

## Domestic Waste Generation and Management During COVID-19 in Tambahrejo Village

### *Pengelolaan dan Produksi Sampah Domestik Selama COVID-19 di Desa Tambahrejo*

Larasati<sup>1</sup>, Prehatin Trirahayu Ningrum<sup>2\*</sup>, Anita Dewi Moelyaningrum<sup>3</sup>, Yudhiakuari Sincihu<sup>4</sup>

<sup>1,2,3</sup>Department of Public Health, Faculty of Public Health, Universitas Jember, Jember, East Java, 68121, Indonesia

<sup>4</sup>Widya Mandala Surabaya Catholic University, Surabaya, East Java, 60272, Indonesia

#### ARTICLE INFO

**Received:**

October 14, 2025

**Accepted:**

December 02, 2025

**Published online:**

December 31, 2025

**\*Correspondence:**

harumfkm@unej.ac.id

**Doi:**

<https://doi.org/10.54630/ijahr.v2i2.135>

**Keyword:**

Domestic waste;  
Composition waste;  
Management during a  
covid-19 pandemic

**Kata Kunci:**

Limbah domestik;  
Limbah kompos;  
Pengelolaan selama  
pandemi Covid-19

#### ABSTRACT

Villages in Candipuro District, Lumajang Regency, including Tambahrejo Village, have not implemented programs in cooperation with the Environmental Agency for household waste collection, both before and during the Covid-19 pandemic. According to Regional Regulation No. 58 of 2018, Lumajang Regency targeted a 26% reduction and 73% handling of household waste by 2022. This study analyzed household waste production, composition, and management during the pandemic to support JAKSTRADA policy. The study used a descriptive observational method with a cross-sectional design, measuring waste according to SNI 19-3964-1994, interviews, and observation. Results showed an average household waste weight of 0.32 kg/person/day and a volume of 3.42 liters/person/day. Potential waste from households with members engaging in home learning reached 168,101.32 kg/day, dominated by 46.11% organic waste. Waste reduction and processing reached 4.72% and 4.7%. Domestic waste increased during the pandemic, while management remained suboptimal. Recommended strategies include source-based waste separation, optimization of waste banks, application of the 3R principle, continuous community education, and collaboration between village authorities, schools, and residents to improve the effectiveness of domestic waste management.

#### ABSTRAK

Desa di Kecamatan Candipuro, Kabupaten Lumajang, termasuk Desa Tambahrejo, belum memiliki program kerja sama dengan Dinas Lingkungan Hidup untuk pengumpulan sampah rumah tangga, baik sebelum maupun selama pandemi Covid-19. Berdasarkan Peraturan Daerah Nomor 58 Tahun 2018, Kabupaten Lumajang menargetkan pengurangan sampah rumah tangga 26% dan penanganan 73% pada 2022. Penelitian ini menganalisis produksi, komposisi, dan pengelolaan sampah rumah tangga selama pandemi guna mendukung kebijakan JAKSTRADA. Metode penelitian adalah observasi deskriptif dengan desain cross-sectional, menggunakan pengukuran sampah sesuai SNI 19-3964-1994, wawancara, dan observasi. Hasil menunjukkan rata-rata berat sampah rumah tangga 0,32 kg/orang/hari dan volume 3,42 liter/orang/hari. Potensi produksi sampah dari rumah tangga dengan anggota Belajar Dari Rumah mencapai 168.101,32 kg/hari, didominasi sampah organik 46,11%. Pengurangan dan pengolahan sampah baru mencapai 4,72% dan 4,7%. Produksi sampah domestik meningkat selama pandemi, sementara pengelolaan masih kurang optimal. Strategi yang dibutuhkan meliputi pemilahan dari sumber, optimalisasi bank sampah, penerapan 3R, edukasi berkelanjutan, serta kolaborasi pemerintah desa, sekolah, dan masyarakat untuk meningkatkan efektivitas pengelolaan sampah domestik.



## 1. INTRODUCTION

Domestic waste generation continues to increase due to the growth of human activities and consumption patterns. Globally, cities generate more than 1.3 billion tons of waste annually, and this amount is projected to increase to 2.2 billion tons by 2025<sup>1</sup>. In Indonesia, waste generation has reached approximately 175,000 tons per day or around 64 million tons per year. These increasing amounts of waste pose significant environmental and public health challenges, particularly in areas with limited waste management infrastructure and services<sup>2,3</sup>.

