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Stakeholder Relationship Model in Waste Bank Management in Madiun City

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Abstract: In 'Neraca Pengelolaan Sampah Kota Madiun' data for 2023, waste production was 44,750.39 tons/year, while the amount of waste reused and recycled was 4,600.28 tons/year and processed waste that went to landfill was 31,444.75 tons/year. Waste banks began to be formed in Madiun City from 2010 to 2023. There are 168 waste banks that have been formed and only 49.4% are still actively operating. The phenomenon found in the field is that involvement between stakeholders in the Waste Bank program in Madiun City is still not optimal, and this finding is the basis for this research, namely analyzing the relationship model of stakeholder roles in managing the Waste Bank in Madiun City. Madiun City. This research uses a mixed method paradigm to obtain a holistic picture of the characteristics and relationships of stakeholders in the Waste Bank program in Madiun City. All data in this study were analyzed using MACTOR software. The results of this research conclude that the stakeholders who have the greatest influence are DLH and public figure (Lurah) who are the main actors in waste bank management, because they are involved in planning, implementation and policy so that there is still a need to improve their relationships and roles in supporting the success of the waste bank program. Madiun City. Very strong convergence between actors shows that between the Matahari Sampah Bank and community leaders, Sedoro Asri Waste Bank, Sehati Waste Bank, Pesanggrahan Waste Bank and Risky Lancar Manis VI Waste Bank. Very weak convergence is shown between the Madiun City Environmental Service and NGOs, Pertamina, Academics, the PKK Mobilization Team and the Griya Kencana Waste Bank.

Keywords: MACTOR analysis; Madiun city; Stakeholder relations; Waste bank management

Introduction

Data from the Ministry of Environment and Forestry and the Environment for 2021 shows that Indonesia produces 67.8 million tons of waste. Meanwhile, according to Forbes, Indonesia is also the second largest producer of plastic waste in the sea, namely 56.3 million tons. This condition occurs due to the low awareness of the Indonesian people in managing waste responsibly (Febrina et al., 2023; Taufani, 2023). The increasing amount of waste generation is also supported by the low level of public willingness to manage waste independently. According to Brotosusilo et al. (2020) and Febrianti (2022) that community participation in implementing waste management policies in the regions is very much needed to improve waste management efforts.

The problem of waste management is also caused by the low and limited budget available so that the Regional Government is trying its best to manage waste (Guerrero et al., 2013; Khan et al., 2022; Shekdar, 2009). As a result, final disposal sites in several areas have reached maximum capacity. Regional governments also experience difficulties in finding new landfill

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construction areas due to limited suitable land and increasing land prices (Derin et al., 2020; Kansanga et al., 2020; Ma et al., 2020).

As one of the countries in the world that are developing rapidly, Indonesia certainly produces quite a lot of solid waste. Agustin et al. (2020) and Kurniawan et al. (2021) stated that in 2020 around 200,000 tons of solid waste were generated nationally every day. On average, around 384 large cities in Indonesia produce around 2.2–2.7 kg of solid waste per capita every day. Indonesian waste data shows that the highest number of waste sources are households (38.3%), traditional markets (27.8%) and business centers (14.4%) (Arsela, 2024; Dakhoir, 2018; Saidatuningtyas et al., 2024).

The Word Commission on Environment and Development (1987) defines sustainable development as development that meets the needs of the current generation without sacrificing meeting the needs of future generations. One way that can be done is by carrying out sustainable waste management. In achieving sustainable development from an environmental perspective, an environmentally sound waste management system can contribute to the realization of a sustainable city, because environmentally sound waste management will create a good environment. This shows that sustainable waste management can influence the achievement of SDGs targets, especially SDGs 3, 7, 13, 14 and 15.

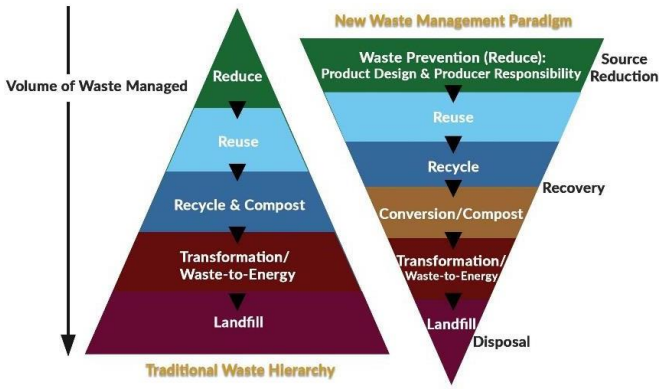

Figure 1. Comparison of the traditional paradigm and new paradigm waste management hierarchy (Fagariba et al., 2018)

