



Published by: Media Sci Tech

Indonesian Journal of Environmental and Natural Science

Journal homepage: www.ijoen.com

Analysis of Traditional Market Waste Management and Sustainable Environmental Cleanliness: Evidence from Pasalaran Market, Indonesia

Nadia Ulfa*, Ridho Abdul Muhfid, Nasehudin

Department of Social Science Education, Faculty of Tarbiyah and Teacher Training, Syekh Nurjati State Islamic Cyber University Cirebon, West Java, 45156, Indonesia.

Article Info

Article history:

Received May 21, 2026
Revised June 10, 2026
Accepted June 26, 2026

Keywords:

Traditional market;
Market waste;
Environmental cleanliness;
Waste management;
Pasalaran Market

Abstract

Traditional markets are important economic centers but also represent significant sources of waste generation that may influence environmental cleanliness. This study aimed to examine waste generation activities at Pasalaran Market, Cirebon Regency, identify the types and sources of waste produced, and explore their implications for environmental cleanliness. A descriptive qualitative approach was employed through direct observations and in-depth interviews with the Head of Pasalaran Market, a vegetable trader, and a clothing trader selected using purposive sampling. Data were analyzed using the Miles, Huberman, and Saldana framework, including data reduction, data display, and conclusion drawing. The findings indicate that Pasalaran Market accommodates approximately 1,400 traders, consisting of 329 kiosks, 648 stalls, and 416 open trading spaces, supported by ten sanitation workers responsible for maintaining cleanliness. Organic waste, such as vegetable residues, fish waste, and meat waste, constitutes the largest portion of market waste, while plastic packaging and cardboard dominate inorganic waste. Waste generation mainly originates from food trading activities and visitors' shopping practices. Although the market environment remains relatively clean due to the availability of sanitation facilities and routine waste collection services, waste segregation practices are still limited because of low trader participation. The study highlights that effective market waste management depends not only on waste characteristics but also on environmental awareness and behavioral commitment among stakeholders. Strengthening the implementation of the 3R principles and enhancing collaboration between market authorities and local government are essential for promoting more sustainable environmental cleanliness.

This is an open access article under the CC BY-NC license.

DOI:10.XXXXX/ijoen.v1i1.9



Corresponding Author:

Nadia Ulfa
Social Science Education Study Program,
Syekh Nurjati State Islamic Cyber University Cirebon, Indonesia
Bakung-Jamblang Street No. 225, Cirebon, West Java, 45156, Indonesia
Email: nadddiaa634@gmail.com
Phone: +6289660721716

1. Introduction

Waste management has become an environmental issue that has received widespread attention in many countries because it affects environmental quality and human well-being. Maalouf and Agamuthu [1] explain that population growth, urbanization, and the expansion of economic activities have

continuously increased waste volumes, particularly in developing countries. This condition has made waste management one of the environmental challenges requiring serious attention. Therefore, sustainable waste management has become an essential aspect of maintaining environmental quality and supporting sustainable development.

The intensive activities at Pasalaran Market have the potential to generate environmental impacts. This is due to the presence of both organic and inorganic waste resulting from buying and selling activities. As a consequence, the market environment and surrounding areas experience environmental disturbances such as unpleasant odors, traffic congestion, and cleanliness problems. Waste-related issues have become the primary focus of this study based on the environmental impacts caused by Pasalaran Market in Cirebon Regency. According to data from the Ministry of Environment and Forestry (KLHK) in 2020, 37.3% of waste in Indonesia originates from household activities. The second-largest source of waste comes from traditional markets, accounting for 16.4%, while 15.9% originates from residential areas. Furthermore, 14.6% comes from other sources, 7.29% from commercial activities, 5.25% from public facilities, and 3.22% from office activities [2]. This indicates that traditional markets are among the largest contributors to waste generation in Indonesia. These findings are consistent with the study conducted by Nasution et al. [3], which revealed that food trading activities in traditional markets are major contributors to waste generation, particularly organic waste derived from vegetable residues, fruits, and other food products. In addition, Tulus et al. [4] emphasized that the success of waste management is highly dependent on the participation of traders and market managers in maintaining environmental cleanliness.

