+\varepsilon$$

The equation shows that without variables x1 to x7, respondents can manage waste using the 3R method with a value of 9385.3. This equation also shows that with age, education level, number of family members, availability of waste disposal facilities, availability of trash bins at home, distance to TPS, knowledge of waste management using the 3R method and family income as it is today, then the variables age, education level and availability of waste disposal facilities at home have a negative effect, while the number of family members, knowledge of waste management using the 3R method and income have a positive effect on waste management.

A positive regression coefficient on the knowledge variable means that the higher a person's knowledge of the 3R principle, the better their behavior in managing waste. The regression coefficient value of the knowledge variable of 386 means that by increasing 1 unit of knowledge, the waste management score will increase by 386 units. Knowledge about waste management using the 3R method was obtained by respondents through social media and interactions with other people who live in other areas. With knowledge of the 3R method, respondents manage waste by reducing, reusing and recycling the waste they produce through daily household activities. This is in line with research conducted by Faktor et al., (2023) that knowledge influences people's behavior in managing household waste.

DISCUSSION

The behavior of managing waste with the 3R method in Wosi Village, Inggramui Village and Udopi Village shows that most residents have not consistently managed waste with the 3R method. Residents do not understand how to reduce waste by avoiding the use of products that produce a lot of waste, using shopping bags, buying environmentally friendly products, buying good quality goods, and using refillable goods. There is a small portion of the population who understand but are not consistent in doing so. In addition, residents have not consistently taken action to reduce waste by using goods that

can still be used, repairing damaged goods so that they can be reused, storing and reusing plastic bags, donating suitable clothing to those in need and using reusable food containers. In terms of reducing waste by recycling, it is also not consistent.

The results of further tests show that knowledge and income also influence waste management behavior. The higher the knowledge and income, the more consistent the population is in carrying out 3R. Understanding of 3R affects the behavior of the population. The more they understand about waste management, the more consistent the population is in implementing 3R. This is in line with the results of research (Ediana et al., 2018; Winarko et al., 2023) that knowledge about waste management greatly influences waste management behavior. The results of this study emphasize the importance of increasing public knowledge as the main strategy in encouraging sustainable waste management behavior. Public education about the 3R concept can be carried out through counseling programs, environmental campaigns, or curriculum integration in schools. This is in line with the principles of behavioral change that place knowledge as the first step in forming attitudes and actions (Ajzen, 1991).

Income as the second significant factor also shows that waste management policies need to consider economic aspects, for example through incentives or support facilities for low-income community groups so that they can still contribute to waste management activities. This is in line with the results of research (Deshpande et al., 2024) that income affects waste management behavior. Meanwhile, the insignificance of infrastructure variables such as distance to TPS and availability of trash bins shows that the existence of facilities does not necessarily guarantee a change in behavior, if not followed by increased motivation and understanding of the community.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, it can be concluded that:

1. Most of the residents around the Ingramui TPS location have not consistently managed waste using the 3R method
2. Factors that simultaneously influence community behavior related to waste management at the Ingramui TPS are age, education, number of family members, availability of facilities, distance to TPS, knowledge of waste management with the 3R method and income, but what has a partial effect is knowledge of waste management with the 3R method and income.

FURTHER STUDY

Things that can be recommended are as follows:

1. There needs to be massive socialization from related agencies about waste management with the 3R method.
2. There needs to be an institution that accommodates residents' creativity from waste so that it can attract residents' interest in utilizing waste into crafts that can be sold.
3. The waste collection fleet that has often been late in collecting waste from residents' homes needs to be reactivated so that there is no waste piling up in residents' yards forming attitudes and actions (Ajzen, 1991).

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