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Circular Economy In Mataram City Waste Management: Opportunities, Challenges, And Implementation Strategies

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ABSTRACT

This study aims to analyze the condition of waste management, identify opportunities and challenges in implementing a circular economy, and formulate a strategy for implementing a circular economy in waste management in Mataram City. This study uses a qualitative approach with data collection techniques through in-depth interviews, observation, and documentation involving the government, business actors, communities, waste bank managers, and the public. Data analysis is carried out through data reduction, data presentation, drawing conclusions, and SWOT analysis. The results show that waste management in Mataram City is still in the transition stage towards a circular economy and is dominated by a linear pattern (collect-transport-dispose). The implementation of a circular economy has opportunities through the availability of waste as raw material, waste processing innovation, policy support, and increased community participation. However, its implementation still faces challenges such as low waste sorting at source, limited facilities and infrastructure, and an unintegrated waste management system. Based on the SWOT analysis, the recommended priority strategy is the Weakness-Opportunities (WO) strategy through increasing education and community participation, strengthening collaboration between actors, and developing facilities and infrastructure for circular economy-based waste management. This study found that the implementation of the circular economy in Mataram City is still in a partial transition state, namely when various elements of the circular economy have developed, but have not yet formed a complete and sustainable waste management system.

Keywords: Circular Economy, Waste Management, Implementation Strategy, SWOT, Mataram City

INTRODUCTION

The waste problem is a major challenge to sustainable development in various countries, including Indonesia. Population growth, urbanization, and economic activity have led to a continuous increase in waste volume each year. Poorly managed waste can have various environmental, health, and socioeconomic impacts. In Indonesia, most waste

management still uses a linear approach of collection, transport, and disposal, resulting in relatively low rates of recycling and reuse.

Mataram City, the capital of West Nusa Tenggara Province, also faces similar challenges. High economic activity and population growth have led to a continuous increase in waste generation, while the management system remains dominated by a linear pattern. Mataram City generates an average of 257.89 tons of waste per day, with most of it still relying on the Kebon Kongok Regional Landfill for final processing.

The overloaded Kebon Kongok Landfill has caused various problems, such as restrictions on waste transportation routes, waste accumulation at several TPSs, and an increased risk of environmental pollution and public health problems. These conditions demonstrate that the existing waste management system is unable to meet the challenges of sustainable urban waste management.

One widely developed approach to addressing this problem is the circular economy. This concept positions waste as a resource that still has economic value through reduction, reuse, and recycling, thereby reducing reliance on landfills and increasing resource efficiency.

Various studies have shown that the circular economy has significant potential for improving waste management. However, most research focuses on specific aspects, such as technical processing, waste banks, or partial community participation. Studies integrating waste management conditions, opportunities and challenges, and circular economy implementation strategies in the context of mid-sized cities are still very limited.

Furthermore, research on the implementation of a circular economy in the context of the waste crisis caused by the overloaded Kebon Kongok Landfill in Mataram City is still scarce in the literature. Although the Mataram City Government has regulations supporting sustainable waste management, their implementation has not been optimal.

Based on these conditions, this study aims to analyze the state of waste management in Mataram City, identify opportunities and challenges for implementing a circular economy, and formulate a strategy for implementing a circular economy in waste management. This study fills a gap in previous research by integrating an analysis of the existing conditions, opportunities, challenges, and implementation strategies for a circular economy in the context of a mid-sized city experiencing a waste crisis due to landfill overload.

RESEARCH METHODS

This study uses a descriptive qualitative approach to gain a deep understanding of the state of waste management, the opportunities and challenges of implementing a circular economy, and its implementation strategies in Mataram City. A qualitative approach was chosen because it can comprehensively explain phenomena from the perspectives of stakeholders involved in waste management.

The research was conducted in Mataram City, West Nusa Tenggara Province, which was purposively selected due to its waste management challenges stemming from increasing waste generation and the overloaded Kebon Kongok Regional Landfill. The study locations

included the Mataram City Environmental Agency, waste bank management units, waste processing businesses, environmental communities, and the general public.

The research data consists of primary and secondary data. Primary data was obtained through in-depth interviews and field observations, while secondary data was obtained from official government documents, reports from the Mataram City Environmental Agency, laws and regulations, and various relevant literature on the circular economy and waste management.

Research informants were selected using purposive sampling, selecting informants based on their knowledge, experience, and direct involvement in waste management in Mataram City. Informants included local government officials, waste bank managers, waste processing businesses, environmental communities, and the general public.

Data collection techniques were carried out in three stages, namely: (1) in-depth interviews with research informants; (2) observation of waste management conditions and waste processing activities in the field; and (3) documentation in the form of collecting statistical data, reports, photos and other supporting documents.

Data analysis used the Miles and Huberman interactive model, which includes four stages: data collection, data reduction, data presentation, and conclusion drawing. Data validity was tested through source and technique triangulation to ensure the validity and consistency of the information obtained.

Next, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was used to formulate a circular economy implementation strategy. This analysis was used to identify internal and external factors influencing the implementation of a circular economy in waste management in Mataram City and determine the most appropriate priority strategies.