Law of the Republic of Indonesia Number 18 of 2008 concerning Waste Management requires the government to implement an integrated waste management by considering waste grouping and implementing 3R (reduce, reuse, and recycle) which replaces the old paradigm regarding waste, namely collecting, transport and throw away. The government plays an important role in providing quality waste management services by establishing and implementing policies, laws and regulations that regulate all aspects of waste management (Muhammad, 2023; Nurikah et al., 2022; Okhtafianny & Ariani, 2023; Tarigan & Dukabain, 2023).

Community-based waste management is an approach based on community participation and involvement in waste management and recycling practices (Rustiarini et al., 2021; Sekito et al., 2013). This community-based waste management aims to reduce waste at the source, sort which materials can be recycled, and reduce the amount of solid waste sent to final processing sites (Ismail, 2019; Kalra, 2020). Community-based waste management according to Manalu et al. (2022) have made a significant contribution to solid waste management in several developing countries such as the Philippines and Thailand.

The first waste bank was established in Phitsanulok, Thailand in 2006. Thailand is one of the five worst contributors to marine pollution in the world, with plastic waste as the main cause. It is estimated that 68% of the 70,000 tonnes of recyclable waste is not managed properly. In fact, only 480 of the 2,450 waste disposal sites. Public and private sectors in Thailand that can manage their waste properly.

To overcome the solid waste problem in Thailand, the government has established community-based waste banks (Mongkolnchaiarunya, 2005; Siriratpiriya, 2014). These waste banks are generally implemented in primary and secondary schools and have proven to be very effective in changing recycling habits and reducing unmanaged waste. In 2004, Roong Aroon School on the outskirts of Bangkok implemented a waste bank entitled, "Zero Waste Project." In one and a half years, there was a 90% reduction in waste at the school. This waste bank program has also reached neighboring countries such as Vietnam and Indonesia (Hondo et al., 2020).

The first waste bank in Indonesia was established in Bantul in 2008. The waste bank adopts the 3R system and conventional banks where customers deposit waste that has been sorted and handed over to the waste bank. Customers are given a savings book to record the amount of waste that has been converted into currency based on a predetermined waste price calculation. Customers can also withdraw their savings if necessary (Samadikun et al., 2023; Sriyanto & Intan, 2019; Susilowati & Herdiansyah, 2019).

Based on data from the Regency/City Waste Bank program throughout Indonesia in 2022 which is collected in the National Waste Management Information System for all regions, it is known that waste generation is 35,206,294.70 tonnes/year, the waste reduction rate is 17.55% or 6,180,407.98 tonnes/year, the handling rate waste 47.37% or 16,675,890.76 tons/year.

The implementation of the waste bank program as a waste management effort was also explained in a study which stated that reducing waste generated in Malang

City could be done through the Waste Bank. This waste bank can reduce waste generation at the source by up to 0.24 kg/person per day (Sholikah & Herumurti, 2017). The research results of Husen et al. (2021) stated that the calculation of the waste absorption capacity that is suitable for entering the waste bank with the overall waste production produced is considered to be effective because the average percentage of waste reduction in Jambi City is 64.32%.

Based on the 'Neraca Pengelolaan Sampah Kota Madiun', it is known that the waste generation in Madiun City is is 44,750.39 tons/year, while the amount of waste reuse and recycling is 4,600.28 tons/year and the processed waste entering the landfill is 31,444.75 tons/year (DLH, 2021). Most of the waste produced goes directly to the landfill. This of course increasingly threatens the existence of TPA in Madiun City. Therefore, it is necessary to make efforts to reduce waste, one of which is through the Waste Bank Program.

Waste banks have also begun to form in Madiun City since 2010, but the numbers are still small. In 2023, Madiun City has established 168 waste banks, both active and inactive. Of the total waste banks, only 83 BSUs or only 49.4% are still actively operating (Saputro et al., 2016). The existence of this waste bank is spread across sub-districts in Madiun City. The number of customers at the waste bank in Madiun City is 3,246 people with the number of waste bank administrators being 548 people. This number of customers is very small compared to the population of Madiun City of 201,992 people in 2023 or only 1.6% of the total population in Madiun City. This could result in waste production in Madiun City being quite high and increasingly threatening the capacity of the Madiun City landfill, which to date has been filled at around 70% of its total capacity, namely 768,000 m^3.

