



ORIGINAL RESEARCH

Improvement of Public Health Through Waste Bank Schematic Design

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Abstract: The community health public in Indonesia needs to be improved to elevate the quality of life. The waste bank is an activity of a non-governmental program to maintain environmental health by separating the household waste into organic and non-organic categories. The waste bank is managed using a system such as banking conducted by officers. It was proven that waste bank activity has a positive impact on declining waste volume to improve sanitation. However, waste banks are still carried out in volunteering houses, public service houses, and residential paths. Waste banks have many potencies to support either ecotourism or eco green planning. This study was performed by waste generation and characterization sampling to determine the required size of the waste bank schematic design. The result shows a schematic design model of the Waste Bank building by researching society's needs for better environment health.

Purpose: This research is to design a waste bank based on public health needs

Patients and methods: This study is a descriptive study with a *cross-sectional approach*. The sampling technique used is *stratified random sampling*, with 98 respondents residing in Lhokseumawe city. Data collection was done by 8 days of sampling.

Results: The results showed that there is no waste bank building that meets the public health building requirements. There is a schematic design to propose.



Conclusion: There is urgency to have a requirements to waste bank building design to improve sanitation and public health.

Keywords: public health, waste bank, building design

Introduction

Waste is unwanted residual material after the end of a process. Waste is defined by humans according to the degree of use; in natural processes, there is no concept of waste; there are only products produced after and during the natural process, for example, used goods in the form of drink bottles, paper, crackle sticks, glasses, gallons of drinking water, and another inorganic, not only from household appliances but also from building materials such as used house paint cans, paragon or drums from the road.

For most people, waste is an item that can no longer be used. They think that garbage is an object that must be thrown away, so they often ignore and leave garbage without needing to know about other benefits of waste. But for some people, waste is an item that can be used and reused according to their needs. They realized that waste has other benefits, which are, of course, very useful. One way to use it is to recycle waste.

Recycling is the reprocessing of used goods that are no longer useful into goods that can be reused. Generally, every item produced from the recycling process has two different functions from the original item before it becomes waste; in other words, a change in function occurs. The recycling process to produce new goods (recycled) is adjusted to the needs; the recycling process must also require high creativity, both in terms of art and its benefits.

The types and sources of waste are regulated as follows, 1) Household Waste Which is solid waste originating from the rest of daily activities in the household, excluding feces and specific waste and from natural processes originating from the household environment. This waste comes from homes or housing complexes. 2) Types of household waste, namely household waste that does not



come from the household and household environment but comes from other sources such as markets, trade centers, offices, schools, hospitals, restaurants, hotels, terminals, ports, industries, city parks, and more. 3) Specific Waste, namely household waste or similar household waste which due to its nature, concentration, and/or quantity, requires special handling, including waste containing B3 (hazardous and toxic materials such as used batteries, used toner, and so on), waste that is containing B3 waste (medical waste), waste due to disasters, demolition debris, waste that cannot be processed technologically, waste that arises periodically (waste from community service).

The waste management mechanism concerning Waste Management includes the following activities, Waste reduction, namely activities to overcome the generation of waste from waste producers (households, markets, and others), reuse of waste from the source and/or at the processing site, and recycling waste at the source and/or at the processing site. Waste reduction will be regulated in a separate Ministerial Regulation. Waste handling, namely a series of waste handling activities that include sorting (grouping and separating waste according to its type and nature), collection (moving waste from the source of the waste to a TPS or integrated waste processing site), transportation (activities to move the waste from the source, TPS or TPS). Integrated waste processing site, final product processing (changing the shape, composition, characteristics, and amount of waste so that it is further processed, utilized, or returned to nature and active processing of waste processing activities or residues resulting from previous processing.

The waste hierarchy refers to the 3Rs, namely Reuse, Reduce, and Recycle, which classify waste management strategies according to what is appropriate. The order of the garbage hierarchy from the highest to the lowest is prevention, waste reduction, reuse, recycling, energy saving, and disposal. The waste hierarchy has had several concepts since decades ago, but the initial concept, namely the waste reduction strategy, has long been near the end of the hierarchical pyramid. The main goal of the waste hierarchy is to maximize the use of products and produce as little waste as possible because waste prevention is the highest point of the waste hierarchy pyramid. Some waste management experts conceptualize the 4Rs by adding one R, namely Rethink, which implies that the waste management system will be effective if people have a new perspective on waste.



Materials and Methods

This research is descriptive of the *cross-sectional* method in North Aceh Regency in 2021. The sample size in this study was all 98 people who met the inclusion and exclusion criteria. The research stages consist of a literature Study, which includes fundamental theories related to the generation and composition of waste obtained from reference books, journals, and previous research. The research was conducted by collecting data on waste generation for eight days starting on June 25-2 July 2022, In Lhokseumawe city.