Pasalaran Market in Cirebon Regency is located in Weru Lor Village, Weru District, Cirebon Regency, West Java. Traditional markets are defined as markets built and managed by the government, local governments, private entities, state-owned enterprises, regional-owned enterprises, and cooperatives, where trading activities are conducted through bargaining mechanisms [5]. The market occupies a strategic location near the Pantura highway, making it crowded with visitors every day. Pasalaran Market consists of two floors. These characteristics reflect the typical features of traditional markets in urban and peri-urban areas, which generally accommodate diverse trading activities and maintain direct interactions between sellers and buyers [6]. The ground floor accommodates sellers of food commodities such as vegetables, meat, fish, eggs, fruits, traditional cakes, snacks, and other food products. The upper floor accommodates sellers of fabrics, clothing, electronic devices, toys, and other non-food products. The market is visited daily by many people, most of whom are local residents. Traditional markets play an important role in maintaining local economic activities and supporting community livelihoods [7]. The large number of traders and visitors has the potential to increase the volume of waste generated each day. In addition, traditional markets contribute to improving community welfare and quality of life through the provision of goods, employment opportunities, and social interactions [8]. Such conditions may affect environmental cleanliness around the market if waste management is not carried out optimally. The considerable potential for waste generation at Pasalaran Market can also be observed from the scale of trading activities conducted daily. That Pasalaran Market accommodates approximately 1,400 traders, consisting of 329 kiosks, 648 stalls, and around 416 open trading spaces. This condition indicates the high intensity of commercial activities that potentially generate large amounts of both organic and inorganic waste [9].

Several previous studies have shown that traditional market activities are closely related to waste problems and environmental cleanliness. Research conducted by Chaerul and Dewi [10] found that ineffective waste management contributes to waste accumulation and unpleasant odors. Meanwhile, Silfia and Surtikarti [11] highlighted the importance of adequate waste management facilities in maintaining the environmental quality of markets. However, these studies mainly focused on waste management in general and have not specifically analyzed the relationship between market activities, the types of waste generated, and the level of awareness among market stakeholders regarding environmental cleanliness in the context of Pasalaran Market, Cirebon Regency. Therefore, this study was conducted to fill this research gap by analyzing sources of waste generation, environmental cleanliness conditions, and the awareness of market stakeholders in maintaining market cleanliness.

Although various studies have examined waste-related issues in traditional markets, most have primarily focused on waste generation, waste volume, or waste management in general. Studies that connect market activities as sources of waste generation with traders' awareness levels and the cleanliness conditions of the market environment remain relatively limited, particularly in the context of Pasalaran Market in Cirebon Regency. Based on this research gap, the present study offers novelty by analyzing the relationship between market activities, the types and sources of waste generated, traders' awareness levels, and the cleanliness conditions of the market environment within a single analytical framework. Therefore, this study not only identifies the waste generated by market activities but also

explains how trading activities and traders' behavior influence the cleanliness of the market environment.

2. Research Method

This study employed a descriptive qualitative approach to understand the activities of Pasalaran Market in Cirebon Regency as a source of waste generation, the cleanliness conditions of the market environment, and the awareness of market stakeholders in maintaining environmental cleanliness. This approach was selected because it enables researchers to gain an in-depth understanding of real conditions in the field. Research informants were selected using a purposive sampling technique based on their relevance and experience related to the research focus. The informants consisted of the Head of Pasalaran Market in Cirebon Regency, a food vendor who had been trading for approximately 16 years, and a clothing vendor who had been trading for approximately 20 years.

Data were collected through in-depth interviews and direct observations conducted within the Pasalaran Market environment in Cirebon Regency. The interviews employed a semi-structured interview guide covering trading activities, types and sources of waste, waste management practices, environmental cleanliness conditions, and challenges encountered in waste management. Each interview lasted approximately 5–15 minutes, depending on the informants' availability. Observations were conducted during a single field visit in the afternoon for approximately three hours to examine market cleanliness conditions, trading activities, waste management facilities, and the surrounding environmental conditions. Data were analyzed using the Miles, Huberman, and Saldana model, which consists of data reduction, data display, and conclusion drawing [12]. To ensure data credibility, triangulation was applied by comparing interview results with findings obtained from field observations.