The issue of waste management is of course a shared responsibility, not just the local government, but requires stakeholder involvement in managing waste banks in Madiun City. Each stakeholder can play an active role so that the waste bank program can run optimally. Each stakeholder has different roles and interests in waste management. The phenomenon found in the field is that involvement between stakeholders in the waste bank program in Madiun City is still not optimal. It is known that each stakeholder has not carried out their role optimally, this also influences the success of implementing the waste bank program in Madiun City. This is a challenge regarding how to create an agreement between stakeholders to work together in achieving common goals beyond their respective interests. The background presented is the basis for this research, namely analyzing the relationship model of the role of stakeholders in managing the Waste Bank in Madiun City.

Method

This research was conducted in Madiun City, East Java, using a purposive model of determining research locations (Mudrikatin, 2024; Saputri, 2022) because it saw the phenomenon of the Madiun City government's problems regarding landfill capacity which was almost full so alternative waste management, especially at the source level, was addressed with the Waste Bank program, but it could not be implemented optimally.

The active waste bank population in Madiun City is 68 units. The data sources used in this research as shown in Table 1.

Table 1. Research Resource

Stakeholders	Informans
Matahari Waste Bank	Director of Matahari Waste Bank
Sedoro Asri Waste Bank	Director of Sedoro Asri Waste Bank
Rizky Lancar Manis VI Waste Bank	Director of Waste Bank Rizky Lancar Manis VI
Sehati Waste Bank	Director of Sehati Waste Bank
Pesanggrahan Waste Bank	Director of Pesanggrahan Waste Bank
Griya Kencana Waste Bank	Director of Griya Kencana Waste Bank
Collector	Mr Supriyono
Madiun City Environmental Service	Sub-coordinator for Waste Processing and Reduction of the Madiun City Environmental Service
Academics	Lecturer at the Environmental Science Study Program, Muhammadyah University of Madiun
Non-governmental organization	Chairman of the Wilis Institute for Community Studies and Empowerment
BUMN	Junior Supervisor HSSE PT Pertamina Fuel Terminal Madiun
Public figure	Banjarejo Village Head
Activator Team of PKK	Chair of Working Group III of the Madiun City PKK Mobilization Team
Private Parties	General Staff of the New Rejoagung Sugar Factory

This research uses a mixed method paradigm which combines qualitative and quantitative approaches in all stages of the research process to obtain a holistic picture of the characteristics of the stakeholders of the Waste Bank program in Madiun City and their relationships between other stakeholders. Data collection techniques were carried out using in-depth interviews and questionnaires. All data in this study were analyzed using Mactor software (Matrix of Alliances and Conflicts Tactics, Objectives and

Recommendations) (Darmastuti et al., 2023; Nopriani et al., 2022).

Results and Discussion

Data Exposure

Sustainable waste bank management must pay attention to the relationships and roles of all stakeholders in achieving goals. The stakeholders in waste bank management consist of: Madiun City Environmental Service (DLH); 'Matahari' Waste Bank (BS MTHR); 'Sedoro Asri' Waste Bank (BS SDR ASR); 'Sehati' Waste Bank; 'Pesanggrahan' Waste Bank; 'Rizky Lancar Manis VI' Waste BankVI (BS RLM); 'Griya Kencana' Waste Bank (BS GK); Academics (AKAD); BUMN-Pertamina (PERTAMINA); Activator Team of PKK Madiun City (TP PKK); Public figure (TOKMAS); Non-governmental organization (LSM); Collector (PENGPL); and Private Parties (PG).

The indicators as instruments for this research are: Additional Income (TP); Expansion of Employment (PLK); Increasing Public Awareness (PKM); Increasing Community Participation (PPM); Support CSR Programs (MPC); Supporting the Adipura Program (MPA); Support the Climate Village Program (MPKI); Creating Environmental Cleanliness (MKL); Improving the Quality of the Environment (PKLH); Increasing Community Capacity (PKMA); Reducing Waste Generation (PTS); Sorting Organic and Inorganic Waste (PSOA); and Ease of Saving Waste (KMS).