The COVID-19 pandemic further contributed to the increase in domestic waste generation because most community activities, including work and learning activities, were carried out from home through the Learning from Home (LFH) policy. This condition increased household consumption and generated additional waste, including disposable masks, gloves, disinfectant containers, and packaging waste. However, improvements in household waste management practices did not occur proportionally with the increase in waste generation.

In Lumajang Regency, domestic waste generation increased during the COVID-19 pandemic. Data from the Lumajang Regency Environmental Service showed that waste generation increased from 151,549 kg/day in 2019 to 166,000 kg/day in 2020, indicating an increase of approximately 3.2%. In addition, the average waste generation reached 0.48 kg/person/day. This increase reflects the growing burden of domestic waste management during the pandemic period.

Tambahrejo Village, Candipuro District, was selected as the study area because waste management practices in the village remain inadequate. Preliminary observations showed that more than 50% of housewives reported an increase in household waste during the Learning from Home (LFH) period. Most residents still dispose of waste by open burning or dumping it into rivers regardless of waste type. In addition, the village has limited waste management facilities, including the absence of temporary waste disposal sites and inadequate waste collection services. These conditions may increase environmental pollution and health risks such as diarrhea, dengue fever, respiratory disorders, and vector-borne disease

Based on the preliminary study that has been carried out, it has been proven that more than 50% of housewives in the village of Tambahrejo stated that the waste in their homes has increased since the recommendation of School from Home (SFH) where all activities require to be done at home. However, the addition of new waste such as used disposable masks, used gloves, used tools, and disinfectants does not change the management of household waste.

Waste management improvement is necessary to support the achievement of regional waste reduction targets. Based on Lumajang Regent Regulation Number 58 of 2018 concerning Regional Policies and Strategies for Household Waste and Household-like Waste Management (JAKSTRADA), Lumajang Regency targeted a 26% reduction in household waste and 73% waste handling coverage by 2022. However, achieving these targets remains challenging due to increasing waste generation and limited community participation in waste reduction practices.

Previous studies have generally focused on urban waste generation and management, while studies examining domestic waste generation, composition, and community-based waste management in rural areas during the COVID-19 pandemic are still limited. Therefore, this study aimed to analyze the generation, composition, and

management of domestic waste during the COVID-19 pandemic in Tambahrejo Village, Candipuro District, Lumajang Regency, to support the implementation of the JAKSTRADA program and strengthen community-based waste management strategies. The achievement of the Lumajang Regency Policy and Strategy program in the Management of Household Waste and Types of Household Waste (JAKSTRADA) is not easy because it requires cross-sectoral coordination according to Lumajang Regent Regulation Number 58 of 2018 concerning Regional Policies and Strategies for Household Waste Management and Household-like Waste (JAKSTRADA).

This study aims to analyze the generation, composition, and management of domestic waste during the Covid-19 pandemic in Tambahrejo Village, Candipuro District, Lumajang Regency to support the Lumajang Regency Policy and Strategy program in the Management of Household Waste and Similar Household Waste (JAKSTRADA). However, studies analyzing the generation, composition, and community-based management of domestic waste during the COVID-19 pandemic in rural areas are still limited, particularly in Tambahrejo Village, where waste disposal practices such as open burning and river dumping are still common and waste management facilities remain inadequate.

## 2. METHODS

This study used a descriptive quantitative approach with a cross-sectional design and was conducted in Tambahrejo Village, Candipuro District, Lumajang Regency in 2022. The study population consisted of 1,868 households with family members participating in Learning from Home (LFH), and additional informants the Head of Tambahrejo Village, and officers from the Lumajang Regency Environmental Service.

The sample size for household respondents was determined using the SNI 19-3964-1994 standard regarding methods for sampling and measuring municipal waste generation and composition. Based on the calculation, a minimum of 43 household respondents and 7 households for direct waste generation measurement were obtained. Households were selected using a simple random sampling technique based on the household registration list provided by the village administration. The inclusion criteria were households with family members conducting Learning from Home (LFH) activities during the COVID-19 pandemic.