This study has several limitations. First, the number of informants was limited to three individuals, namely the Head of the Market, a food vendor, and a clothing vendor. Therefore, the findings may not fully represent all stakeholders involved in market waste management. Second, observations were conducted during only one field visit lasting approximately three hours in the afternoon, which may not adequately capture variations in market conditions at different times, such as in the morning, evening, market days, or regular days. Consequently, the findings of this study should be interpreted within the context and scope of the research conducted.

3. Results and Discussion

3.1. Pasalaran Market Activities in Generating Waste

The environmental cleanliness conditions around Pasalaran Market are considered relatively good, although several constraints related to specific types of waste remain. The findings indicate that trading activities at Pasalaran Market generate a considerable amount of waste, primarily originating from agricultural commodities, fish, and meat. These findings are consistent with the study by Nasution et al. [3], which reported that traditional markets are among the primary sources of organic waste because the trading of fresh food commodities generates large quantities of vegetable residues, fruits, fish, and agricultural products. Similar conditions were observed at Pasalaran Market, where cassava waste, vegetable residues, and fish and meat waste constitute the major sources of waste generation. The trade of fresh food commodities at Pasalaran Market produces various residues that have the potential to affect market cleanliness. One source of waste generation originates from cassava trading activities, which produce a substantial amount of soil residue and consequently increase the need for cleaning market areas. In addition, fish and meat trading activities generate organic waste that decomposes easily and may cause unpleasant odors if not handled promptly. This condition indicates that the characteristics of traded commodities influence both the type and severity of waste-related problems occurring within the market environment. These findings support the study by Nasution et al. [3], which stated that fresh food trading activities are the primary source of organic waste generation in traditional markets. Despite generating a relatively large volume of waste, the overall cleanliness condition of Pasalaran Market remains fairly good and has not significantly disrupted trading activities. This condition is supported by the presence of sanitation workers and a routine waste transportation system.

Waste generation activities at Pasalaran Market are relatively well organized. Every day, waste is produced by a large number of traders and buyers, resulting in substantial waste volumes. The waste is collected at a Temporary Disposal Site (TPS) located behind the market and transported daily by the Environmental Agency for further management to prevent accumulation. Under the supervision of the agency, approximately ten workers are assigned duties (out of a total of twelve personnel, with two having been reassigned), consisting of sweepers and one officer responsible for collecting waste service fees. Waste generated from trading activities is collected before being transported for further

management. Although waste collection and transportation activities are routinely carried out by sanitation workers and the Environmental Agency, waste management remains focused primarily on collection and final disposal stages. In fact, the concept of Integrated Solid Waste Management emphasizes that effective waste management should include waste reduction, segregation, reuse, and processing before final disposal [13]. Therefore, the condition at Pasalaran Market indicates that the waste management system remains conventional and has not fully implemented sustainable waste management principles. These findings suggest that market waste management cannot rely solely on collection and transportation but also requires waste reduction efforts at the source. If not handled optimally, organic waste generation may lead to environmental pollution and public health disturbances. To provide a more structured overview of waste management conditions at Pasalaran Market, Cirebon Regency, the results of observations and interviews are summarized in **Table 1**. The summary includes key aspects related to waste management systems, sanitation facilities, and waste transportation mechanisms implemented within the market environment.

Table 1. Summary of Waste Management Conditions at Pasalaran Market

Aspect	Findings
Number of traders	1,400
Sanitation workers	10 persons
Waste bins	1 unit per kiosk
Temporary Disposal Site	Available
Waste transportation	Daily
Waste segregation	Not yet optimal
Management authority	Environmental Agency of Cirebon Regency

Table 1 shows that Pasalaran Market already possesses basic waste management facilities, including waste bins at each kiosk, a Temporary Disposal Site (TPS), sanitation workers, and routine daily waste transportation conducted by the Environmental Agency. These findings indicate that waste generated from intensive trading activities has been supported by an operational waste collection and transportation system. However, the waste management system remains focused primarily on waste collection and final disposal. Although the existing facilities help maintain market cleanliness and prevent waste accumulation, waste reduction and resource recovery efforts have not yet been implemented optimally. This condition suggests that waste management practices at Pasalaran Market are still dominated by conventional approaches rather than integrated and sustainable waste management strategies. Similar findings were reported by Putra et al. [13], who emphasized that effective waste management should involve waste reduction, segregation, reuse, and treatment prior to final disposal.