MDII	BS MTHR	BS SDR ASR	BS SHT	BS PES	BS RLM	BS GK	DLH	AKAD	PERTAMINA	TP PKK	TOKMAS	LSM	PENGPL	PG	Ii
BS MTHR	17	16	17	16	16	16	21	15	15	20	19	15	16	15	217
BS SDR ASR	16	18	16	16	16	16	21	17	15	19	18	15	16	15	216
BS SHT	17	16	17	16	16	16	21	15	15	20	19	15	16	15	217
BS PES	16	16	16	18	16	16	22	15	18	19	18	15	15	15	217
BS RLM	16	16	16	16	16	16	19	15	15	19	18	15	15	15	211
BS GK	16	16	16	16	16	16	19	15	15	19	18	15	15	15	211
DLH	17	18	17	18	16	16	37	17	17	29	28	15	26	15	249
AKAD	15	17	15	15	15	15	17	17	15	17	17	15	16	15	204
PERTAMINA	15	15	15	17	15	15	17	15	17	17	17	15	15	15	203
TP PKK	16	16	16	16	16	16	16	15	15	16	16	15	13	15	201
TOKMAS	17	16	17	16	16	16	23	16	16	23	22	15	19	15	225
LSM	15	15	15	15	15	15	15	15	15	15	15	15	13	15	193
PENGPL	13	13	13	13	13	13	13	13	13	13	13	13	13	13	169
PG	15	15	15	15	15	15	15	15	15	15	15	15	13	15	193
Di	204	205	204	205	201	201	239	198	199	245	231	193	208	193	2926

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Figure 2. Value of direct and indirect influence between actors (Source: Primary data processed by Mactor, 2024)

The Direct and Indirect Influence Matrix (MDII) determines the direct or indirect influence of actors (Troschinetz, 2005). The level of direct and indirect influence of each actor is visible in the row, while the level of direct and indirect dependence of each actor is visible in the column. Figure 2 shows the value of direct and indirect influence between actors. The Madiun City Environmental Service actor has the highest score (249), so it can be interpreted that this actor has a high influence on other actors. This is reinforced by the fact that the Environmental Service has a role as a regulator that can create waste bank management policies in Madiun City.

In-depth interviews were conducted with fourteen actors. The results of interviews with stakeholders obtained information that the informants supported the management of waste banks in Madiun City. All stakeholders emphasize that waste bank management in Madiun City has a positive impact on economic, social and environmental aspects.

MACTOR Analysis Results

The results of analysis with MACTOR produce the as shown in Figure 3.

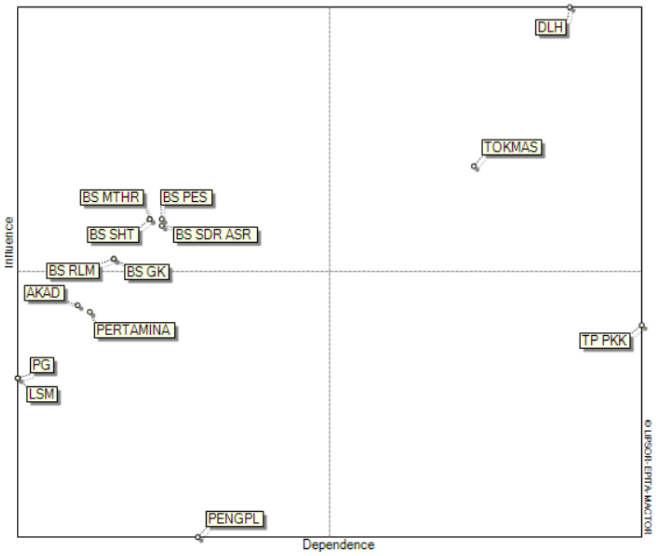

Figure 3. Map of influence and dependency between actors (Source: Primary data processed by Mactor, 2024)

Figure 3 shows that six actors are in quadrant 1, a condition with low influence and high dependence. The actors in this quadrant are Matahari Waste Bank, Sedoro Asri Waste Bank, Sehati Waste Bank, Pesanggrahan Waste Bank, Risky Lancar Manis VI Waste Bank, and Griya Kencana Waste Bank. Madiun City Environmental Service actors and community leaders are in quadrant 2, conditions with high influence and high dependency. This shows that these actors are the main actors in managing waste banks in Madiun City.

The Environmental Service and Public Figure (TOKMAS) carry out planning, activity programs and waste bank management policies in Madiun City. There is only one actor who is in quadrant 3, a condition with high influence and low dependence, namely the Madiun City PKK Mobilization Team. This happens because even though this actor has high influence, it is very dependent on the decisions and policies made by other actors. Actors in quadrant 4, conditions with low influence and low dependency, are academics, the

private sector, Pertamina, non-governmental organizations and collectors. This condition shows that the activities of other actors do not influence all of their activities. Meanwhile, stakeholder opinions will be analyzed based on objectives.

