

Waste management at kartasuro traditional market, Sukoharjo Regency

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Abstract. Kartasura traditional market is a people's market located in Kartasura District, Sukoharjo Regency. This market produces organic and inorganic waste. The purpose of the study was to analyze waste management at Kartasura Traditional Market. The type of research was descriptive qualitative. The informants of the study were cleaners, traders, market heads, staff of the Sukoharjo Regency Cooperative UKMK Trade Service, and the head of the Sukoharjo Regency Environmental Service UPTD. The object of the study was the waste management system at Kartasura Traditional Market based on the Decree of the Minister of Health Number 519 / MENKES / SK / VI / 2008 concerning guidelines for organizing a healthy market environment, PMK Number 17 of 2020 concerning Healthy Markets and SNI 519-2454-2002 concerning Technical Operational Procedures for Urban Waste Management. Data analysis used the Miles and Huberman model, namely Data Reduction, Data Presentation, and Conclusions or Verification. Research results management garbage in traditional markets Not yet in accordance with condition health, technology management rubbish sustainable that can applied is biomass and waste banks. Need done effort management trash that can contribute to sustainability environment is recycle repeat 3R.

1 Introduction

Rubbish management is systematic, comprehensive and continuous which includes reduction and handling rubbish [1]. Management rubbish become issue multi-sector impact in development sustainable various aspects in society and economy, management rubbish own relatedness with issue health, change climate, reduction poverty, security food and resources, as well as production and consumption sustainable [2]. Sustainable waste management is very important to achieve sustainable development goals. Waste management programs are created to reduce the negative impacts of landfill [3]. Management efficient waste creating safe, inclusive, disaster-resilient and sustainable cities (SDGs 11).

Waste management contributes to improving the quality of the urban environment. Minimizing waste, recycling, and processing waste safely, can reduce negative impacts on the environment, including water and air pollution, and help maintain the quality of life for city dwellers. Sustainable waste management is also related to disaster risk reduction. In

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disaster situations, good waste management can help prevent the spread of disease and reduce the impact of disasters caused by uncontrolled waste.

Sustainable waste management is a form of responsibility for consumption and production that has been carried out (SDGs 12). Excessive consumption will produce excess waste which will affect the area of the landfill. The beach becomes a place disposal rubbish which is filled with waste of hazardous materials and substances and various types of waste, such as leftover fishing nets, plastic, cigarette butts, and plastic straws. This will certainly have an impact to marine ecosystems (SDGs 14). In addition to marine ecosystems, waste that is not managed properly will affect terrestrial ecosystems (SDGs 15). Irresponsible production processes will produce chemical waste that can poison the surrounding soil and rivers. This will affect the amount of clean water sources available (SDGs 6). In addition to marine and terrestrial ecosystems, sustainable waste management can also reduce air pollution that occurs, thereby increasing a healthier life (SDGs 3).

Waste or garbage that is not managed properly will produce excess methane and CO₂. This will have an impact on existing climate change so that waste management can be one way to reduce climate change (SDGs 13). Waste that is managed and utilized properly can increase economy society (SDGs 8). Use of return rubbish as well as recycling Waste recycling can be an economic potential for the community so that it can be used as an alternative to improving the economy. Sustainable development is development that meets the needs of the current generation without sacrificing the fulfillment of the needs of future generations. Management sustainable waste become alternative fulfillment needs. Waste management policies, such as waste banks, can be used as an effort to reduce the amount of waste that is loaded into landfills and help the community's economy. Sustainable waste management can affect the achievement of SDGs targets, especially SDGs 1, 8 and 12.