Figure 1. Trading areas at Pasalaran Market, Cirebon Regency: (a) food commodities generating organic waste and (b) non-food commodities generating inorganic waste.

Based on **Figure 1**, trading activities are observed to be highly intensive, with various kiosks selling both food and non-food products. Such intensive commercial activities have the potential to generate waste every day, particularly from food residues, plastic packaging, cardboard, and other waste materials. This condition demonstrates that organized waste management is essential for maintaining market cleanliness and ensuring comfort for people carrying out activities within the market.

Interview findings were consistent with field observations. The market manager stated, "Most of the waste generated here comes from leftover vegetables and unsold food products." This statement

aligns with field observations, which showed that organic waste, particularly vegetable waste, was the dominant type of waste found in several trading areas. The consistency between interview data and observational findings strengthens the credibility of the results through data triangulation (Head of Market, interview, 2026).

3.2. Types and Sources of Waste

The findings reveal that waste generated at Pasalaran Market consists of both organic and inorganic waste, with the main sources originating from traders and market visitors. Organic waste includes vegetable residues and waste from food trading activities, whereas inorganic waste is predominantly composed of plastic and product packaging materials. These findings are consistent with the study by Haviz et al. [14], which reported that traditional market waste composition is dominated by organic waste, while plastic waste constitutes the largest inorganic component due to the extensive use of single-use packaging in trading activities. To facilitate the identification of waste types and sources found during the study, the findings are presented in **Table 2**.

Table 2. Types and Sources of Waste at Pasalaran Market

Type of Waste	Source
Vegetable residues	Vegetable traders
Fish waste	Fish traders
Meat waste	Meat traders
Plastic packaging	Clothing traders and buyers
Cardboard	Goods distribution activities

Table 2 indicates that organic and inorganic waste are the two major categories of waste generated at Pasalaran Market. Organic waste generally originates from food trading activities such as vegetables, fish, and meat, whereas inorganic waste is dominated by plastic packaging, cardboard, and various wrapping materials. These findings suggest that waste characteristics are strongly influenced by the types of trading activities taking place within the market environment.



Figure 2. Food trading area as a source of organic waste at Pasalaran Market

Figure 2 illustrates the food trading area, which serves as one of the main sources of organic waste generation at Pasalaran Market. Trading activities involving commodities such as vegetables, fruits, and other food products produce residues in the form of unsold materials and products that are no longer suitable for consumption. This condition indicates that the food trade sector contributes substantially to market waste generation and therefore requires more optimal management, particularly through waste segregation and the reuse of organic waste.

Waste sources in the market come from both traders and visitors. Traders generate waste from product packaging residues, while visitors produce waste during shopping activities within the market area. The findings indicate that plastic waste generated from trading activities is generally disposed of in waste bins provided by market management. This demonstrates that trading activities constitute the main source of waste generation within the market environment. The considerable amount of plastic waste indicates that consumption and distribution practices within the market still heavily depend on single-use packaging materials. These findings support the study by Haviz et al. [14], which found that plastic waste is one of the dominant components of inorganic waste in traditional markets due to the extensive use of disposable packaging. Similar conditions indicate that plastic waste remains a common challenge in traditional market waste management in various regions. This condition poses

environmental management challenges because plastic waste requires a relatively long degradation period compared with organic waste. Improperly managed plastic waste may also pose significant risks to environmental quality and human health, as plastics and their associated chemical substances can contaminate ecosystems, accumulate in food chains, and contribute to various adverse health effects in humans [15].