The research results show that all actors agree with the goals of additional income, expanding employment opportunities, increasing public awareness, increasing community participation, supporting the CSR Program, supporting the Adipura Program, supporting the Climate Village Program, realizing environmental cleanliness, improving the quality of the environment, increasing community capacity, reducing waste generation, sorting organic and inorganic waste and making it easier to save waste as in Figure 4.

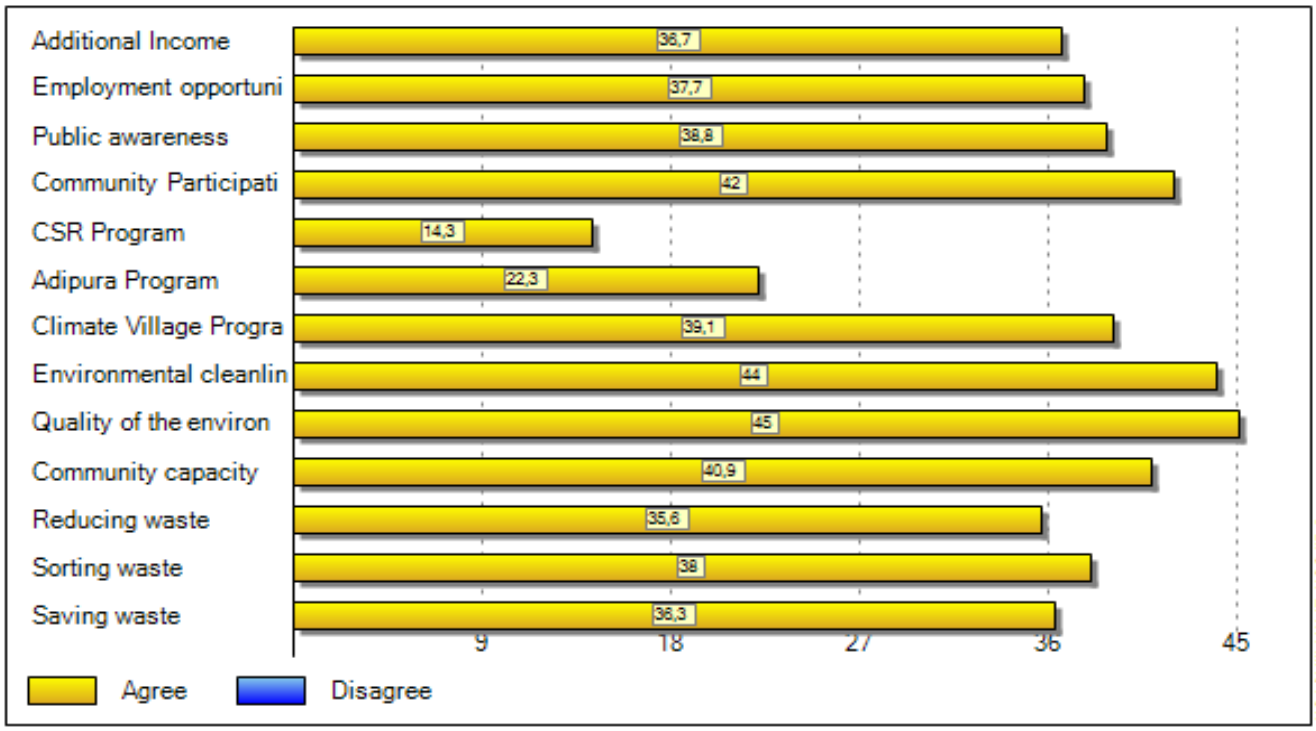

Figure 4. Goal implications for actors (Source: Primary data processed by Mactor, 2024)

The next analysis measures convergence between actors towards goals. The processing results are shown in Figure 5.

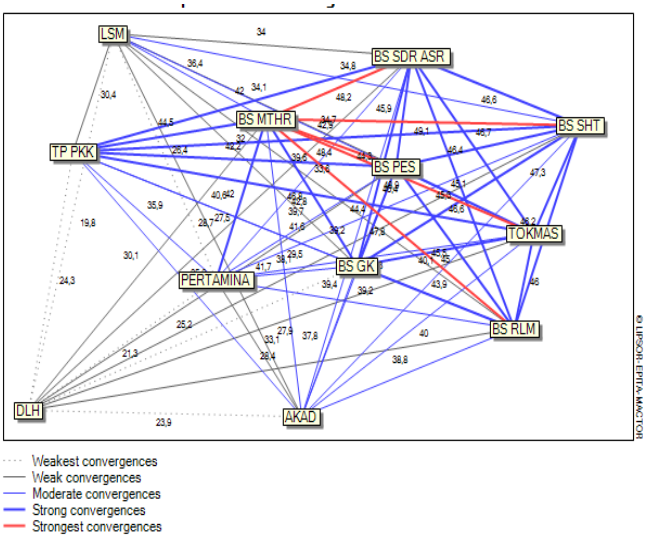

Figure 5. Convergence between actors towards goals (Source: Primary data processed by Mactor, 2024)