The procedures for collecting and measuring waste are as follows:

- 1) Waste sampling locations were taken from 12 houses in Tambahrejo Village; 2) Sampling was conducted once every 8:00 a.m. Western Indonesian Time for 8 days without a break, with the same respondents and locations; 3) The equipment and supplies used included: a) Waste collection tools in the form of 40-liter plastic bags; b) Boxes measuring 20 cm x 20 cm x 100 cm with a height gauge to measure waste volume; c) Scales with scales (0-10) kg and (0-50) kg; d) Bins measuring (1 m x 0.5 m x 1 m) with a height gauge to measure waste volume; e) Equipment used for waste removal included gloves and a shovel.

## 3. RESULT

Household waste production was measured by taking samples from at least 7 homes (minimum sample) with the criterion that there were family members implementing Learning from Home (LFH). Waste production measurements were

conducted for 8 days directly at the same location in 2022. Waste production measurements were divided into two, namely weight (Kg) and volume (Liter). The results of household waste production measurements in Tambahrejo Village, Candipuro District, Lumajang Regency are as follows:

### Household Waste Generation

- Domestic waste generation rate in units of weight (kg/individual/day)

**Table 1. Distribution of Household Domestic Waste Generation by Weight in Tambahrejo Village**

No. House	Number of Family Members (Persons)	Weight Measurement (Kg)							
		Day							
		1	2	3	4	5	6	7	8
1	4	1.46	1.62	0.786	1.305	0.914	0.893	1.356	0.991
2	5	1.17	1.246	1.005	0.773	1.127	0.917	0.873	1.075
3	4	0.761	1.123	0.863	0.749	1.106	0.935	0.861	0.743
4	3	1.486	1.279	1.377	0.997	1.287	0.929	0.769	1.121
5	6	2.172	1.890	1.998	2.123	1.865	3.51	1.791	1.987
6	2	0.752	0.713	0.597	0.459	0.817	0.397	0.467	0.388
7	4	0.598	1.871	0.911	0.997	1.309	1.141	0.791	0.815
8	3	0.648	0.751	0.588	0.981	0.617	1.101	0.988	0.828
9	4	2.177	3.101	2.901	2.816	1.990	2.255	2.171	1.826
<b>Total</b>	<b>35</b>	<b>11.22</b>	<b>13.59</b>	<b>11.03</b>	<b>11.2</b>	<b>11.03</b>	<b>12.08</b>	<b>10.07</b>	<b>9.77</b>
		<b>89.99</b>							
<b>Amount of waste generation per individual unit</b>		<b>= <math>\sum</math>Domestic waste (kg)/<math>\sum</math>Family members /<math>\sum</math>Day</b>							
		<b>= 89.99/35/8</b>							
		<b>= 0.32 (kg/individual/day)</b>							

Source: Primary Data, 2021

Based on table 1, it can be seen that the measurement results of domestic waste generation per individual unit in weight units are 0.32 kg/person/day. The average waste generation generated in Tambahrejo Village during the Covid-19 pandemic is smaller than the average waste generation that is usually generated in Lumajang Regency, which is 0.48 kg/person/day (Lumajang Regency Waste Management Document in 2017). The results of the weight generation of waste generated in the household of Tambahrejo Village stillbirthbyth SNI 19-3983-1995 concerning specifications for waste generation in medium and small cities, namely the weight of residential waste which ranges from 0.25-0.40 kg/person/day.

- Potential waste generation per village (kg/person/day)

Based on the results of the calculation of waste generation in Addrejo Village, Candipuro District, Lumajang Regency with the criteria that family members are doing School from Home (SFH), then the potential waste generation is as follows:

$$\begin{aligned} \text{Domestic waste} &= \text{Total domestic waste} \times \text{number of villagers} \\ &= 89.99 \times 1868 \\ &= 168.101.32 \text{ kg/person/day} \end{aligned}$$

The results above show that the potential for waste generation in Tambahrejo Village, Candipuro District, Lumajang Regency with the criteria of households where family members are doing Learning from Home (LFH) during the Covid-19 pandemic is 168,101.32 kg/day.