The cleanliness condition of Pasalaran Market is considered fairly good because it is supported by the availability of sanitation facilities, the presence of sanitation workers who perform their duties regularly, and a waste transportation system operating every day. These facilities help reduce waste accumulation and maintain the comfort of trading activities. The findings indicate that market cleanliness is influenced not only by the availability of facilities and infrastructure but also by coordination among market managers, sanitation workers, traders, and visitors.

3.3. Impacts of Waste on the Surrounding Environment

The impacts of market waste on environmental cleanliness at Pasalaran Market are not entirely negative, as some waste, particularly organic waste such as vegetable residues (cabbage, mustard greens, and similar vegetables), still has beneficial value for the surrounding community. A portion of this organic waste, especially vegetable residues, is utilized by local residents as animal feed. This practice reflects the implementation of circular economy principles, which emphasize the reuse of resources so that they do not immediately become waste. The circular economy concept promotes the reutilization of organic waste as a valuable resource, thereby reducing the amount of waste ending up in final disposal sites and improving resource-use efficiency [16]. Although the utilization of vegetable waste as animal feed reflects the principles of a circular economy, its implementation remains limited to direct use without further processing. In fact, the organic waste generated by the market has the potential to be processed into compost or utilized through biogas technology to produce energy and organic fertilizer. In addition, inorganic waste such as plastic and cardboard can be recycled through material recovery mechanisms. Therefore, the development of circular economy practices at Pasalaran Market still presents significant opportunities to reduce the volume of waste disposed of at temporary waste collection sites while simultaneously increasing the economic value of the generated waste. In addition, based on direct field observations, the environmental conditions surrounding the market are relatively clean and do not produce the strong odors typically associated with waste accumulation. Although some waste was still found at several specific locations, its presence did not significantly affect overall cleanliness. Thus, it can be concluded that the management and utilization of a portion of organic waste at Pasalaran Market contribute positively to maintaining environmental cleanliness and preserving a relatively clean market environment.

Nevertheless, the low level of awareness among traders regarding waste segregation and environmental cleanliness remains a major challenge in waste management at Pasalaran Market. This finding is consistent with the study conducted by Hettiarachchi et al. [17], which states that low public awareness, weak supervision, and governance limitations are among the main factors hindering effective waste management in developing countries. This condition indicates that the success of waste management depends not only on the availability of physical facilities but also on the active participation of market users. The low level of participation is presumed to be influenced by the perception of some traders who consider waste management to be the responsibility of sanitation workers after paying sanitation fees. Furthermore, the absence of strict monitoring mechanisms and sanctions has resulted in waste segregation practices not becoming a common habit within the market environment. This condition suggests that merely providing physical facilities is insufficient to improve waste management effectiveness unless accompanied by increased awareness and responsibility among market users. These findings support the study by Hettiarachchi et al. [17], which emphasizes that community behavior is one of the determining factors for successful waste management in developing countries.

Furthermore, Ferronato and Torretta [18] explained that inadequate waste segregation at the source remains one of the major waste management issues in developing countries, thereby reducing the effectiveness of recycling and waste reduction processes. A similar phenomenon can also be observed at Pasalaran Market, where waste segregation facilities are available but are not utilized optimally because of the low participation of traders. One trader stated that *"the waste is usually collected directly by the sanitation workers, so we only need to gather it at the designated collection point and we also pay cleaning fees."* (Clothing Trader, interview data, 2026). This statement indicates that some traders still perceive waste management as the responsibility of sanitation workers, resulting in waste-sorting practices not being carried out optimally. The Head of Pasalaran Market also explained that *"waste bins have been provided, but some traders still do not separate organic and inorganic waste"* (Head of Market, interview data, 2026).

This finding suggests that the provision of facilities has not been fully accompanied by behavioral changes among market users. The low level of participation among some traders in waste sorting indicates that the success of waste management is determined not only by the availability of physical facilities but also by behavioral factors. The findings of this study reveal that some traders still perceive waste management as the responsibility of sanitation workers because they pay sanitation service fees. This perception has resulted in waste sorting not yet becoming a routine practice in their daily trading activities. These findings can also be interpreted through the perspective of Environmental Behavior Theory, which suggests that pro-environmental behavior is influenced not only by the availability of facilities but also by individual awareness, responsibility, and environmental values. Although waste-sorting facilities are available at Pasalaran Market, some traders still perceive waste management as the responsibility of sanitation workers.