Figure 5 shows that the actors who have very strong convergence are the Matahari Waste Bank and community leaders, Sedoro Asri Waste Bank, Sehati Waste Bank, Pesanggrahan Waste Bank and Risky Lancar Manis VI Waste Bank, because they have a partnership relationship. The waste bank also partners with community leaders (Lurah) who act as facilitators and regulators to support sustainable waste bank management. Very weak convergence was shown between the Madiun City Environmental Service and Non-Governmental Organizations, Pertamina, Academics, the PKK Mobilization Team and the Griya Kencana Waste Bank. This indicates that the Environmental Service has not played an active role in implementing the waste bank management program in Madiun City. These findings will be used as a reference in determining policies, namely increasing the role of stakeholders in supporting the success of the waste bank program in Madiun City.

Conclusion

The results of this analysis conclude that waste bank management in Madiun City requires synergy from various parties, including Government, Private Sector, BUMN, Academics, Society, Community Leaders, Non-Governmental Organizations and Activator Team of PKK. Stakeholders or actors who have greater influence are the Environmental Service and Community Leaders/Public Figure (Lurah) who are the main actors in managing waste banks in Madiun City, who are the parties involved in planning, activity programs and policies. Convergence between actors shows that the very strong convergence is between the Matahari Waste Bank and community leaders, Sedoro Asri Waste Bank, Sehati Waste Bank, Pesanggrahan Waste Bank and Risky Lancar Manis VI Waste Bank. Very weak convergence was shown between the Madiun City Environmental Service and NGOs, Pertamina, Academics, the PKK Mobilization Team and the Griya Kencana Waste Bank. It is necessary to improve relationships and the role of stakeholders in supporting the success of the waste bank program in Madiun City.

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The author would like to thank all informants, hopefully the results of this research can be taken into consideration by the stakeholders of the Waste Bank program in Madiun City to be able to optimize the objectives of the waste management program and improve the economy of the people of Madiun City as motivation towards achieving Madiun as a Green Ecology City.

Author Contributions
This research team contributed to the writing of this scientific work, namely: ideas, conception, data collection, analysis and interpretation of results, manuscript preparation, article writing, revision process and funding of this research.

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Conflicts of Interest
The authors declare that there is no conflict of interest in the publication of this article.

References

Agustin, H., Setiawan, R., & Puspitasari, A. K. (2020). Pengembangan Bank Sampah Terkomputerisasi Di Desa Cibitung Wetan, Bogor. *Kumawula: Jurnal Pengabdian Kepada Masyarakat*, *3*(2), 140–153. https://doi.org/10.24198/kumawula.v3i2.24771

Arsela, W. (2024). *Pengaruh Pelatihan Pengelolaan Sampah Rumah Tangga Terhadap Tingkat Pengetahuan, Sikap, Dan Tindakan Masyarakat Di RT. 17 Kelurahan Kenali Besar Kota Jambi Tahun 2023* [Universitas Jambi]. Retrieved from https://repository.unja.ac.id/63369/

Brotosusilo, A., Nabila, S. H., Negoro, H. A., & Utari, D. (2020). The level of individual participation of community in implementing effective solid waste management policies. *Global Journal of Environmental Science and Management*, *6*(3), 341–354. https://doi.org/10.22034/gjesm.2020.03.05

Dakhoir, A. (2018). Eksistensi Usaha Kecil Menengah dan Pasar Tradisional dalam Kebijakan Pengembangan Pasar Modern. *Jurnal Studi Agama Dan Masyarakat*, *14*(1), 31–41. https://doi.org/10.23971/jsam.v14i1.783

Darmastuti, L., Rustiadi, E., Fauzi, A., & Purwanto, Y. J. (2023). Stakeholder Analysis of Sustainable Wastewater Management: A Case Study of Bogor, Indonesia. *Sustainability*, *15*(15), 11826. https://doi.org/10.3390/su151511826