RESULTS AND DISCUSSION

1. Condition of Waste Management in Mataram City

Waste management in Mataram City is still dominated by a linear approach (collect-transport-dispose), namely a system of collecting, transporting, and disposing of waste at the final processing site (TPA). This system results in a significant portion of waste not being optimally sorted and processed at the source. This situation indicates that circular economy practices in waste management in Mataram City are still in the early stages of transition.

Data from the Mataram City Environmental Agency shows that the daily volume of waste generated remains quite high, while waste management capacity and infrastructure have not been able to keep up with the increasing volume. The overloaded condition of the Kebon Kongok Regional Landfill further highlights the limitations of the existing waste management system. As a result, waste continues to accumulate in several Temporary Disposal Sites (TPS), causing various environmental and social impacts for the surrounding community.

The findings of this study align with those of Rahmawati et al. (2021), who stated that most cities in Indonesia still employ conventional waste management systems and have not optimally integrated circular economy principles. This linear system leads to a high

dependence on landfills and accelerates the decline in the capacity of final disposal sites.

2. Opportunities for Implementing a Circular Economy in Mataram City

The research results show that Mataram City has significant potential to implement a circular economy in the waste management sector. The first opportunity lies in the abundant availability of waste raw materials, which have the potential to be processed into products with economic value. Organic waste can be used as compost or maggot feed, while inorganic waste can be recycled into various new products.

The second opportunity lies in the increasing innovation in waste management by businesses and environmental communities. The existence of waste banks and various community-based waste management groups demonstrates a growing awareness of the importance of sustainable waste management in Mataram City.

The third opportunity lies in government policy support through Regional Regulation No. 1 of 2019 concerning Waste Management and Mayoral Regulation No. 2 of 2023 concerning Reducing the Use of Single-Use Plastics. These regulations can serve as a foundation for encouraging broader adoption of a circular economy.

In addition, increasing community participation in waste sorting and management activities indicates the existence of social capital that can support the successful implementation of a circular economy in Mataram City.

3. Challenges of Implementing a Circular Economy in Mataram City

Despite its numerous opportunities, implementing a circular economy in Mataram City still faces several challenges. The main challenge is the low level of waste sorting at source. Most residents still mix organic and inorganic waste, complicating processing and recycling.

The next challenge is the limited waste management facilities and infrastructure. The number of waste processing facilities, transportation fleets, and other supporting facilities is still inadequate to optimally support a circular economy system.

Furthermore, the unintegrated waste management system has resulted in ineffective coordination between stakeholders. This research found a lack of synchronization between established policies and implementation on the ground.

This finding is in line with Siregar (2024) who stated that the success of a circular economy is highly dependent on collaboration between actors, policy support, and changes in community behavior.

4. SWOT-Based Circular Economy Implementation Strategy

Based on the SWOT analysis, four alternative strategies were obtained, namely SO (Strengths-Opportunities), WO (Weaknesses-Opportunities), ST (Strengths-Threats), and WT (Weaknesses-Threats) strategies.

The research results show that the prioritized strategy is the Weaknesses-Opportunities (WO) strategy. This strategy emphasizes exploiting available opportunities to address various internal weaknesses in waste management in Mataram City.

The recommended priority strategies include:

1. Increase public education and awareness regarding waste sorting from the source.
2. Strengthen collaboration between government, private sector, communities, and academics.
3. Develop facilities and infrastructure for circular economy-based waste management.
4. Increase institutional capacity and integrated waste management systems.
5. Encourage the development of waste processing businesses that have economic value.

The findings of this study indicate that the implementation of a circular economy in Mataram City is still in a partial transitional state, namely a condition where various elements of the circular economy have begun to develop, but have not yet been integrated into a complete and sustainable waste management system.

Theoretical Implications

The results of this study provide an overview of the conditions of circular economy implementation in urban waste management and can be a reference for similar research in other areas.

Policy Implications

Local governments need to accelerate the transformation from a linear waste management system to a circular economy system by strengthening regulations, increasing infrastructure investment, and developing multi-stakeholder collaboration in urban waste management.

CONCLUSION AND SUGGESTIONS

This research shows that waste management in Mataram City is still in the transition phase toward a circular economy. Despite regulatory support and commitment from the local government, waste management practices are still dominated by a linear system (collect-transport-dispose) and have not yet optimally implemented circular economy principles. Mataram City has significant opportunities through the availability of waste as raw material, innovation from businesses and communities, public participation, and policy support and collaboration between actors. However, its implementation still faces various challenges, such as low consistency in waste sorting, limited facilities and infrastructure, overloaded landfills, and a lack of integrated waste management system.

Based on the results of the SWOT analysis, the recommended priority strategy is the Weakness–Opportunities (WO) strategy, which utilizes various available opportunities to overcome internal weaknesses through increasing public education, strengthening collaboration between actors, utilizing external support, and developing waste management innovations. The findings of this study indicate that the implementation of the circular economy in Mataram City is still in a partial transition state, where various elements of the circular economy have developed but have not yet formed a complete and sustainable waste

management system. Practically, the results of this study can provide input for local governments in formulating more integrated circular economy-based waste management policies.

This study is limited by its coverage area and number of informants, as well as its use of a qualitative SWOT analysis. Therefore, further research is recommended to develop a quantitative analysis of the economic potential of waste management and utilize IFAS and EFAS weightings to determine strategic priorities more measurably.

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