Based on data from the national waste management information system (SIPSN) in 2023, the amount of waste produced in Sukoharjo Regency, Central Java Province per day is 364 tons and the amount of waste produced per year is 133,114 tons. One of the largest contributors to waste is traditional markets. SIPSN in 2023 recorded that 3.8% of waste in Sukoharjo Regency came from traditional markets. Based on data from the Sukoharjo Regency Health Service in 2022 regarding supervision of public facilities (TFU), the scope of healthy market management is still low. The low management of healthy markets is because waste and sewage have not been managed properly. One of the markets in Sukoharjo Regency is a traditional market in sub-district [4]. A preliminary study by interviewing the Head of the UPTD of the Sukoharjo Regency Environmental Service, the sub-district in Sukoharjo that contributes the most waste is Kartasura District, which is 50 tons/day. The amount of waste produced at Kartasura Market per day is 10 tons. The results of the preliminary survey using the observation method show that the types of waste that are most produced are organic waste and inorganic waste. The inorganic waste that is mostly found is plastic waste. Organic waste is in the form of food, vegetable and fruit waste.

Waste generated from the market traditional Kartasura can changed become source material fuel (ethanol). Stack the existing trash in the market traditional Kartasura can processed become source energy renewable in the form of briquette Biomass. Briquettes Biomass is energy alternatives that can replace wood burn or LPG gas which is classified as in category energy that is not can updated [5]. Management garbage in traditional markets Kartasura can also done through the Garbage Bank. Garbage Bank is effort management rubbish based on empowerment public through the 3R program, which uses rubbish as source Power economy, also changes paradigm management rubbish from the "end of pipe" paradigm becomes "reduction at the source" paradigm [6].

2 Method

This type of research is descriptive with a qualitative approach [7] which is guided by the Decree of the Minister of Health Number 519/MENKES/SK/VI/2008 concerning Market Environmental Health Requirements, SNI 519-2454-2002 concerning Operational Technical Waste Management and PMK Number 17 of 2020 concerning Healthy Markets. The subjects in this study were selected using a purposive sampling technique [8]. Based on this, the research subjects [9] were determined, namely: (a) Head of Kartasura Traditional Market; (b) Head of UPTD Environmental Service of Sukoharjo Regency; (c) Head of Market Management Division, Cooperatives, Trade and SMEs Service of Sukoharjo Regency; (d) Officers of Fleet and Waste Retribution Section of UPTD Environmental Service of Sukoharjo Regency; (e) Cleaning Officers of Kartasura Traditional Market as many as 2 people; (f) 1 person Trader on Floor 1 of Kartasura Traditional Market; (g) 1 person Trader on Floor 2 of Kartasura Traditional Market; (h) 1 person Trader Outside Kartasura Traditional Market. The object of this research is waste management in Kartasura Traditional Market, Sukoharjo Regency. Data analysis in this research uses the Miles & Huberman model, namely: data reduction, data presentation and conclusion or verification [10]. Technology management rubbish sustainable that can applied in traditional markets Kartasura is biomass and waste banks. The advantages they have Source energy biomass is can renewable so that can provide source energy in a way sustainable [11]. Waste bank is method management economical waste energy with 3R concept (Reduce, Reuse, Recycle) [12].

3 Results and Discussion

3.1 Characteristics of Informants

Table 1. Informant characteristics.

Name	Informant status	Education	Gender	Age	Length of work	Beginning
Revelation of Jatmika	Head of Kartasura Market	Senior High School	Man	>40	>2	WJ
Suyamto	Kartasura market cleaning staff	Senior High School	Man	30	>2	S
Al Amin	Kartasura market cleaning staff	Senior High School	Man	25	>2	A
Revelation	Traders on the 1st floor of Kartasura Market	Senior High School	Woman	>40	>2	We
Rusmini	Traders on the 2nd floor of Kartasura Market	Senior High School	Woman	>450	>2	R
Dani	Traders outside Kartasura market	Senior High School	Man	>40	>2	D

Name	Informant status	Education	Gender	Age	Length of work	Beginning
English	Officers of the Fleet and Waste Retribution Section of the Sukoharjo Regency Waste Management Unit	Vocational School	Man	40	>5	ID
Agus P	Head of Market Management Division, Cooperatives, Trade and SMEs Service, Sukoharjo Regency	Bachelor	Man	>40	<1	AP
English	Head of UPTD Waste, Environmental Service, Sukoharjo Regency	Bachelor	Man	>40	1	AR

The gender of the informants in this study was on average male with high school education, informants with bachelor's degrees were only 2 people, namely the Head of Market Management at the Cooperatives and SMEs Trade Service of Sukoharjo Regency. The age of the informants was 25 to 40 years. The informant who worked the longest was the Fleet and Waste Retribution Officer, which was more than five years.