Results

Table 1 Description of Respondents Characteristics

Age	Frequency (n)	Percentage (%)
17-25	32	33.5%
26-35	66	66.5%
Total	98	100%

Gender	Frequency (n)	Percentage (%)
Man	74	75.5%
Woman	24	24.5%
Total	98	100%

Work	Frequency (n)	Percentage (%)
Employee	30	30.6%
Unemployment	68	69.4%
Total	98	100%



Source: Primary Data, 2021

Based on table 1 above, it can be seen that as many as 66 respondents (66.5%) aged 26-45 years, followed by the age of 17-25 years with a total of 32 respondents (33.5%), then it can be seen that as many as 74 respondents (75.5%) are male and 24 respondents (24.5%) are female and as many as 68 respondents (69.4%) work and 30 respondents (30.6%) do not work.

Table 2 Waste Generation in Communities, Lhokseumawe city

Days	Waste Generation (Kg/Person/Day)
1	0,180
2	0,060
3	0,108
4	0,149
5	0,141
6	0,065
7	0,120
8	0,123
Average	0,1182

As 55 respondents (56.1 %). There are 25 respondents (25.5%) who have sufficient preparedness and 18 (18.4%) people who have less preparedness.

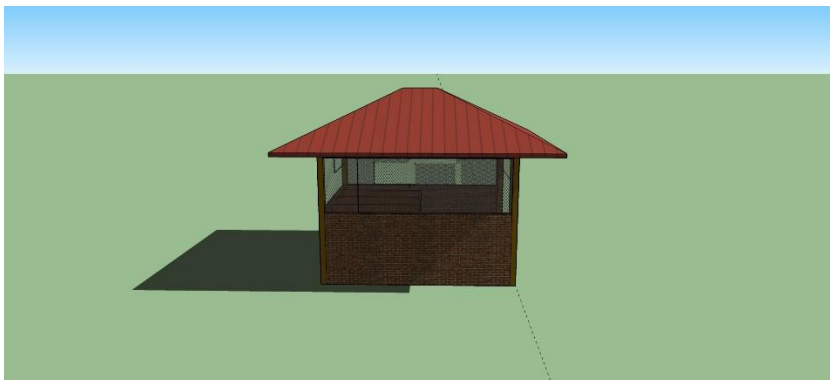
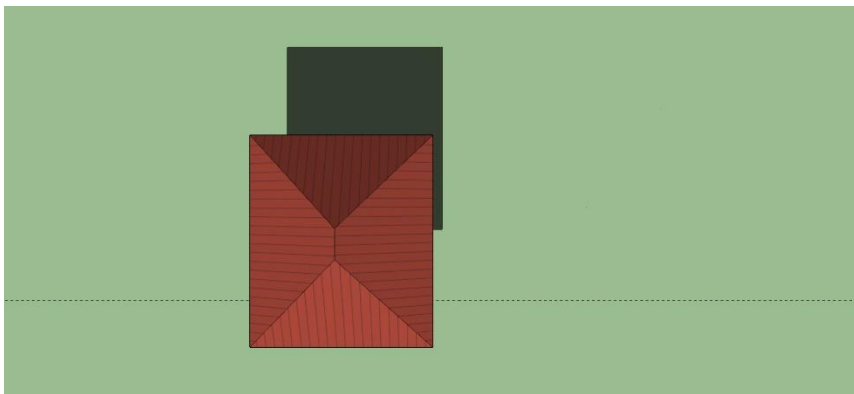




Figure 1. Schematic design of waste bank

Based on table 3 above, it shows that the majority of community preparedness levels based on the age of 17-25 years have good preparedness (61.9%), sufficient (28.6%) and less (9.5%), while those aged 26-45 years have preparedness good (62.5%), sufficient (19.6%) and less (17.9%). Then the majority of male respondents had a good level of preparedness (62.2 %), and the majority of respondents who did not work had a good level of preparedness (64.2%).

Discussion

1. Respondent's Characteristic

Most respondents in this study were respondents aged 26-45 years with a good level of preparedness, but there are still people who have a level of preparedness that is less or sufficient; at that age, there will be an increase in one's performance and physical skills. According to Lawrence Green, age is a factor that can encourage the creation of behavior (8).

The majority of respondents in this study are male with a good level of preparedness; gender is an enabling factor or a predisposing factor that influences a person's level of preparedness.

Most respondents who do not work have a good level of preparedness; the work environment can provide knowledge or experience to someone directly or indirectly, which will also affect a person's process of receiving knowledge about preparedness.