## 3. Domestic waste generation in units of volume

**Table 2. Distribution of Household Domestic Waste Generation Volume in Tambahrejo Village**

No. House	Number of Family Members (Persons)	Volume Measurement (liter/volume)							
		Day							
		1	2	3	4	5	6	7	8
1	4	15.4	16.2	10.5	13.8	12.2	11.3	14.6	13
2	5	13	13.8	12.2	9.7	13.8	11.3	10.5	12.2
3	4	9.7	13	10.5	9.7	13	11.3	10.5	9.7
4	3	15.4	13.8	14.6	11.3	13.8	11.3	9.7	13
5	6	21.9	18.6	20.3	21.1	18.6	28.4	17.8	20.3
6	2	9.7	8.9	7.3	6.5	9.7	5.7	6.5	5.7
7	4	4.9	18.6	10.5	11.3	15.6	13	9.7	9.7
8	3	5.7	6.5	4.9	8.1	5.7	9.7	8.1	7.3
9	4	21.9	29.2	26.7	25.9	20.3	22.7	21.9	19.4
<b>Total</b>	<b>35</b>	<b>117.6</b>	<b>138.6</b>	<b>117.5</b>	<b>117.4</b>	<b>122.7</b>	<b>124.7</b>	<b>109.3</b>	<b>110.3</b>
		<b>958,1</b>							
<b>Amount of waste generation per individual unit</b>		<b>= <math>\sum \text{Domestic waste (kg)} / \sum \text{Family members} / \sum \text{Day}</math></b>							
		<b>= 958.1/35/8</b>							
		<b>= 3.42 (liter/individual/day)</b>							

Source: Primary Data, 2021

Based on table 2, it can be seen that the measurement results of domestic waste generation per individual unit in volume units are 3.42 liters/individual/day. This is not in line with SNI 19-3983-1995 concerning specifications for waste generation in medium and small cities, namely the average volume of waste is between 1.75-2.50 liters/individual/day. The existence of the Covid-19 pandemic does not always make the volume of waste in an area increase. This is in accordance with research conducted (Hardi and Akbar, 2021:102) which states that there is a recommendation for Large-Scale Social Restrictions the average volume of waste has decreased this can be due to the characteristics of an area that can affect the characteristics of solid waste in households at the time of Covid-19 pandemic.

## 4. Domestic Waste Composition

**Table 3. Distribution of Domestic Waste Generation by Waste Composition in Tambahrejo Village**

No.	Composition waste	Type waste	Average (kg/day)	Percentage By Component (%)	Percentage (100%)		
1.	Leftovers and leaves	Organic	5,1865	46,11	46,64		
2.	Wood		0,05975	0,53			
3.	Papers	Anorganic	0,071125	0,64	42,77		
4.	Cloth		0,013125	0,12			
5.	Rubber, Leather		0,00875	0,08			
6.	Plastic		4,68625	41,66			
7.	Metal		0,01225	0,11			
8.	Glass		0,017625	0,16			
9.	Disposable masks		B3	0,64725		5,75	10,59
10.	Anti-septic bottles			0,0775		0,69	
11.	Used disinfectant tools	0,01725		0,15			
12.	Used gloves	0,03625		0,32			
13.	Tissue	0,029875		0,43			
14.	Cotton	0,012125		0,11			

No.	Composition waste	Type waste	Average (kg/day)	Percentage By Component (%)	Percentage (100%)
15.	Diapers		0,1355	1,20	
16.	Bandage		0,21875	1,94	
<b>Total</b>			<b>11,23</b>	<b>100,00</b>	<b>100,00</b>

Source: Primary Data, 2021

Based on table 3, it can be seen that the largest composition of domestic waste is organic waste, namely food scraps and leaves with a percentage of 46.11%, then inorganic waste as the largest waste after organic waste with a percentage of 42.27%. This research is in line with research conducted (Ngambuta & Tangkab, 2018: 249) which states that the composition of domestic waste in the Arta Graha Housing shows that organic waste is found to be 50% more than inorganic waste at 48%.

### Domestic waste reduction system

#### 1. Amount of domestic waste reduction

**Table 4. Distribution of Household Domestic Waste Reduction Practices in Tambahrejo Village**

Days to:	Total Weight	Type waste Organic		Total Weight	Type waste Anorganic	
		Kg	%		Kg	%
1	5,907	0,881	14,91	3,248	0,937	28,84
2	3,799	0,793	20,87	5,038	0,562	11,15
3	4,235	0,509	12,01	4,028	0,497	12,33
4	5,991	0,957	15,97	5,256	0,781	14,85
5	5,208	0,431	8,27	6,543	0,989	15,11
6	6,935	0,637	9,18	5,12	0,699	13,65
7	4,331	0,294	6,78	3,394	0,892	26,28
8	5,494	0,746	13,57	5,906	0,997	16,88
<b>Total</b>	<b>41,9</b>	<b>5,248</b>	<b>37,8</b>	<b>38,443</b>	<b>6,348</b>	<b>139,09</b>
<b>Average</b>	<b>1,04</b>	<b>0,65</b>	<b>4,72</b>	<b>4,80</b>	<b>0,79</b>	<b>17,38</b>