This perception reduces their motivation to participate actively in waste segregation practices. In addition, the Theory of Planned Behavior (TPB) explains that environmental behavior is shaped by attitudes, subjective norms, and perceived behavioral control. The low participation of some traders in waste sorting indicates that positive attitudes toward waste segregation have not yet been fully developed and that social norms encouraging environmentally responsible behavior remain relatively weak. As a result, waste segregation has not become a common practice among market users. Therefore, improving waste management effectiveness at Pasalaran Market requires not only physical facilities but also behavioral interventions, including environmental education, awareness-building programs, and stronger social norms that encourage traders to participate in maintaining environmental cleanliness.

Several waste management efforts have been implemented at Pasalaran Market, although they have not yet been fully optimized. Market management provides facilities such as separate bins for organic and inorganic waste, waste containers at each kiosk, and garbage bags to facilitate waste collection. Waste generated by traders every day is cleaned by approximately ten sanitation workers, whose sweeping schedules are carried out during the afternoon and evening. Subsequently, waste is collected and transported to the Temporary Disposal Site (TPS) periodically, ranging from once every one to two days depending on the volume of waste generated. In this regard, waste management is entirely under the responsibility of the Environmental Agency (DLH), while market management only acts as an intermediary by providing facilities, collecting waste, and collecting sanitation fees from traders. In addition, waste segregation efforts have been introduced, in which some organic waste, such as vegetable residues, is utilized as animal feed, although further processing into compost has not yet been implemented optimally.

Environmental cleanliness is also maintained through the spraying of disinfectants at the Temporary Disposal Site (TPS) to reduce bacterial growth and unpleasant odors. However, waste management still faces various challenges, including the low level of awareness among traders regarding cleanliness, the absence of strict sanctions for violators, and the misuse of facilities such as waste bins. Therefore, increased awareness, supervision, and cooperation among traders, market management, and the Environmental Agency are required to maintain market cleanliness more effectively. From an environmental policy perspective, the findings of this study indicate the need to strengthen the implementation of the 3R principles (Reduce, Reuse, Recycle) through educational programs for traders, supervision of waste segregation practices, and the utilization of organic waste as compost or animal feed. A 3R-based approach is considered capable of reducing the amount of waste disposed of at the Temporary Disposal Site while simultaneously supporting the circular economy concept in traditional market waste management [19]. Furthermore, collaboration among market managers, traders, and the Environmental Agency is an important factor in establishing a more sustainable waste management system. From a policy perspective, the findings indicate that waste management practices at Pasalaran Market are generally aligned with the waste-handling provisions stipulated in Indonesia's Law No. 18 of 2008 on Waste Management, particularly through routine waste collection and transportation activities [20]. However, the waste reduction component through the implementation of the 3R principles (Reduce, Reuse, and Recycle) remains suboptimal. This condition suggests that the implementation of waste management policies at the market level continues to focus more on handling waste after it is generated rather than reducing waste at its source. Therefore, strengthening educational programs, monitoring mechanisms, and waste-sorting practices is necessary to support the implementation of a more sustainable waste management policy [21].

Triangulation was also observed regarding vendor participation in waste management. One informant stated, "We usually throw all our waste into one bin because then the cleaning staff will take care of it (Food Vendor, interview, 2026)." This finding was supported by field observations, which showed that organic and inorganic waste were often mixed at several disposal points within the market

area. The consistency between interview and observation data further supports the validity of these findings.

3.4 Research Limitations

This study has several limitations. First, the number of interview participants was limited to three individuals, namely the Market Head, a food trader, and a clothing trader. As a result, the findings may not fully represent all stakeholders involved in market waste management. Second, field observations were conducted during a single visit lasting approximately three hours in the afternoon, which may not adequately capture variations in market conditions at different times, such as in the morning, evening, on market days, or on regular days. Therefore, future research is recommended to involve a broader range of informant groups, including sanitation workers, market visitors, and representatives from the Environmental Agency, as well as to conduct observations over a longer period to obtain a more comprehensive understanding of waste management practices in traditional markets.

