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Developing a Model for Economic Sharia Based Management Garbage

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***Abstract*—** This study aimed at developing alternative models of waste processing of recycling and analyzing aspects of commercialization will contribute to the economy of the community of waste owners and Nagari-Owned Enterprises based Sharia. This research is the field of research, and belongs to research and development. In the development stage of the waste processing model, compost products are produced whose quality is validated with SNI 19-7030-2004 on compost quality standards. Data collected through interview, Focus Group Discussion, documentation and observation. For data analysis techniques obtained through interviews and observations, carried out with a qualitative approach. After that proceed with developing an effective and economically efficient waste management model appropriate with SNI 19-7030-2004. The results of the study found the fact that existing waste management is limited to inorganic, with relatively inadequate economic value. Analysis of the economic value of household waste has a value of Rp. 218.00/kg of waste, while the economic value of agricultural residual waste has a value of Rp. 354.00/kg of waste. The waste processing developed has a relatively high economic value, and it can contribute to improving the people's economy.

Keywords*-*Alternative Model, Economic Based Garbage Management, High Economic Value, People's Economy

I. INTRODUCTION

All Conventionally, a lot of waste has been managed by the government by stacking up at the Final Disposal Site. However, from the results of [1], the garbage collected in the landfill is only around 60 - 70% of the total urban waste, while the rest is scattered in various places. Whereas on the other hand landfills are also increasingly limited, because land is also increasingly limited, due to the rapid development of demographics. However, at this time there has been a change in waste management, both in urban and rural areas. The change is well-known because of the change in people's views and understanding of global life today, the climate change due to limited natural resources, has encouraged people to think hard about how to save existing natural resources, including through processing Zero Waste or "eliminate waste" [3].

Efforts to implement ZW concept in waste management are seen in developing countries like Indonesia not only in urban areas, but also in rural areas. Among the villages that manage waste as an effort to realize the concept of ZW, it is seen in Nagari Pakandangan, Enam Lingkung District, Padang Pariaman Regency, West Sumatra through a Nagari/Village-Owned Enterprise (BUMNag), named Pakandangan Emas. The spirit and creativity of this management in waste management, of course, is not just because of running Law No. 18/2008 on Waste Management alone, but also thinking in an economic perspective. This means that through waste management, there is a commercialization that can contribute to the community of waste owners.

The creativity of BUMNag Pakandangan Emas has attracted the curiosity of many people. This BUMNag has even been placed as a pilot BUMNag, as conveyed by Ratna Dewi Adriati, Expert Staff of the Ministry of Villages and Disadvantaged Regions and Transmigration in Economic Development, during a review on Thursday, July 19, 2018. In this case, how the image was built and how with high hopes, this BUMNag could become an inspiration for other BUMNagari/BUMDesa nationally. Especially when there are still many villages governments who are rather overwhelmed to think and look for alternatives in waste management and village economic resources.

However, the real state of the BUMNag, has not yet seen a form of waste management to the maximum, because it has not yet reached the handling of recycling independently and only limited to handling inorganic waste sold to suppliers. Starting from this problem, this study aimed at developing alternative models of waste management in recycling while analyzing the economic value of waste as a commercialization can contribute, both to the community of waste owners, and to BUMNag itself.

The definition of rubbish, as stated in [2], is the remnant of human daily activities and or natural processes in the form of solid, which is divided into household rubbish, and specific rubbish. In Article 6 of [2], it is stated that the public and business people are obliged to participate in maintaining the preservation of environmental functions, preventing and overcoming environmental pollution and damage. Among other things, based on Article 12, through reducing and handling environmentally friendly waste. In waste processing there are several models.

1. Organic Waste Processing

This organic waste is goods that are considered used and discarded by previous users, but can still be used if processed managed with the correct procedures. For example food scraps, dried leaves, dead plants, animal waste [5]. The waste management model is in several forms 1) Sanitary Landfill, dredging garbage in the ground. In Indonesia, it is usually applied in landfills; 2) Biogas Formation, which is an anaerobic fermentation process containing organic matter, so that methane gas can be formed and when it is burned it will produce heat energy; 3) Anaerobic Activity, which is in the form of hydrolysis, acodogenesis, acetogenesis, and methanogenesis processes [8]; [9].

2. Composting Technology

Composting is a biological process carried out by microorganisms, in the form of bacteria, fungi, insects, and worms, to convert organic solid waste into stable products that resemble humus. The process starts from the accumulation of organic waste into a container mixed with soil, sawdust, or lime, and animal waste. Wait until 2 months and keep the temperature in the range of 60-70 degrees C, after which it is ready to be used [11].

3. Processing Plastic Waste

Plastic is part of inorganic waste, which is garbage that has been thrown away and is no longer suitable for use [6]. Plastics can be grouped into two types: first, thermoplastic, which is plastic material, if heated to a certain degree, will melt and can be reprocessed into other forms. Second, thermosetting, which is plastic which if it has formed becomes solid, can no longer be heated and thawed [4]; [10].