Source: Primary Data, 2021

Based on table 4, it can be seen that the amount of domestic waste reduction in the village of Tambahrejo on the type of organic waste is 4.72%, namely food waste, vegetable waste, fruit residue and leaves that will be made into compost. Meanwhile, the reduction of waste in inorganic types was 17.38% consisting of plastic bottles and plastic bags which were sorted for sale

#### 2. Amount of domestic waste disposed of in Addrejo Village

**Table 5. Distribution of Household Domestic Waste Disposal Amounts in Tambahrejo Village**

Days to:	Total weight	Type waste Organic		Total Weight	Type waste Anorganic		Total weight	Type waste B3	
		Kg	%		Kg	%		Kg	%
1	5.907	5.116	86.60	3.248	2.341	72	0.537	0.537	100
2	3.799	3.006	79.12	5.038	4.386	87.05	0.98	0.98	100
3	4.235	3.726	87.98	4.028	3.531	87.66	1.119	1.119	100
4	5.991	3.034	50.64	5.256	4.475	85.14	1.536	1.536	100
5	5.208	4.777	91.72	6.543	5.554	84.88	1.282	1.282	100
6	6.935	6.298	90.81	5.12	4.421	86.34	0.946	0.946	100
7	4.331	4.017	92.74	3.394	2.502	73.71	1.405	1.405	100

Days to:	Total weight	Type waste		Total Weight	Type waste		Total weight	Type waste	
		Organic			Anorganic			B3	
		Kg	%		Kg	%		Kg	%
8	5.494	4.748	86.42	5.906	4.909	83.11	1.233	1.233	100
<b>Jumlah</b>	<b>41.9</b>	<b>34.722</b>	<b>666.03</b>	<b>38.443</b>	<b>32.119</b>	<b>572.23</b>	<b>9.038</b>	<b>9.038</b>	<b>100</b>
<b>Average</b>	<b>1.04</b>	<b>4.34</b>	<b>83.25</b>	<b>4.80</b>	<b>4.01</b>	<b>71.52</b>	<b>1.13</b>	<b>1.13</b>	<b>100</b>

Source: Primary Data, 2021

Based on table 5, it can be seen that the majority of organic waste types are thrown away at 83.25% consisting of wood, vegetable waste, food waste and leaves. Meanwhile, 71.52% of inorganic waste disposed of consisted of paper, cloth, rubber, metal, glass/glass and plastic. All B3 waste is disposed of directly without any prior management of 100% consisting of used disposable masks, used hand sanitizer bottles, used gloves, used disinfectant tools and materials, tissue, cotton, diapers and sanitary napkins.

### Domestic waste management system in Tambahrejo Village, Candipuro District, Lumajang Regency

1. Sorting, Storage, and Processing of Waste in the Household, can be seen from table 6 as follows:

**Table 6. Distribution of Household Domestic Waste Segregation Practices in Tambahrejo Village**

Sorting Activities	Number of Households	Percentage (%)
Yes	2	4,7
No	41	95,3
<b>Total</b>	<b>43</b>	<b>100</b>

Based on table 6, it can be seen that the majority of people in Tambahrejo Village with a percentage of 95.3% do not sort the waste first before being disposed of. This can be proven by the observations that researchers have made, namely the absence of trash cans that are distinguished by the type of waste in the household. Meanwhile, 2 respondents with a percentage of 4.7% did sorting by sorting inorganic waste and organic waste in different containers.

**Table 7. Distribution of Household Domestic Waste Storage Facility Characteristics in Tambahrejo Village**

Ingredient	Capacity (Liter)	Characteristics of Container Facilities						
		Total (Unit)	Not easily broken	Water proof	Economic	Easily obtained	Light	covered
Plastic Basket	12	30	√	-	√	√	√	-
Plastic bags	40	5	-	-	√	√	√	-
Plastic bags	12	6	-	-	√	√	√	-
Plastic bags	5	2	-	-	√	√	√	-
Plastic tub	40	10	√	√	√	√	√	-
Bucket	40	5	√	√	√	√	√	-

Characteristics of Container Facilities								
Ingredient	Capacity (Liter)	Total (Unit)	Not easily broken	Water proof	Economical	Easily obtained	Light	covered
Cardboard box	16	3	-	-	√	√	√	-
Bamboo basket	60	9	√	-	√	√	√	-
Bamboo basket	40	5	√	-	√	√	√	-
Sack	75	11	√	-	√	√	√	-

Based on table 7, it can be seen that the waste container in each house is more than 1 unit, the average household has 2 to 3 used trash bins. A plastic basket is a means of trash cans used by households with a maximum of 30 units. Meanwhile, 2 units of trash bins are used by households, namely plastic bags with a capacity of 5 liters.