4. Conclusion

This study demonstrates that trading activities at Pasalaran Market, Cirebon Regency, constitute the primary source of waste generation, mainly originating from food commodity trading and visitors' shopping activities. Waste management at the market is supported by the presence of sanitation workers, waste disposal facilities, and routine waste collection services provided by the Environmental Agency. Nevertheless, waste segregation practices and the participation of some traders in maintaining environmental cleanliness remain suboptimal. From a scientific perspective, this study contributes to the literature by highlighting that waste management issues in traditional markets are not solely related to the types and sources of waste generated but are also influenced by behavioral factors and the level of environmental awareness among traders. These findings underscore the importance of an integrated approach that considers market activities, waste characteristics, stakeholder behavior, and environmental cleanliness conditions in the study of traditional market waste management. From a policy perspective, the findings suggest the need to strengthen the implementation of the 3R principles (Reduce, Reuse, and Recycle) through environmental education programs for traders, enhanced monitoring of waste segregation practices, and the development of more productive uses of organic waste. Furthermore, collaboration among market management, traders, and the Environmental Agency should be reinforced to support a more sustainable waste management system in accordance with the provisions of Indonesia's Law No. 18 of 2008 on Waste Management [20]. Future research is recommended to involve a broader range of stakeholders, including sanitation workers, market visitors, and representatives of the Environmental Agency, as well as to conduct observations over a longer period. Such efforts would provide a more comprehensive understanding of waste management dynamics and environmental behavior in traditional market settings.

Acknowledgements

The authors gratefully acknowledge all individuals and institutions that contributed to this research. Special thanks are extended to the lecturer of the Human, Place, and Environment course, the Head of Pasalaran Market in Cirebon Regency, and the informants who participated in this study and provided valuable information during the data collection process.

References

- [1] A. Maalouf and P. Agamuthu, "Waste management evolution in the last five decades in developing countries: A review," *Waste Management & Research*, vol. 41, no. 9, pp. 1420–1434, 2023, doi: 10.1177/0734242X231160099.
- [2] Kementerian Lingkungan Hidup dan Kehutanan, *Sistem Informasi Pengelolaan Sampah Nasional (SIPSN): Data Sumber Sampah Indonesia Tahun 2020*. Jakarta, Indonesia, 2020. [Online]. Available: <https://sipsn.menlhk.go.id/sipsn/>
- [3] E. P. Nasution, E. Gusmayanti, and A. A. Akbar, "Organic waste management in markets based on waste characteristics: A case study of Markasan Market in Nanga Pinoh, Melawi," *Esaprom*, vol. 4, no. 12, pp. 2054–2072, 2025.
- [4] M. T. Tulus, E. G. Sukoharsono, I. Permadi, and Wike, "Traditional environment friendly market waste management model (study in Manado city)," *International Journal of Social Sciences*, vol. 4, no. 1, pp. 190–197, 2021, doi: 10.31295/ijss.v4n1.1660.
- [5] Republik Indonesia, *Peraturan Presiden Republik Indonesia Nomor 112 Tahun 2007 tentang Penataan dan Pembinaan Pasar Tradisional, Pusat Perbelanjaan, dan Toko Modern*. Jakarta, Indonesia, 2007. [Online]. Available: <https://peraturan.bpk.go.id/>

