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Research Article

Economics

SMALL AND MEDIUM ENTERPRISES PROBLEM AND POTENTIAL SOLUTIONS FOR WASTE MANAGEMENT**中小型企业废物管理的问题和潜在解决方案****Dwi Arman Prasetya, Anwar Sanusi, Grahita Chandrarin, Elfiatur Roikhah, Irfan Mujahidin, Rahman Arifuddin**University of Merdeka Malang
Malang, Indonesia, arman.prasetya@unmer.ac.id**Abstract**

Waste is a major issue in the environmental field. Daily garbage in Malang City reaches 661.12 tons per day. Of this amount, 202.96 tons per day are managed by the people of Malang City. The remaining 458.16 tons per day is transported to the existing landfill in Supiturang. The composition of Malang city waste consists of organic waste (70.5%) and inorganic waste (29.5%); meanwhile, the potential of methane gas in the Supiturang landfill is based on the GIZ count of 4521 tons per year. Of this amount, only 3% has been utilized as a substitute for LPG gas by the public and as an electric generator drive, so this research uses the assessment of the potential development of the One Village-Owned Enterprises Urban Program on MSMEs in Malang, East Java Province, based on waste management in driving the community's economy as a most effective solution. This research is a quantitative developmental policy using the analysis of the critical problem and potential solutions. The variables to be explored are factors for the achievement of increased income source, Waste Management Strategies as Alternative Energy Sources and Drivers of Community Economy, regional core competencies and waste management.

Keywords: Waste Management, MSMEs, Alternative Energy Sources

摘要 废物是环境领域的主要问题。玛琅市的每日垃圾达到每天 661.12 吨。其中每天有 202.96 吨由玛琅市人民管理。每天剩余的 458.16 吨被运到苏皮图朗的现有垃圾填埋场。马琅城市垃圾的构成包括有机垃圾 (70.5%) 和无机垃圾 (29.5%) ; 同时, 苏皮图朗垃圾填埋场中甲烷气体的潜力是基于吉兹每年 4521 吨的数量得出的。在这一数额中, 只有 3% 被公众用作液化石油气的替代品和作为发电机驱动, 因此, 本研究使用的是对玛琅市中小微企业的“一个村落企业城市计划”的潜在发展的评估, 东爪哇省以废物管理为基础, 是推动社区经济发展的最有效解决方案。这项研究是一项定量发展政策, 使用对关键问题和潜在解决方案的分析。要探讨的变量是实现增加收入来源的因素, 作为替代能源和社区经济驱动力的废物管理策略, 区域核心竞争力和废物管理。

关键词: 废物管理, 中小企业, 替代能源

I. INTRODUCTION

In Government Regulation Number 81 of 2012 concerning Management of Household Waste and Household Trash, the Provincial and Regency/City Governments determine policies and strategies as well as the master plan for waste management. In the Waste Management Master Plan, it also regulates the final processing of waste by using the controlled method, the sanitary ware method and environmentally friendly technology. Meanwhile, in the Ministry of Energy and Mineral Resources Regulation Number 12 of 2017 concerning the Utilization of Renewable Energy Sources for Electric Power Supply, it is stated that renewable energy includes sunlight, wind, hydropower, biomass, biogas, municipal waste, and geothermal energy [1], [2]. The regulation also states that the State Electricity Company must purchase electricity from PLTSa to help local governments deal with municipal waste. It can be concluded that not many regions have policies on processing waste into alternative energy sources.

Biomass has a lot of potential as a substitute for fossil energy. Apart from the forestry sector, Indonesia's biomass potential comes from agriculture, plantations, and urban settlement waste. Sustainable waste management is a waste management solution that can generate value-added output, such as recycled products, compost, electricity, job creation, and income distribution. Benefits (positive externalities) of waste management can be obtained if the government is able to exercise control; if not, there will be market failures that can have an impact on the environment, increasing health costs and other social problems. One important control is control of the main resource, which is waste [3], [4]. Control over resources can be done by establishing an institutional model or granting property rights [32], [33].

Some regions that have implemented waste processing technology into electrical energy have different policies related to institutional management of PLTSa. For example, the City of Surabaya first formed a Regional State-Owned Enterprise, or BUMD, to manage their waste-to-electricity power plant, or PLTSa, while the Provincial Government of DKI Jakarta chose to hand over management of their PLTSa to the private sector through a Public-Private Partnership [5], [6]. In addition to the goal of developing regional-scale technology for waste

management, this research also explores the potential for the application of this technology to empower local communities while promoting economic growth in the region.

II. METHODS

The main purpose of this research is focused on small and medium enterprises (SMEs) and potential solutions for waste management systems, which intersect through community empowerment, waste management strategies and energy security for SMEs in Malang City. Existing policies such as block grants in Malang have been developed by incorporating environmental, technology, community empowerment, and regional core competencies to address issues. So that the issues explored in this research can be answered and explained chronologically through clear and accountable methods, the paper is organized as follows: description and impact of the One Village-Owned Enterprises policy on improving community welfare, identification and exploration of Malang city competencies that have the potential to be developed as icons of local community empowerment for waste management, and integration of waste processing technology in the Malang city community empowerment model as developer and customer for SMEs.