As for empirically evidentiary, that waste processing can contain economic value, both organic and inorganic waste, has been treated and tested by various actors, both academics and business practitioners. Among these are [15], who treat market waste in the Semarang Sampangan Market, in the form of vegetable residues and others that are processed by way of composting so that it becomes compost or organic fertilizer. After being processed, they are packaged and sold at Rp. 3000 per two kilos.

In another form, [14], have done proof that coconut water, which is a lot of waste in traditional markets, has been turned into a food that has low nutrition and is preferred by mothers. So that it becomes a business object and can be a source of income for farmer group mothers in Kudus Regency. Likewise, the use of

inorganic waste economically, according to research [13], has contributed to the scavengers, because the waste is usually used by garbage collectors for recycling.

In the Islamic concept, any attempt to anticipate a dirty environment, such as garbage, is a necessity. Even realizing the cleanliness of the environment is placed as part of one's faith (*Hadith*). Moreover, the form of garbage settlement is managed economically productively, so that it gives a beneficial impact, namely material welfare and waste, as part of Islamic Sharia

II. METHODS

This research was field research and belongs to research and development category [16]. This means that after conducting research on the reality of existing waste management, and identifying the opportunities and challenges of waste management qualitatively, further efforts are made to develop the BUMNag economic business through a new model of alternative systems in waste management that is more effective and efficient. In the development stage of the waste processing model, compost products are produced whose quality is validated with SNI 19-7030-2004 on compost quality standards. The primary data source is the Director of BUMNag Pakandangan Emas. While the secondary data source is the Nagari Government Leadership and the community that owns the waste, using the Snowball Sampling technique. In the research phase, data were collected through interview, observation and documentation techniques. After that, it will be processed using a qualitative approach, which can be used as a basis for developing a waste management model that can be the basis for BUMNag economic development. As for the development stage, a validity test has been conducted on the product of the waste processing development model. Then it can be recommended to be applied by BUMNag management and the community, after revision and re-testing.

III. RESULTS AND DISCUSSION

The population in Nagari Pakandangan is 5041 inhabitants with a total of 1257 households. The distribution of the most population is in Jorong Ringan-Ringan and the least distribution of the population is in the Jorong Kampuang Paneh. Jorong which has the most potential population distribution as the largest contributor of waste, both types of organic waste (household waste; leftover vegetables, fruit) and types of inorganic waste (plastic, cardboard, paper). The Jorong Ringan-Ringan and Pasa Pakandangan, which is the largest Jorong, can be a household contributor to household waste that supports composting as well as a revenue contribution for BUMNAg.

The topography of Nagari Pakandangan which is at an altitude of 15-20 madl with the acidity of the soil is in the range of 5.5 - 5.9 allows Nagari Pakandangan to be better suited as a plantation and livestock area. Based on Zubachtiroddin (2016) corn can be planted on dry land, paddy land, lebak and tides, with various types of soil, on various types of climate, and at altitudes from 0 to 2,000m above sea level. This is reinforced by Nagari's data on commodity production, it was reported that maize ranks second after rice production.format".

Corn is the most commodities that is planted after rice. Corn is a type of plant that is widely cultivated and it makes Nagari Pakandangan a corn producing center in the Pariaman Regency. The livestock sector is also the economic driver of the Nagari Pakandangan community. BPS Padang Pariaman 2016 data, explained that there were 1701 head of cattle that were bred in Kenagarian Pakandangan District Enam Lingkung. The existence of these two economic sectors driving the community (agriculture and animal husbandry) is a source of waste that has economic value, which has not been explored so far. In the second case the source of

the waste is as a contributor to the main raw material for composting, so it is very potential to be managed by BUMNag Pakandangan in order to increase the income of the business entity.

The culture of the Nagari Pakandangan community provides opportunities for organic waste management. Based on the Forum Group Discussion with the community on Saturday, October 12, 2019 information was obtained that the people of Nagari Pakandangan already have an orderly culture of the existence of waste such as the awareness of the community not to throw garbage in rivers or on public roads. However, it is not yet known that household and agricultural waste can be processed into compost so that the management is still traditional by burning.

This community culture should also be supported by the influence of community leaders who are expected to optimize waste management efforts, because according to Green in [12] community leaders are the central figures who become the reference of the community in behaving. In addition, there are several other indicators that are expected to strengthen the positive culture of the community, such as indicators of the level of knowledge and freedom of time. In [12] explained that the relationship between the level of understanding and time freedom is directly proportional to people's behavior.

Due to the limited knowledge of the community on the management of organic waste and the lack of freedom of time owned by the community to process organic waste into compost, this role should have been taken over by BUMNag Pakandangan. This role is expected to open up opportunities for the development of BUMNag itself.