- [6] I. Aliyah, B. Setioko, and W. Pradoto, "Spatial flexibility in cultural mapping of traditional market area in Surakarta (A case study of Pasar Gede in Surakarta)," *City, Culture and Society*, vol. 10, pp. 41–51, 2017, doi: 10.1016/j.ccs.2017.05.004.
- [7] H. Purwanto and H. Sidanti, "Traditional market transformation into digital market (Indonesian traditional market research library)," *International Journal of Economics, Business and Accounting Research*, vol. 5, no. 3, pp. 1139–1148, 2021, doi: 10.46729/ijstm.v2i6.384.
- [8] M. E. Suryanto, J. Adianto, and R. T. Gabe, "Accommodating the informal economy in public space: The intricate political and spatial arrangements at an Indonesian street market," *Urbani Izziv*, vol. 31, no. 1, pp. 91–102, 2020, doi: 10.5379/urbani-izziv-en-2020-31-01-003.
- [9] T. Soma, "Wasted infrastructures: Urbanization, distancing and food waste in Bogor, Indonesia," *Built Environment*, vol. 43, no. 3, pp. 474–493, 2017, doi: 10.2148/benv.43.3.431.
- [10] M. Chaerul and T. P. Dewi, "Analisis timbulan sampah pasar tradisional (studi kasus: Pasar Ujungberung, Kota Bandung)," *Al-Ard: Jurnal Teknik Lingkungan*, vol. 5, no. 2, pp. 98–106, 2020, doi: 10.29080/alard.v5i2.861.
- [11] R. Silfia and H. K. Surtikanti, "Analisis pengelolaan sampah pasar tradisional di Pasar Gegerkalong, Kota Bandung, Indonesia," *Journal of Waste and Sustainable Consumption*, vol. 1, no. 1, pp. 46–53, 2024, doi: 10.61511/jwsc.v1i1.2024.696.
- [12] M. B. Miles, A. M. Huberman, and J. Saldaña, *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed. Thousand Oaks, CA, USA: SAGE Publications, 2014.
- [13] H. P. Putra, E. Damanhuri, and E. Sembiring, "Integration of formal and informal sector (waste bank) in waste management system in Yogyakarta, Indonesia," *MATEC Web of Conferences*, vol. 154, pp. 1–5, 2018, doi: 10.1051/mateconf/201815402007.
- [14] M. Haviz, D. A. Iryani, P. Yuliandari, U. Hasanudin, E. R. Amien, and A. Haryanto, "Characterization of traditional market solid waste (TMSW) and its recycling potential (case study: Traditional markets in Bandar Lampung)," *Jurnal Teknik Pertanian Lampung (Journal of Agricultural Engineering)*, vol. 11, no. 1, pp. 70–78, 2022, doi: 10.23960/jtep-l.v11i1.70-78.
- [15] P. J. Landrigan *et al.*, "The Minderoo-Monaco Commission on Plastics and Human Health," *Annals of Global Health*, vol. 89, no. 1, p. 23, 2023, doi: 10.5334/aogh.4056.
- [16] B. Bakan *et al.*, "Circular economy applied to organic residues and wastewater: Research challenges," *Waste and Biomass Valorization*, vol. 13, no. 2, pp. 1267–1276, 2022, doi: 10.1007/s12649-021-01549-0.
- [17] H. Hettiarachchi, J. N. Meegoda, and S. Ryu, "Organic waste buyback as a viable method to enhance sustainable municipal solid waste management in developing countries," *International Journal of Environmental Research and Public Health*, vol. 15, no. 11, pp. 1–15, 2018, doi: 10.3390/ijerph15112483.
- [18] N. Ferronato and V. Torretta, "Waste mismanagement in developing countries: A review of global issues," *International Journal of Environmental Research and Public Health*, vol. 16, no. 6, p. 1060, 2019, doi: 10.3390/ijerph16061060.
- [19] N. Akramila, F. A. Mappasere, and A. Mahsyar, "Towards a circular economy: Government policy in waste management based on the 3R concept in Makassar City, Indonesia," *Journal of Government and Public Policy*, vol. 12, no. 1, pp. 1–17, 2025, doi: 10.18196/jgpp.v12i1.22492.
- [20] Republik Indonesia, *Undang-Undang Republik Indonesia Nomor 18 Tahun 2008 tentang Pengelolaan Sampah*. Jakarta, Indonesia, 2008. [Online]. Available: <https://peraturan.bpk.go.id/Details/39067/uu-no-18-tahun-2008>
- [21] D. C. Wilson, C. A. Velis, and L. Rodic, "Integrated sustainable waste management in developing countries," *Proceedings of the Institution of Civil Engineers: Waste and Resource Management*, vol. 166, no. 2, pp. 52–68, 2013, doi: 10.1680/warm.12.00005.