III. ANALYSIS

A. Critical Problem

Waste management is a major source of environmental problems specifically in Indonesia. In Indonesia, 64 million tons of waste is created annually. Of this amount, 44.5% is household waste which is mostly transported to Final Processing Sites. The Ministry of the Environment data states that in 2015, 60% of the existing landfills reached their maximum capacity limit. Landfills in Indonesia are capable of producing 1,581.74 tons of methane gas per year. Thus, if managed properly, the waste would not be a problem, but instead could become a solution to overcome the increasingly depleting Indonesian energy reserves, which are estimated to be only sufficient for the next 12 years [7], [8].

Based on data from the Department of Environment and Cleanliness of Malang City, daily garbage in Malang City reaches 661.12 tons per day. Of this amount, 202.96 tons per day are

managed by the people of Malang City. The remaining 458.16 tons per day is transported to the existing landfill Supiturang. The city of Jakarta's waste comprises both organic waste (70.5%) and inorganic waste (29.5%). Meanwhile, the potential for the production of methane gas in the Supiturang landfill is based on the GIZ count of 4521 tons per year [9], [10]. Of this amount, only 3% has been utilized as a substitute for LPG gas by the public and as an electric generator drive.

Based on the data from the Department of Environment and Cleanliness of Malang City, the daily garbage production in Malang reaches 661.12 tons per day. Of this amount, 202.96 tons per day are managed by the people of Malang, and the remaining 458.16 tons per day is transported to the existing landfill in Supiturang. The city of Malang's waste is composed of organic waste (70.5%) and inorganic waste (29.5%).

Malang is the second-largest city in East Java and is the biggest contributor to the provincial GRDP along with eight other cities/regencies. Malang's economic growth is heavily influenced by the micro and small business sector. Data from the Central Statistics Agency of Malang shows that the growth of non-formal industries and SMIs, including industries that take shelter in industrial centers, is far above the growth of large industries.

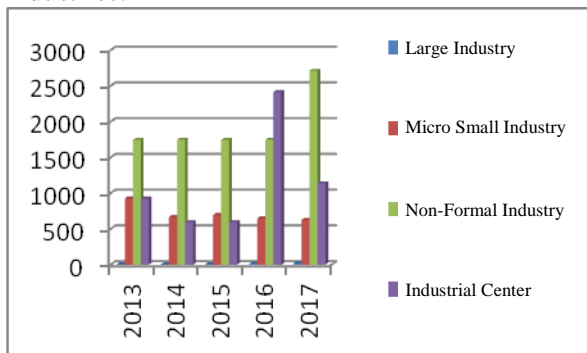


Figure 1. Malang City's economic industries growth

While evaluating the number of business units in Malang, one can observe that micro businesses dominate the number of micro and small businesses (MSMEs), which are spread almost evenly in five districts in Malang [11], [12], [29]. Meanwhile, in the business sector, the number of food and beverage business units, including culinary business units, dominates at 65%.

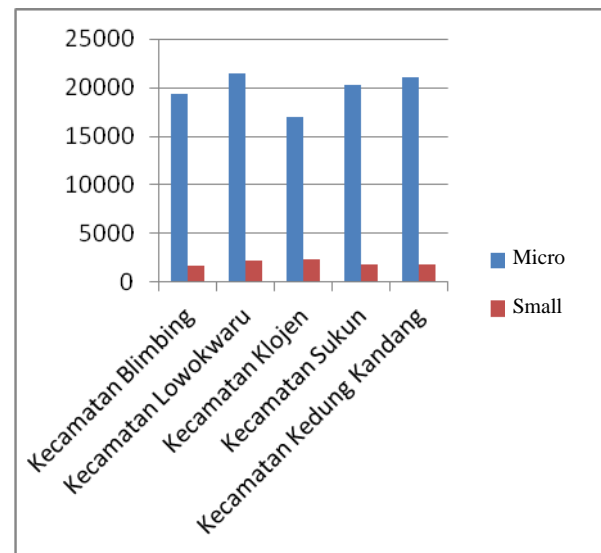


Figure 2. MSMEs Malang City's 2019

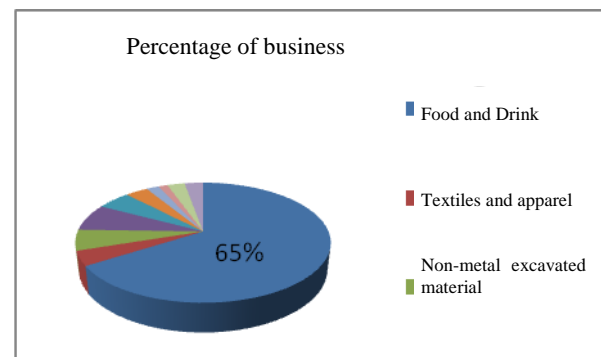


Figure 3. Percentage of business sector Malang City's 2019

All these SME industries produce waste that periodically continues to add up without effective regulation to manage them [13], [14]. Besides that, plastic waste and cooking oil are very dominant as the main problem. Plastic and cooking oil are not sorted and immediately disposed of at an existing landfill site, which is mixed with other waste without being classified.

