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Community Participation in Domestic Waste Management in Vim Village Abepura District Jayapura City

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Abstract - *Household waste production is increasing every day as the number of products and consumption patterns increases. To overcome the waste volume increase can be done by: reducing the volume of waste from the source through community empowerment. The research on community-based waste management in Vim Village Abepura District Jayapura City aims to: (1) obtain an overview of community-based waste management planning and process, (2) to inventory challenges and opportunities in domestic waste management, (3) community-based waste management. The type of this research is descriptive qualitative, that is research which intends to describe phenomenon that happened at research location. Data collection techniques include interviews, questionnaires, observations and documentation, while the data analysis uses qualitative descriptive techniques. The result of this research concludes that domestic waste management in Vim Village Jayapura City can reduce waste disposal to TPA, but not optimally implemented either in sorting and or in composting because of limited facilities and infrastructure. The composition of waste generation in Vim Village Jayapura City consists of: organic garbage 50.75%, plastic 17.14%, 19.42% paper, glass/metal 12.70%. Organic waste utilized to compost will reduce waste generation and reduce environmental burden, while sorting result not only can reduce waste generation but also can be sold or managed so as to increase revenue. Suggestions based on the results of the research can be given as follows: (1) Government needs to do more socialization about waste management. (2) Waste management is done with 3R principles (reduce, reuse, recycle).*

Keywords *– Evaluation, Waste Management, Community Participation*
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1. Introduction

The problem of waste is not a new problem in Indonesia. The increasing volume of waste in line with population growth and limited land for final disposal is a problem that must be solved immediately [1]. An effort that has been done by the government in overcoming and managing the issue of waste is the formulation of Law Number 18 Year 2008 on Waste Management [2]. In the UUPS, it is explained that waste management consists of waste reduction and waste management [3]. The reduction of waste includes the activities of limiting waste piles, recycling garbage, and utilization of waste [4]. While the waste handling activities include sorting in the form of grouping and separation of waste in accordance with its type and the removal of waste from the waste source to the temporary shelter (TPS) then to the final processing (TPA) [5].

Waste management is not only the government obligation. Communities and business actors as waste producers must also be responsible for keeping the environment clean and healthy. This means there must be a good cooperation between the government, business actors, and the community in overcoming the waste problem. Referring to the UUPS, to overcome the problem requires waste management programs in order not to be a garbage dump in the landfill, but it can be turned into something useful and valuable.

The basic concept of a waste bank consists of 5M, which stands for reducing waste, sorting waste, utilizing waste, recycling waste, and saving garbage. From the concept of waste banks it is clear that this waste management cannot be done only by one party [6]. The community participation in moving waste management is important for the sustainability of the waste management organization.

In addition, programs that have been encouraged by the government to be implemented by the community are the 3R principle (reduce, reuse, and recycle). The 3R principle is included in waste management that significantly reduces, reuses, and recycles waste. This 3R principle is a principle applied from the community as a source of waste generation which aims at reducing waste

generation in landfills and reusing recyclable waste into valuable crafts or products to sell. The community as the main actors of this principle is expected to participate so that the problem of waste can be overcome.

Urban area such as Jayapura City is an area that produces a lot of domestic waste. According to information provided by the Department of Hygiene and Funeral of Jayapura City, the waste generated in Jayapura City reaches 700 tons per day. Of the 700 tons of waste, the amount of waste transported to TPA Nafri and Koya Koso reaches 1,226 m3 per day [7].

The implementation of waste management programs that have been targeted in Jayapura City still cannot reduce the amount of landfill with maximum. It is caused by the lack of public participation. The top down development program is one of the reasons why the waste bank program is not optimal yet. The community does not have a strong sense of ownership of the program so that the program does not run continuously. As a result, facilities that have been provided by the government, such as garbage chopper machine become abandoned. The waste problem still cannot be solved completely.

As an effort to arouse awareness in handling environmental problems, especially garbage and to create a clean and environmentally friendly residential environment, a change of waste management paradigm must be done by:

a. Reduction of waste volume from the source by selection, or processing with simple technology such as composting with household scale or environmental scale.
b. Community participation in waste management coordinated by community self-help groups (KSM). This group is responsible for coordinating the management of environmental hygiene.

2. Methods

This research is descriptive qualitative, that is research which intends to describe phenomenon in domestic waste management/area, which happens in Vim Village. The use of qualitative descriptive method has advantages because the problems studied are not only based on reports on an event or phenomenon but also confirmed with other relevant sources [8].

Based on the purpose of qualitative research, the important sampling procedure is how to find key informant. The orientation of the respondent is not how many people are the respondents but whether the collected data are sufficient or not. Therefore, qualitative descriptive research conducted is intended to explore and describe the phenomenon of management.

Data collection is done through observation, interviews, and questionnaires. Sources of supporting data that are in forms of documents that can be reports, notes as well as other written materials which are official documents relevant to the research topic. The number of population and sampling is determined by using Slovin formula. The samples are 32 people from some RW/RT in Vim Village. This study uses abstractive inductive logic that is an analytical method that performs an analytical approach using the researcher's perspective as the main analytical tool.