**Table 8. Distribution of Household Waste Container Placement Practices in Tambahrejo Village**

Placement of trash containers	Number of Households	Percentage (%)
Inside the house	19	44,2
In the front yard	10	23,2
In the backyard	8	18,6
On the side of the house	6	14
Total	43	100

Based on Table 8, it can be seen that the most placement of domestic waste containers is in the house, namely as many as 19 households with a percentage of 44.2%. Based on interviews that have been conducted on 43 respondents, the way households treat domestic waste is as follows:

**Table 9. Distribution of Household Waste Processing and Disposal Practices in Tambahrejo Village**

Processing method	Number of households	Percentage (%)
Thrown into the river	15	34,9
Thrown into vacant land	12	27,9
Composted	1	2,3
Covered with soil	0	0
Burned	13	30,2
Sorted	2	4,7
Total	43	100

Based on table 9, it can be seen that the way households treat domestic waste is mostly disposed of into rivers, namely 15 households with a percentage of 34.9%. The findings of this study indicate that domestic waste generation in Tambahrejo Village

increased during the COVID-19 pandemic, while community-based waste reduction and management practices were still limited. This condition shows that the achievement of the Lumajang Regency JAKSTRADA target for reducing household waste by 26% and handling waste by 73% in 2022 remains challenging, particularly at the village level. The low implementation of waste segregation, recycling activities, and inadequate waste management facilities may hinder the achievement of regional waste reduction targets. Therefore, strengthening community participation through waste segregation at source, optimization of waste banks, provision of temporary disposal facilities, and continuous environmental education are necessary to support the successful implementation of JAKSTRADA in Tambahrejo Village.

### 3. DISCUSSION

The weight of waste and the volume of waste are generally not always the same every day because they can be influenced by several factors, such as the level of population density living in an area, the economic level population, and seasons<sup>4</sup>. Not only that, waste generation can also be affected by the Covid-19 pandemic<sup>5</sup>.

Used disposable masks, gloves and personal protective equipment add to the volume of waste in the environment. Where, used disposable masks were found in the village of 5.75% without any processing before being disposed of. For this reason, proper waste management must be carried out because if the waste is left unattended, it can lead to deadly distribution routes because waste such as mask waste plays an important role as an intermediary for Covid-19 transmission which can last for 7 days<sup>6</sup>.

The handling of medical waste in households can be done by sorting medical waste with domestic waste, distinguishing waste containers from other domestic waste, disinfecting the surface of medical waste containers, and labeling the waste so that waste carriers can distinguish them<sup>7</sup>.

This is in line with research (Filho, et al., 2021) which states that the type of waste in the household changes after the recommendation that all activities be carried out at home such as plastic packaging, food waste, metal, paper, glass bottles and garden waste have a high percentage<sup>8</sup>. quite high in the household. Medical waste in the household must be handled in the same way as managing infectious B3 waste considering that this waste is included in hazardous waste<sup>9</sup>.

Efforts to reduce domestic waste are still low because people still think that domestic waste management is only done at the TPA<sup>10</sup>. Waste reduction is very much needed in an effort to support the Lumajang Regency Regent Regulation No. 58 of 2018 concerning policies and strategies for Lumajang Regency in managing household waste and waste similar to household waste in 2022 by 26% for waste reduction. Reducing waste has a positive value as well as increasing awareness of the importance of protecting the environment, especially during the Covid-19 pandemic because this can help the household economy<sup>11</sup>.

The research results show that community awareness and training, community participation, government support, availability of waste management plans, availability of composting facilities, and government commitment and motivation greatly influence the success of waste management programs.<sup>12</sup>.

