Coastal waste bank as a waste processing effort towards a clean and productive Bagan Deli

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Abstract. Trash is still a problem that the solution still continues to innovate until now. Based on information by the Ministry of Environment and Forestry (KLHK), the Republic of Indonesia has released a list of cities in Indonesia based on its cleanliness level. The Deli River is one of the garbage prone spots, and the waste will accumulate and surely will pollute the environment, all garbage is in the downstream or middle, all will be down to Bagan Deli village which eventually all the garbage will be Sources of pollution and disease for communities in Bagan Deli village. Programs with waste banks have been encouraged, but the management and facilities are still lacking, with community service is expected to understand the importance of maintaining environmental hygiene and utilizing waste as a source of and able to manage the waste bank as a new search eye, sorting based on the categories of till that are more detailed and specific so as to provide convenience during the presses, also will be made miniature garbage bank counter to Well-coordinated fitting management. The result of the Survet shows the level of customer satisfaction of the Trash bank belongs to the category quite well, and need some evaluation for the improvement of Waste Bank. The last will be created special training on how to create another pilot waste bank in other environment in the Kelurahan Bagan Deli

1. Introduction

Garbage waste of industry and the rest of households increase in quantity along with the increasing number of population. Densely populated cities are the main source or production of waste. More or less the amount of garbage in Indonesia reaches 38.5 million annually or 200,000 tons every day, increasing by 2-4 per year. Indonesia's waste Data shows that the most number of waste sources are households (48%), followed by traditional markets (24%), commercial areas (19%) and public facilities[1,2]. In addition, problems such as competition among the people are increasingly strict or urbanisation from village to city is increasingly higher, but also the cause of waste wastes called as the number of garbage increasingly [3]. The growing number of waste production, each year has become a serious problem in the future [4] due to the limitations of the LANDFILL capacity area and difficulty to expand the TPA area. The city of Medan has several places that are vulnerable to garbage, such as Jamin Ginting Street, Abdul Hakim, Setia Budi, and not least garbage dumped into the river, including the Deli River.

The Deli River is a river of one of eight rivers in the city of Medan. The Deli River has a long flow of its 73 kilometers (km), an area of 48,162 hectares, and a width of 5.58 m. The Deli River is not separated from the target of people to dispose of garbage, at least the pollution in the Deli river has reached 70 percent of which resulted Solid and liquid waste, as well as solid domestic waste or SAMPA produced in Medan city 1,235 tons per day. Trash-the garbage will be an estuary to Bagan Deli village which can be a source of pollution and disease community of Bagan Deli village.

Bagan Deli Village is one of the Kelurahan in the district of Medan Belawan, with the population, especially in the target community environment, the environment IV village of Bagan Deli of 16,290 inhabitants with a population density of 3,452 households. With a dense population, it does not cover...
the possibility of adding garbage especially domestic garbage that originated from residents' homes. In addition, the behavior of people who still hang their water needs comes from the Deli River, will increase the number of pain such as diarrhea, cholera, hepatitis A and others [5].

The low level of education (seen from the majority of people who are graduates of ELEMENTARY and junior high school, and few who are graduates of the equal and Bachelor's degree), and lack of knowledge about waste management so a this will adversely affect On the environment especially on river flows.

Based on the problem, the authors propose ideas that can help the community handle the problem that is, the management of waste Bank. In accordance with the fundamental philosophy of waste management in accordance with the provisions of Law No. 18 of 2008 on waste management, now needs to change the way people view about garbage and how to treat or manage waste [6]. This system will accommodate, sorting, and channeling the economic value of the market so that people benefit from the economic benefits of saving waste [7].

The goals of the project is to introduce scientifically about the trash Bank and its benefits, and the importance of maintaining the cleanliness of the environment and utilizing waste as a source of income in the Community Environment 4 Desa Bagan Deli, Belawan, establishing garbage Bank group or volunteer will be built as a sustainability drive for garbage bank in the coastal environment of Belawan, embracing new search eye for the communities in Bagan Deli village to earn income, and seeking attention and public interest about the importance of maintaining the environment by avoiding waste, especially coastal areas as a demonstration place that has never existed in Indonesia.

2. Methods

The methods used are secondary data analysis methods as well as live observations in the field. This activity is a social engineering that teaches people to sort out waste, while raising public awareness in the processing of waste wisely [8]. Secondary data is obtained through a literature study, which is the collection of data from published or unpublished documentary sources, such as reports, statistics, journals, and e-books. The results of field observations in the neighborhood 4 Desa Bagan Deli showed a very poor environmental condition because it has been very contamination of the environment and seawater with garbage.