3. Results

Domestic waste produced in Vim Village from the calculation of research is that there is more inorganic waste than organic waste. Organic waste in Vim Village for now has not been utilized to be compost.

From the data, it is known that the garbage from household in research area of Vim consists of 50.75% organic garbage and 19.42% paper waste, 17.14% plastic, and 12.70% glass/metal. From the data, it can be concluded that organic waste if processed again will have economic value.

Table 1. Composition of waste volume

No	Observation	Waste Type									
		Organic		Paper		Plastic		Glass / Metal		Total	
		Weight (kg/o/hr)	%	Weight (kg/o/hr)	%	Weight (kg/o/hr)	%	Weight (kg/o/hr)	%	Weight (kg/o/hr)	%
1	Day-1	0.31	54.39	0.08	14.04	0.1	17.54	0.08	14.04	057	100
2	Day-2	0.28	54.90	008	15.69	0.09	17.65	0.06	11.76	0.51	100
3	Day-3	0.27	48.21	0.11	19.64	0.09	16.07	0.09	16.07	0.56	100
4	Day-4	0.36	42.35	0.2	23.53	0.16	18.82	0.13	15.29	0.85	100
5	Day-5	0.23	52.27	0.1	22.73	0.11	25.00	0	0.00	044	100
6	Day-6	0.25	44.64	0.12	21.43	0.1	17.86	0.09	16.07	0.56	100

No	Observation	Waste Type									
		Organic		Paper		Plastic		Glass / Metal		Total	
		Weight (kg/o/hr)	%	Weight (kg/o/hr)	%	Weight (kg/o/hr)	%	Weight (kg/o/hr)	%	Weight (kg/o/hr)	%
7	Day-7	0.24	41.38	0.12	20.69	0.1	17.24	0.12	20.69	0.58	100
8	Day-8	0.3	50.00	0.12	20.00	0.12	20.00	0.06	10.00	06	100
9	Day-9	0.31	48.44	0.12	18.75	0.11	17.19	0.1	15.63	0.64	100
10	Day-10	0.26	49.06	0.09	16.98	0.08	15.09	0.1	18.87	0.53	100
11	Day-11	0.23	50.00	0.1	21.74	0.06	13.04	0.07	15.22	046	100
12	Day-12	0.24	61.54	0.08	20.51	0.07	17.95	0	0.00	0.39	100
13	Day-13	0.23	54.76	0.08	19.05	0.06	14.29	0.05	11.90	042	100
14	Day-14	0.24	58.54	0.07	17.07	0.05	12.20	0.05	12.20	041	100
Average		0.27	50.75	0.11	19.42	0.09	17.14	0.07	12.70	0.54	100

Table 2. Composition and total amount of waste dump in Vim Village

No	Composition	Percentage (%)	Weight kg/o/hr	Economy Potential
1	Organic	50.75	0.27	Composting material
2	Paper	19.42	0.11	Recycling material
3	Plastic	17.14	0.09	Recycling material
4	Glass & Metal	12.70	0.07	Recycling material
	Total Amount	100	0,54	

Table 3. Economic value of potential utilization of waste components in Vim Village

No	Waste Component	Weight Kg/o/ day	Percentage (%)	Number of People	Weight kg/ day	Price (Rp/kg)	Value (Rp)
1	Organic	0.27	50.75	205	55.35	1000	55350
2	Paper	0.11	19.42	205	22.55	500	11275
3	Plastic	0.09	17.14	205	18.45	900	16605
4	Glass and Metal	0.07	12 70	205	14.35	400	5740
	Total	0,54	100	205	110.7		88970

4. Conclusions

Community-based waste management can reduce waste disposal. Based on the result of observation analysis, the composition of waste generation in Vim is 50.75% organic garbage, 17.14% plastic, 19.42% paper and 12.70% glass/metal. 49.52% organic waste, 18% plastic, 19.29% paper, and 12.52% glass/metal. The community-based domestic waste management in Vim Village is implemented only in the development stage so that in the future, the community is expected to participate in utilizing the waste.

It is applied with the 5M concept that is reducing waste, sorting out garbage, utilizing garbage, recycling garbage and saving garbage as well as 3R Concept (Reduce, Reuse, and Recycle). The main problem of community participation in domestic waste management is how to apply the paradigm of sorting, disposing of garbage into waste utilization.

Therefore, it is suggested that the government do more socialization about community-based waste management through organic and inorganic waste sorting, so that the community understands the functions and benefits of household waste better. In addition, to meet the needs of facilities and infrastructure that have not been adequate, the government of Jayapura City is expected to meet the needs of infrastructure facilities such as arm roll trucks, open trucks, trash motor, garbage containers in the neighborhood so that transporting waste to TPS and TPA can be done in order. In addition to the limitations of resources, it is necessary to think of a solution for the driver, officers who work mainly in the fulfillment of life needs and incentives or a decent salary.

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