3.2 Management Garbage in Traditional Markets Kartasura

Management rubbish is activity For manage rubbish from beginning until disposal, including collection, transportation, treatment and disposal, accompanied by monitoring and regulation management rubbish [13]. Management the existing trash in the market traditional Kartasura started from the process of sorting, collecting, storing temporary, transportation, and disposal end. Management the existing trash in the market traditional Kartasura is also supported by performance officer cleanliness and facilities supporting infrastructure.

Waste sorting is a waste management activity carried out by grouping the type, quantity or nature of waste [6]. Based on results observation Not yet done sorting rubbish in the market traditional Kartasura. The new paradigm of waste management is integrated reduction and handling from upstream to downstream, especially involving the community in this case market traders. Market traders need to reduce waste generation and have the ability and knowledge to handle the waste produced properly [14]. Waste management that is currently considered the most effective is by sorting waste according to its type, namely organic waste, inorganic waste and residual waste, each type of which requires different actions. This is closely related to the new paradigm of waste management that sees waste no longer as waste [15]. The importance of carrying out the waste sorting process is to reduce the amount of waste that must be transported to the TPS so that the burden on the TPS is reduced. Waste management efforts must begin at the initial stage of the source of waste generation [16].

Waste collection is an activity of collecting waste starting from the source and then collecting it at a temporary shelter (TPS). The stages of waste transportation that exist in the

market traditional Kartasura is the collection and transfer of waste from the waste source to a temporary storage site (TPS) or integrated waste processing site (TPST) [1]. Waste transportation is carried out every day and uses push carts. The waste that is there in the market traditional Kartasura only collected and then piled up in the trash at the market gate without any further management. This causes an unpleasant odor, discomfort traders and visitors and disrupt the aesthetics of the market environment [17].

Shelter Meanwhile, waste (TPS) is a container or place used to store collected waste before being transported to the final disposal site [18]. Based on the observation results, Kartasura Traditional Market does not have a TPS. The collected waste is only piled up in the trash bin at the main gate of the market, the trash bin is a plastic basket. TPS is one part of waste management which is expected to reduce waste, so that waste disposed of at the TPA only becomes residual waste that can no longer be used. This effort is an alternative step to help the role of local government in reducing operational costs for waste transportation and can also extend the life of the TPA [19].

The waste transportation process is an activity of transporting waste. rubbish from source rubbish using certain tools going to final processing site (TPA) [1]. Transportation process garbage in traditional markets Kartasura done every day, the waste that comes from from stall trader transported use cart push, garbage transported to place disposal end (TPA) using truck with tub closed. Inhibiting factors in the waste management process include a waste transportation system that is not yet optimal [20]. An inadequate number of waste transportation fleets has the potential to cause the waste management process hampered. The number of waste collection fleets should be able to transport all the waste produced by the community every day [21]. Conditions in the field show that the obstacles that occur in the transportation process at the Kartasura traditional market are the limited number of fleets and cleaning staff.

Final Disposal Site (TPA) is a place for processing and returning waste to the environment in a way that is safe for humans and the environment [18]. TPA is a place for disposing of waste until the final stage in the waste management process starting from the source, collection, transfer or transportation, processing to final disposal [22]. Waste from the Kartasura traditional market is transported and taken to the Final Disposal Site (TPA) located in Mojorejo Village, Bendosari District, Sukoharjo Regency. The condition of the waste at the Mojorejo TPA has been sorted by scavengers and the TPA has provided heavy equipment for waste management such as 4 bulldozers and 1 excavator. In addition, the TPA is also equipped with a guard post, fence, waste sorting scales, drainage channels and compost bins. Condition of the Mojorejo TPA Already fulfil Health requirements.