Based on the results of interviews with households, due to lack of time and a sense of laziness to start reducing waste at home. This is in line with research (Wildawati and Hasnita, 2019: 150) which states that the reason people do not manage domestic

waste even though their knowledge is quite high is because they don't care and are indifferent to the environment so that domestic waste cannot be managed properly as it should. households also lack knowledge about the importance of processing waste into high economic value<sup>13</sup>.

The handling of domestic waste in the village of Tambahrejo is still carried out on an individual scale. Households collect the waste generated from their household and throw it into the river, burn the garbage, and throw it in the open yard and jublangan or excavated land. Overall, the waste in Tambahrejo Village has not received management from the source, even during the Covid-19 pandemic, where there was the addition of new waste, but they did not carry out special management according to the recommendations. Even though in households, organic waste is still the most commonly found, this B3 waste must be considered again so that it does not have an impact on humans themselves and the environment<sup>14</sup>. The results of the interviews that have been conducted obtained information that all respondents as many as 43 households with a percentage of 100% have their own trash bins or containers in their homes. Based on SNI 19-2454-2002 concerning Procedures for Operational Techniques for Waste Management, the characteristics of a good waste container are usually the type of waste that is waterproof and not easily damaged, when it is disposed of, the container is easy to lift, 1 household has a minimum capacity of 40 liters of garbage, cheap and easy to get<sup>15</sup>.

During the Covid-19 pandemic, as currently, in the household environment, new types of waste have been added, such as disposable masks, used anti-septic bottles, used disinfectants, and other personal protective equipment. Based on the results of interviews and observations of the presence of mask waste during the Covid-19 Pandemic, it can be seen that used disposable masks were found in all households with a percentage of 100% during this Covid-19 pandemic<sup>16</sup>.

Community waste management behavior in Tambahrejo Village can be explained using the Health Belief Model (HBM). The low practice of waste segregation and the continued habit of burning or disposing of waste into rivers indicate that community perceptions regarding the severity and susceptibility of environmental and health impacts caused by poor waste management are still relatively low. In addition, limited facilities such as temporary waste disposal sites and waste collection services may reduce perceived benefits and increase perceived barriers to proper waste management practices. The lack of regular education and socialization activities also contributes to limited cues to action among the community. Therefore, strengthening environmental health education and improving waste management facilities are important strategies to increase community awareness and participation in sustainable waste management.

The increase in domestic waste generation in Tambahrejo Village during the COVID-19 pandemic may increase local environmental risks, particularly because most residents still dispose of waste by open burning and dumping it into rivers. These practices can contribute to air pollution, unpleasant odors, water contamination, and the proliferation of disease vectors such as flies, mosquitoes, and rodents. In addition, the improper disposal of infectious waste such as used masks and gloves may increase public health risks and potentially contaminate the surrounding environment. The absence of temporary waste disposal facilities and limited waste collection services further exacerbate environmental pollution in the village area.

This study has several limitations. First, the number of household samples used for waste generation measurement was relatively small, which may limit the generalizability of the findings. Second, waste measurement was conducted only for eight days, so it may not fully represent variations in waste generation over longer periods or different seasons. Third, the interview and questionnaire data relied on respondents' perceptions and self-reported information, which may introduce recall bias and response bias. Therefore, further studies with larger sample sizes and longer observation periods are recommended to obtain more comprehensive results.

#### 4. CONCLUSION

The study showed that domestic waste generation in Tambahrejo Village during the COVID-19 pandemic reached 0.32 kg/person/day or 3.42 liters/person/day, with a potential waste generation of 168,101.03 kg/day in households implementing Learning from Home (LFH). Organic waste was the dominant waste type (46.67%), while disposable mask waste contributed significantly to household hazardous waste (5.71%). Waste reduction and utilization practices were still low, whereas most organic, inorganic, and hazardous waste was directly disposed of without proper management. These findings indicate the need to strengthen sustainable community-based waste management practices.

#### 5. ACKNOWLEDGEMENT

Thank you to all parties who helped in this research.

#### Contribution of Authors

L: conceptualized and designed the study; PTN: collected and analysed the data, wrote the introduction and edited the paper; ADM: reviewed empirical studies; YS: designed the methodology.