B. Potential Solution

1) Increased Knowledge of Accounting

Accounting is very useful in management control and decision making – for example, describing the energy consumption, waste management existing landfill, and determining the product selling price requires the calculation of the cost of production [35], [36]. Bad information for waste management can result in increased production costs due to the determination of product selling prices based on instincts or market prices and waste generated. In addition to decision making, accounting has also functioned as a planning tool, cost control, source of financial information, and a way of getting access to sources of funding waste management systems and energy sources that can have a good impact on MSMEs [26], [27], [30]. Based on the

survey results, the accounting activities of Malang City's MSME can be identified as:

Table 1.
Accounting activities of Malang City's MSME

No	Accounting activities done	Number of MSMEs
1.	Did not carry out at all	57
2.	Carry out simple accounting activities	28
3.	Utilizing accounting information (balance sheet, L / R etc.) for decision making	15
Total		100

Out of 100 respondents, only 15 MSMEs have carried out structured accounting activities, namely journalizing transactions every day, posting to ledgers, and compiling simple financial reports every month. The remaining 85 SMEs have not yet carried out accounting procedures. 57 MSMEs do not even keep accounting books at all [15]. There needs to be an increase in knowledge and accounting skills in order to increase business progress, financial position, cost history, energy consumption, and waste management systems so that MSMEs can make decisions regarding determining product selling prices, working capital requirements, etc [16], [17], [28], [31].

2) Developed Access to Resources

The limitations of MSMEs in accessing resources occur in almost all sources, such as human resources, material resources, funding resources, energy sources, and management of waste in existing landfills. This limitation is due to the low trade power of SMEs – for example, producers and distributors of raw materials will provide substantial price discounts for large purchases, while the ability of MSMEs to do so is limited [34]. This will cause the competitiveness of MSME's to decrease, as compared to larger businesses. Limited access to resources reaches 100% because all MSME's have answered that they have a minimum limit of one resource [18], [19]. Specifically, the survey shows limited access to the following resources:

Table 2.
Limited access to resources

No	Obstacle factor	Number of MSMEs	Percentage
1.	Low of skilled and innovative staff	55	55%
2.	High production costs	82	82%
3.	Limited working capital	76	76%
4.	Limited market	68	68%

To answer the questions in this section, MSME's are allowed to choose more than 1 answer choice. Based on Table 2, it can be seen that the biggest problem related to resources is high production costs. This shows that MSME access to raw material sources, energy sources, and waste management in the business place or existing landfill is very limited. This results in high production costs. The high cost of production causes the selling price of the product to rise, so that the product's competitiveness is low [20]. The following are the raw material components that are most commonly used by MSME's:

Table 3.
Raw material components that are most commonly used by MSMEs

No	Components of production materials	Number of SMEs users	Percentage
1.	Food raw materials	67	67%
2.	Other raw materials	33	33%
3.	Electricity	88	88%
4.	Gas	74	74%

To answer the questions in this section, MSME's choose the type of raw material according to the main production material used and the types of overhead. Based on Table 3, it can be seen that the majority of MSME's use raw food materials, which means they are engaged in food and beverages [21]. Second, the majority of MSME's use electric or gas energy or a combination of both. It is necessary to develop various alternatives to access materials and energy production as a priority source.

3) Utilize ICT Access

The need for the development of information technology due to limitations in accessing information sources, both related to markets, raw materials, process technology, as well as innovation and development of production technology. The survey shows the results of identification as follows:

Table 4.
Utilize ICT access

No	Information technology activities	Number of SMEs users	Percentage
1.	Do not use at all	73	73%
2.	Utilizing IT for online sales only	21	21%
3.	Utilizing IT for sales and other needs	6	6%

Table 4 shows that the majority of MSME's (73%) are not familiar with information

technology. Only a few MSME's have used IT to meet production needs, both in accessing information on raw materials, markets, designs, energy sources, and waste management with the synergy system. This factor can hamper the development of MSME's because of the limitations in market information, consumer needs, or cheap raw material markets and waste management [22], [23]. The need for ICT development processes in MSME's is synergistic in accessing information needs related to the business being developed [24], [25].

IV. CONCLUSION

Some facts that can be stated in this research are as follows: first, MSME plays an important role in the economic growth of Malang City. On the other hand, the fact is that MSME's still encounter many obstacles in the field and are the most highlighted energy sources and waste management. Second, the biggest obstacle for MSME's is the limitation in accessing resources, especially raw material sources and waste management information-management systems. Third, to improve the competitiveness of MSME's, the government needs to step in to provide guidance and facilitation. One facilitation that the government can provide is to increase MSME access to raw material sources, especially energy sources and appropriate waste management.

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