The actions of the cleaning staff are a series of activities carried out by the cleaning staff in managing market cleanliness, especially regarding waste management. The cleaning staff is tasked with carrying out daily activities and monitoring the waste management system. The cleaning staff plays a role in waste management from the collection stage to final disposal [23]. The cleaning staff must work together with market traders to create a healthy and clean market environment.

The availability of facilities and infrastructure is a basic facility that can support the implementation of waste management activities [24]. From the results of observation it is known that there is a need for additional and improved waste management facilities and infrastructure. Such as building temporary waste storage (TPS) and providing trash bins. Limited facilities and infrastructure will affect the actions of market traders in managing waste. This means that even though market traders have an understanding, knowledge and positive attitude in managing waste, they are not equipped with adequate facilities and infrastructure, so they have the potential to manage waste by throwing waste carelessly [25].

3.3 Technology Management Sustainable Waste

Draft Management rubbish sustainable is management waste that is intended for reduce impact bad to environment and health man as well as increase mark a goods or services, creating benefits, prevent losses caused by decline mark goods, repair a objects, and set something with a better way useful. Management rubbish need role important society, especially in reduce amount trash and organize type trash so that trash the beneficial [3]. Implementation technology management garbage in traditional markets Kartasura can help develop economy area as well as increase quality life society. Technology management rubbish sustainable that can applied in traditional markets Kartasura in the form of biomass and waste banks.

Biomass is material organic origin from plants, animals, bacteria, or mushrooms, which can utilized as source energy renewable. Waste existing organic in the market, such as remainder food, vegetables, fruit, can changed become biomass. Biomass own a number of advantages, including: Biomass can updated in a way sustainable, Biomass can produce energy when just, different with energy wind and sun that do not Determinant, Biomass own amount net zero CO₂, so that No contribute to the improvement greenhouse gas emissions glass, Biomass is material friendly environment that can reduce pollution environment, Biomass can reduce dependence on materials burn fossil such as natural gas, LPG, and propane [26].

Briquettes is one of the the method used for convert source energy biomass to form other biomass with method compressed so that its shape become more regular [27]. The famous briquettes is briquette coal However No only coal only one can made become briquette. Example other biomass made become briquette is husk, charcoal husk, powder saw, sawdust wood, and waste other biomass. Making briquette no too difficult, the tools used are also not too complicated [28].

Garbage bank is facilities that play a role important in management rubbish sustainable. Waste bank can help overcome problem trash and improve awareness public will healthy environment. Waste bank is draft collection and sorting rubbish dry run like a bank where trader can save trash and get money. Trash bank customers can also borrow money which is then returned with deposit garbage. Garbage bank is place for collect, sort, and manage rubbish dry or inorganic. Garbage existing inorganic in the market traditional Kartasura can managed through the waste bank. Implementation of the waste bank is one of the engineering social for inviting and forcing existing traders in the market for sorting trash. With equalize rubbish in money or goods valuable that can saved, trader in the market finally educated for value rubbish in accordance types and values. Waste bank can become means education, change behavior in management waste, and implementation economy circular. Waste banks can also create flow sustainable and profitable income.

4 Conclusion

- a. Management garbage in traditional markets kartasura started from the process of sorting, collecting, storing temporary, transportation, and disposal end as well as supported by performance officer cleanliness and facilities supporting infrastructure.
- b. Management process garbage in traditional markets kartasura in a way overall not yet fulfil health requirements according to the Decree of the Minister of Health Number 519 of 2008 concerning Market Environmental Health Management, SNI Number 519 of 2002 concerning Technical Procedures for Waste Management in Residential Areas and PMK Number 17 of 2020 concerning Healthy Markets.

- c. Potential strategies for increase management rubbish is introduce technology management rubbish sustainable that can applied in the market traditional kartasura that is biomass and waste banks.
- d. Need done effort improvement waste management in traditional markets that can contribute to environmental sustainability in the form of recycle repeat 3R.
- e. Suggestions for study furthermore still focus on management rubbish sustainable with consider other technologies that can applied in traditional markets kartasura.

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