Derin, P., Yecsilnacar, M. I., Çullu, M. A., & others. (2020). A study on evaluation of site selection in sanitary landfill with regard to urban growth. *Environmental Research and Technology*, *4*(2), 117–125. https://doi.org/10.35208/ert.841200

DLH. (2021). *Ringkasan Eksekutif Informasi Kinerja Pengelolaan Lingkungan Hidup Daerah Kota Madiun Tahun 2020*. Retrieved from https://dlh.madiunkota.go.id/wp-content/uploads/2022/03/RE-IKPLHD-KOTA-MADIUN-2020.pdf

Fagariba, C. J., Song, S., & Baoro, S. K. G. S. (2018). Climate change in Upper East Region of Ghana; challenges existing in farming practices and new mitigation policies. *Open Agriculture*, *3*(1), 524–536. https://doi.org/10.4236/oje.2018.81005

Febrianti, R. (2022). *Analisis Partisipasi Masyarakat dalam Pengelolaan Sampah di Kecamatan Tuah Madani Kota Pekanbaru* [UNIVERSITAS ISLAM NEGERI SULTAN SYARIF KASIM RIAU]. Retrieved from https://repository.uin-suska.ac.id/60066/

Febrina, W. S. T., Fitra, S. T., John Suarlin, S. E., Surya Indrawan, S. T., Bahri, S. E., Ir Yusrizal, M. M., Azmi, S. T., Melliana, S. T., Widya Fitriana, S. P., & Pohan, R. F. (2023). *Green Industry Management*. Cendikia Mulia Mandiri.

Guerrero, L. A., Maas, G., & Hogland, W. (2013). Solid waste management challenges for cities in developing countries. *Waste Management*, *33*(1), 220–232. https://doi.org/10.1016/j.wasman.2012.09.008

Hondo, D., Arthur, L., & Gamaralalage, P. J. D. (2020). *Solid waste management in developing Asia: prioritizing waste separation*. Retrieved from https://www.iges.or.jp/en/publication_docume

nts/pub/policy/en/11085/adbi-pb2020-7.pdf

Husen, V. B., Halim, R., & Perdana, S. M. (2021). Gambaran Pengelolaan Bank Sampah Dream Dalam Mengurangi Timbulan Sampah Anorganik Di Perumahan Bcl 5 Kota Jambi. *Electronic Journal Scientific of Environmental Health And Disease*, *2*(1), 40–51. https://doi.org/10.22437/esehad.v2i1.13751

Ismail, Y. (2019). Pengelolaan sampah berbasis masyarakat. *Academics in Action Journal of Community Empowerment*, *1*(1), 50–63. https://doi.org/10.33021/aia.v1i1.742

Kalra, N. (2020). Community participation and waste management. In *Sustainable Waste Management: Policies and Case Studies: 7th IconSWM – ISWMAW 2017*. https://doi.org/10.1007/978-981-13-7071-7_10

Kansanga, M. M., Ahmed, A., Kuusaana, E. D., Oteng-Ababio, M., & Luginaah, I. (2020). Of waste facility siting and relational geographies of place: Peri-urban landfills, community resistance and the politics of land control in Ghana. *Land Use Policy*, *96*, 104674. https://doi.org/10.1016/j.landusepol.2020.104674

Khan, S., Anjum, R., Raza, S. T., Bazai, N. A., & Ihtisham, M. (2022). Technologies for municipal solid waste management: Current status, challenges, and future perspectives. *Chemosphere*, *288*, 132403. https://doi.org/10.1016/j.chemosphere.2021.132403

Kurniawan, T. A., Avtar, R., Singh, D., Xue, W., Othman, M. H. D., Hwang, G. H., Iswanto, I., Albadarin, A. B., & Kern, A. O. (2021). Reforming MSWM in Sukunan (Yogjakarta, Indonesia): A case-study of applying a zero-waste approach based on circular economy paradigm. *Journal of Cleaner Production*, *284*, 124775. https://doi.org/10.1016/j.jclepro.2020.124775

Ma, M., Tam, V. W. Y., Le, K. N., & Li, W. (2020). Challenges in current construction and demolition waste recycling: A China study. *Waste Management*, *118*, 610–625. https://doi.org/10.1016/j.wasman.2020.09.030

Manalu, P., Tarigan, F. S., Girsang, E., & Ginting, C. N. (2022). Hambatan Implementasi Kebijakan Pengelolaan Sampah Rumah Tangga di Kota Binjai. *Jurnal Kesehatan Lingkungan Indonesia*, *21*(3), 285–292. https://doi.org/10.14710/jkli.21.3.285-292