2. Description of respondent's age on flood disaster preparedness

Most respondents with a level of flood preparedness in Pirak Timu District, North Aceh district, are in a good category. This is evidenced by the answers of respondents in the adult category (26-45 years) with a good level of preparedness. A person's age affects the mindset and grasping power in studying an object. The older you get, the more your mindset and ability to learn something will increase so that the knowledge you get is getting better (9). When a person has good knowledge of disaster preparedness, he will be able to determine how he should act when a disaster occurs (10)



The results of this study are in line with research by Afrianti et al, which proves that age influences the level of community preparedness for flood disasters. This is because the level of preparedness for flood disasters is higher in the adult age category than adolescents (9) . The results of the study support the theory that the higher a person's age, the more life experience they have and the easier it is to improve preparedness, especially in the face of flood disasters. With age, the level of thinking is also more mature in acting.

3. Description of respondent's gender on flood disaster preparedness

The majority of respondents' gender in this study were male. Gender has an influence on a person's level of preparedness. When compared with men, people with the female gender tend to have better knowledge. This is because people with the female gender have more time to read or discuss with their environment (11) .This is evidenced by the results of research showing that both men and women both have a good level of preparedness for flood disasters with a percentage of 62.2 %: 62.5%. The results also show that the number of male and female respondents who have a low level of preparedness is also almost the same.

Gender is not the only factor that influences respondents to have a good level of preparedness. This is because respondents with male and female gender have their respective roles in increasing preparedness in dealing with flood disasters (12) .

4. Schematic design of waste bank

In this study, it can be seen that the majority of respondents are those who do not work for the community in Pirak Timu District, North Aceh Regency. Work does not prevent a person from increasing good preparedness for floods (13) . This is because respondents who work or do not work both continue to do or get good information on disaster preparedness. In addition, the type of work that is not in the health sector also causes respondents who work not necessarily to have experience or better preparedness than people who do not work. The results of this study are in line with Yatnikasari et al (2020) which showed that there was no relationship between employment status and flood disaster preparedness. Employment status is not related to flood disaster preparedness,



possibly because respondents will still increase their preparedness even though they are not working (11) .

5. An overview of flood disaster preparedness for the community in Pirak Timu District, North Aceh Regency

The results of this study are in line with research conducted by Erika et al who conducted research on the description of flood disaster preparedness in the community in Pucang Sawit Village, Jebres District, Surakarta. Based on the results of the study, the majority had a good level of flood disaster preparedness with a percentage reaching (86.2%) (14) . This study is also in line with the research conducted by Herman et al, with research conducted on the community totaling 40 respondents, the results of this study indicate that the majority of respondents have a good level of preparedness (15) . The same thing was also found in the research conducted by Kamriana et al, regarding flood disaster preparedness in the community in the Tangguh Disaster Village, Takalar Regency, where it was found that the majority of flood disaster preparedness in the community were classified as good as many as 46 people from a total of 54 respondents (16) .

This research also shows that there are still people who have a sufficient level of preparedness to face flood disasters, this is in line with research conducted by Nindya Wulandari in Kebun Raja Village, Palembang. In this study, it was found that the majority of respondents had a sufficient level of preparedness, because the people in the village had very little knowledge about flood disaster preparedness and also lacked counseling from the local government for the village (10) . The same thing is also found in the research conducted by Ibnu Murbawan et al, in this study the results of the level of flood disaster preparedness were less, namely as much as (47.5%), because the government in the area was very less giving counseling about preparedness to face flood disasters (17) .

This study is also similar to the research conducted by Astutiningsih in which in this study there were still people who had a low level of flood disaster preparedness (50.3 %). This is because in the area studied there is still a lack of knowledge and also counseling related to preparedness to face flood disasters, this is what triggers the community in the area to have a low level of



preparedness (8) . The same thing is also found in the research conducted by Oktayfal et al, in the research conducted by him the majority of the people who have a low level of preparedness are as much as (52.4%), this is due to the lack of government attention to the Tomohon area to provide counseling related to flood disaster preparedness, so that people there do not understand what should be done during a flood disaster (18) .

Based on the results of this study indicate that most respondents have a good level of flood preparedness, this can happen because the area is an area prone to flood disasters, so that from the government, especially the North Aceh BPBD actively provides attention and counseling regarding knowledge of flood disaster preparedness, so that the community has a good level of preparedness in dealing with flood disasters. In addition, because the area is classified as an area that often experiences floods, so that people in the area have experience in dealing with flood disasters.

This research still found people who have preparedness that is still quite adequate and lacking, as for the factors that can cause this is the lack of awareness of the people in the area, of course this can be an evaluation for the government, especially BPBD North Aceh to continue to improve knowledge and preparedness of the community in the area in the face of flood disasters.

Conclusion

Based on the research and discussion that has been described previously, it can be concluded that the majority of the waste bank owned by respondents in North Aceh Regency is not meets the requirements. Then the majority of respondents aged 26-45 years with a good level of preparedness (62.2%), then male respondents with a good level of preparedness (62.5%) and the majority of respondents who do not work with a good level of preparedness (64, 2%).

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Figure 1 : Filling out the questionnaire



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