2.1. Development Plans

Steps on developing the project in Bagan Deli are including:
1. Determining the target area based on research conducted by the group
2. Review the location and do observations and interviews to the target area (neighborhood 4 Desa Bagan Deli)
3. Program formulation and intervention strategy to be conducted
4. Target Area Program Permit
5. Planning Schedule Program Implementation
6. Socialization of the program to local communities
7. Implementation of the program
8. Construction of Waste Bank Miniature of PAUD FITRI
9. Establishment of “Best Customer” of PAUD FITRI Waste Bank awards. This is as the application of Operant Conditioning method [9]
10. Filling the PAUD FITRI Satisfaction Index to society.

3. Results and Discussion

In the implementation of the program, the location that is the target of the implementation of devotion is a house that concurrently education school early Childhood (PAUD) named PAUD FITRI. This school is managed by Mrs. Zainab Yusuf, one of the environmental activist IV of Bagan Deli. One of the strong reasons for PAUD FITRI is the strategic location of the dedication is where the PAUD
implements the school money payment system using garbage, so that the location also has a simple garbage bank.

Because PAUD FITRI Garbage Bank is still a simple form, waste management and the architecture of the building is still quite simple. The garbage that can be managed is only limited to inorganic waste such as plastics and paper. The next obstacle is in the management of waste bank, especially on grouping specific types of garbage because of lack of human resources and facilities that support such activities. The number of waste bank customers is still relatively small due to the lack of public awareness about the importance of waste management in Bagan Deli environment to improve environmental hygiene and productivity.

Therefore, the first step is to do a miniature model of a simple bank counter in the front of PAUD FITRI with a combination of architectural performances like a bank counter and a unique mix of colors. The purpose of building a miniature trash bank counter PAUD FITRI is to draw a positive stimulus that creates the attractiveness of Bagan Deli people visually to save in the trash bank like a counter at the bank in general.

Management of trash Bank assisted by increasing partnership with PKK mothers and Karang Taruna Bagan Deli as the manager of trash bank. The provision of the books and management science is very helpful to the managers of the waste bank PAUD FITRI in sorting and grouping garbage to more specific [10].

The “Best Customer” awards gives a huge contribution towards the society and the bank itself. The impacts of the competition establishment are shown by the spirit of the customers on increasing their waste input on the bank, thus increasing PAUD FITRI waste input per week from 200-300 kg to 350-400 kg.

The survey results through the questionnaire that was distributed to the customers of PAUD FITRI Garbage bank consisting of Bagan Deli community showed the following results.

![Figure 1. Results of public satisfaction survey of trash Bank PAUD FITRI (Ket. A:socialization, B: program implementation, C: infrastructure, D: the role of waste bank, E: partnership)](image)

Respondents consisted of 50 people from 30-50 years of age, educated in the last high school, as housewives and female workers (TKW)/female labor abroad, and included new or old customer. Overall, the result shows that the public satisfaction of the waste bank is included in a fairly good range. Some things that need to be an evaluation for the development and improvement of PAUD FITRI Trash Bank to better the future is mainly in the socialization aspect. The importance of socialization is that the information about the benefit of waste bank can be delivered in a good and creative, and conveyed to all aspects of society, with great hope that society can contribute to make use of bank PAUD's garbage as a means of productivity and clean environment of Bagan Deli.
4. Conclusion

The Waste Bank in the environment IV of Bagan Deli has been formed in a house concurrently school named PAUD FITRI, which has been initiated by Zainab Yusuf's mother as the environmental IV community. Volunteer Manager of Waste Bank is formed from the representative of the Group of Mothers PKK and Karang Taruna. Trash bank has become an alternative in financial transactions, such as the application of payment of tuition by saving in the garbage Bank in PAUD FITRI. With the construction of miniature garbage bank counters and improvements to the appearance of building PAUD FITRI and the addition of Sarana-prasarana, this is the first step in improving the appeal of the community to save the garbage bank PAUD FITRI Deli. The results of public satisfaction survey of PAUD FITRI Garbage Bank are included in a fairly good range. Halyang need to be the main evaluation is in the aspect of garbage bank socialization.

The advice obtained after evaluation of activities for further development is the need to explore other environments in Bagan Deli area to find strategic and potential location to be used as a new trash bank, and addition of digitalization aaporach of IoT (Internet of Things) implementation on waste sorting and mobile application development for waste bank organizer and customer utilities- based on the results.

Acknowledgements

The author overcomes a big thank you to LPM USU through ABDIMAS 2019 program in support of this program, as well as the Limulact.ion team that has contributed on implementing the program and establishing a good partnership relationship in the field.

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