#### 6. REFERENCES

1. Elwan A, Arief YZ, Adzis Z, Muhamad NA. Life Cycle Assessment-based Environmental Impact Comparative Analysis of Composting and Electricity Generation from Solid Waste. *Energy Procedia*. 2015;68:186-194. doi: <https://doi.org/10.1016/j.egypro.2015.03.247>
2. Ssemugabo C, Nalinya S, Lubega GB, Ndejjo R, Musoke D. Health Risks in Our Environment: Urban Slum Youth' Perspectives Using Photovoice in Kampala, Uganda. *Sustainability*. 2020;13(1):248. doi: <https://doi.org/10.3390/su13010248>
3. Kementerian Lingkungan Hidup dan Kehutanan (KLHK). *Gerakan Nasional Pilah Sampah Dari Rumah Resmi Diluncurkan*. 2019.
4. Guo H, Tong L, Shu T, Li X, Bai B, Nie X. Characteristics of community domestic waste separation: separation amount, physical and chemical characteristics. *IOP Conf Ser Earth Environ Sci*. 2021;836(1):012020. doi: <https://doi.org/10.1088/1755-1315/836/1/012020>
5. Olawade DB, Wada OZ, Ore OT, et al. Trends of solid waste generation during COVID-19 Pandemic: A review. *Waste Management Bulletin*. 2024;1(4):93-103. doi: <https://doi.org/10.1016/j.wmb.2023.10.002>

6. Axmalia A, Sinanto RA. Pengelolaan Limbah Infeksius Rumah Tangga pada masa Pandemi COVID-19. *Jurnal Kesehatan Komunitas*. 2021;7(1):70-76. doi: <https://doi.org/10.25311/keskom.Vol7.Iss1.857>
7. Behera BC. Challenges in handling COVID-19 waste and its management mechanism: A Review. *Environ Nanotechnol Monit Manag*. 2021;15:100432. doi: <https://doi.org/10.1016/j.enmm.2021.100432>
8. Filho WL, Voronova V, Kloga M, et al. COVID-19 and waste production in households: A trend analysis. *Science of The Total Environment*. 2021;777:145997. doi: <https://doi.org/10.1016/j.scitotenv.2021.145997>
9. Cook E, Woolridge A, Stapp P, Edmondson S, Velis CA. Medical and healthcare waste generation, storage, treatment and disposal: a systematic scoping review of risks to occupational and public health. *Crit Rev Environ Sci Technol*. 2023;53(15):1452-1477. doi: <https://doi.org/10.1080/10643389.2022.2150495>
10. Kiswara LD, Perdana Mahardika A, Rizky M, Hary S, Sidhi EY. Sosialisasi Pemilahan Limbah Bahan Berbahaya dan Beracun (B3) Rumah Tangga di Lingkungan Masyarakat. *Jatimas : Jurnal Pertanian dan Pengabdian Masyarakat*. 2022;2(2). <https://ojs.unik-kediri.ac.id/index.php/jatimas/article/view/3478>
11. Matiuk Y, Liobikienė G. How the Covid-19 pandemic contributed to changes in climate change and environmental concern, resource-saving and waste-sorting behaviour. *J Clean Prod*. 2023;430:139759. doi: <https://doi.org/10.1016/j.jclepro.2023.139759>
12. Alimoradiyan H, Hajinezhad A, Yousefi H, Giampietro M. Fostering community participation in sustainable municipal solid waste management at multiple scales in Tehran, Iran. *Results in Engineering*. 2024;22:102174. doi: <https://doi.org/10.1016/j.rineng.2024.102174>
13. Wahfiuddin MH, Riyanto R. Partisipasi Rumah Tangga dalam Program Bank Sampah: Studi Kasus di Kota Depok. *Jurnal Ilmu Lingkungan*. 2024;22(2):464-471. doi: <https://doi.org/10.14710/jil.22.2.464-471>.
14. Dahalan FA, Mulia MI. The impact of pollution from hazardous and toxic materials (B3) waste on public health. *Environmental and Toxicology Management*. 2025;4(1):33-37. doi: <https://doi.org/10.33086/etm.v4i1.6958>
15. Badan Standardisasi Nasional. *Tata Cara Teknik Operasional Pengelolaan Sampah Perkotaan*.
16. Lompo P, Heroes AS, Ouédraogo K, et al. Knowledge, awareness, and risk practices related to bacterial contamination of antiseptics, disinfectants, and hand hygiene products among healthcare workers in sub-saharan Africa: a cross-sectional survey in three tertiary care hospitals (Benin, Burkina Faso, and DR Congo). *Antimicrob Resist Infect Control*. 2024;13(1):44. doi: <https://doi.org/10.1186/s13756-024-01396-3>