Based on data, inorganic waste was collected as of January 2019 totaling 14022.3 kg, but only 7959.7 kg were sold (57%). This means that another 43% becomes piles, which of course has disturbed the cleanliness of the environment and cash flow of BUMNag funds, due to the holding of these funds in unsold waste piles, which are certainly not economical. For that we need other efforts that can make the waste problem resolved, but economic efforts are increasing.

Waste Management Opportunities can be explained in the figure below. The scheme explains that inorganic waste has been managed by BUMNag Pakandangan through the Waste Bank. This management has an impact on the increase in revenue of Pakag BUMNag while also helping the community in managing inorganic waste. According to [17] that inorganic waste is also called non-biodegradable waste is a type of waste that cannot be processed by utilizing the activities of other living organisms. The management efforts undertaken by BUMNag Pakandangan have helped minimize the existence of this type of waste so that it can be considered aesthetically good and can healthfully inhibit the spread of disease due to the buildup effect.

Other opportunities for the existence of waste in Nagari Pakandangan can be seen from the presence of organic waste. Organic waste is a type of biodegradable waste, meaning that waste can be decomposed by microorganisms [17]. Although it can run out by itself, organic waste if it is reprocessed will actually provide economic value. The processing of organic waste sourced from household waste and the rest of the harvest into compost is expected to increase income for the development of BUMNag Pakandangan.

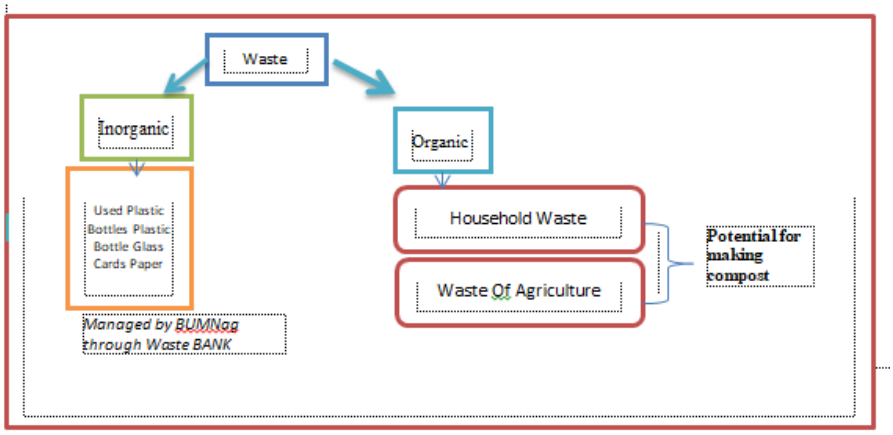

Figure 1. Waste Management Opportunities

Organic Waste Processing Model Into Compost

1. Outdoor Organic Waste Management Model

This model is anaerobic compost processing as has been done in general. Modifications were made to provide simple tools and add trichoderma and molasses. The steps for outdoor processing can be seen as follows: a) prepare a 3 x 3 m tarpaulin for the stirring container. Prepare agricultural corn waste. Corn waste in the form of corn straw is cut into smaller particles. We recommend using a chopper machine so that the results are smoother. But don't be too subtle so that the aeration process is perfect; b) prepare a microorganism starter consisting of Trichoderma and molasses. Both of these ingredients are dissolved in water; c) Add corn waste that has been cut with cow dung with a ratio of 1: 1. Stir the two ingredients. Flush with microorganism starter material. Then do the stirring; d) enter the ingredients that have been mixed into a 25 ml closed container then flush with water. After 24 hours, the temperature of the compost material will rise to ± 65 ° C. To reduce the temperature of compost, do the stirring again on the fourth day; e) after one week, the stirring process is again carried out. Brownish compost and the smell has started to disappear. Let stand again until one week later; f) after one week, it is observed that the compost is brown even, odorless and loose. This indicates that the compost has been completed.

2. Indoor Compost Processing Model

This waste management model is recommended for agricultural waste on a small scale and more efficient is used to treat household waste. This model is a modification of the waste management model using the "Takakura" basket.

The processing of organic waste has a relatively high economic value, it can be an economic resource for the community and the Nagari-Owned Enterprises. If juxtaposed with the processing of inorganic waste that has been carried out as part of BUMNag's business ventures in collaboration with the community so far, of course the participation of commercial organic waste management will have a relatively significant economic impact designations [7].

IV. CONCLUSION

The waste processing model developed produces compost products in accordance with SNI 19-7030-2004, with the following analysis results; 38% water content, pH 6.8, temperature equal to ground water temperature, blackish color, no smell (soil odor), composition N 2.26%, P 0.975%, K 1.53% C / N 18.76%. Analysis of the economic value of household waste has a value of Rp. 218.00 per kilogram of waste while the economic value of agricultural residual waste has a value of Rp 354.00 per kilogram of waste. The use of compost has economic value that is more efficient than synthetic fertilizer.

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