Mongkolnchaiarunya, J. (2005). Promoting a community-based solid-waste management initiative in local government: Yala municipality, Thailand. *Habitat International*, *29*(1), 27–40. https://doi.org/10.1016/S0197-3975(03)00060-2

Mudrikatin, S. (2024). Prevention Efforts of Covid-19 Qualitative Study Transmission in East Java Province. *Journal of Scientific Research, Education, and Technology (JSRET)*, *3*(1), 77–85. https://doi.org/10.58526/jsret.v3i1.320

Muhammad, A. R. (2023). *Implementasi Prinsip Good Environmental Governance Dalam Kebijakan Daerah Tentang Pengelolaan Sampah Rumah Tangga Di Kabupaten Pesawaran*. Retrieved from https://digilib.unila.ac.id/69958/

Nopriani, M., Fauzi, A., & Nuva, N. (2022). Analisis Prospektif Untuk Keberlanjutan Pengelolaan Tps 3r Di Kota Pangkalpinang A Prospective Analysis For Tps 3r Sustainability In Pangkalpinang City. *Eqien-Jurnal Ekonomi Dan Bisnis*, *11*(1), 1281–1296. https://doi.org/10.34308/eqien.v11i1.864

Nurikah, N., Jazuli, E. R., & Furqon, E. (2022). Tata Kelola Pengelolan Sampah Berdasarkan Undang-Undang Nomor 18 Tahun 2008 Tentang Pengelolaan Sampah Terhadap Pengelolaan Sampah Berbasis Partisipasi Masyarakat di Kota SeraNG. *Gorontalo Law Review*, *5*(2), 434–442. https://doi.org/10.32662/golrev.v5i2.2201

Okhtafianny, T., & Ariani, R. (2023). Analisis implementasi kebijakan pengelolaan sampah di kota payakumbuh. *Jurnal Ekonomi Bisnis, Manajemen Dan Akuntansi (JEBMA)*, *3*(2), 537–550. https://doi.org/10.47709/jebma.v3i2.2837

Rustiarini, N. W., Legawa, I. M., Adnyana, Y., & Setyono, T. D. (2021). Pengolahan Sampah Plastik Menjadi Kerajinan Tangan Bernilai Ekonomi. *JURPIKAT (Jurnal Pengabdian Kepada Masyarakat)*, *2*(2), 223–234. https://doi.org/10.37339/jurpikat.v2i2.502

Saidatuningtyas, I., Nufus, T. H., Ardhan, D. T., Arnanda, R., & Khoirunnisa, R. (2024). Pelatihan Pembuatan Eco Enzyme Untuk Mengurangi Limbah Organik pada Warga Rumpin, Bogor. *PROFICIO*, *5*(2), 71–79. https://doi.org/10.36728/jpf.v5i2.3404

Samadikun, B. P., Nugraha, W. D., Rahayu, A. P., Napitupulu, J. C. W., Fuad, T. S., Amartia, N. U., & Mirhan, S. A. A. (2023). The impact of waste bank development on society during endemic era in semarang city. *IOP Conference Series: Earth and Environmental Science*, *1268*(1), 12011. https://doi.org/10.1088/1755-1315/1268/1/012011

Saputri, K. (2022). *Pengaruh Program Bank Sampah Terhadap Pemberdayaan Ekonomi Masyarakat (Studi Pada Masyarakat Kelurahan Tejo Agung Kecamatan Metro Timur Kota Metro)* [Institut Agama Islam Negeri Metro]. Retrieved from https://repository.metrouniv.ac.id/id/eprint/7091/

Saputro, Y. E., Kismartini, K., & Syafrudin, S. (2016).

Pengelolaan sampah berbasis masyarakat melalui bank sampah. *Indonesian Journal of Conservation*, *4*(1). https://doi.org/10.15294/ijc.v4i1.5162

Sekito, T., Prayogo, T. B., Dote, Y., Yoshitake, T., & Bagus, I. (2013). Influence of a community-based waste management system on people's behavior and waste reduction. *Resources, Conservation and Recycling*, *72*, 84–90. https://doi.org/10.1016/j.resconrec.2013.01.001

Shekdar, A. V. (2009). Sustainable solid waste management: An integrated approach for Asian countries. *Waste Management*, *29*(4), 1438–1448. https://doi.org/10.1016/j.wasman.2008.08.025

Sholikah, S., & Herumurti, W. (2017). Timbulan dan Reduksi Sampah di Kecamatan Sukun Kota Malang. *Jurnal Teknik ITS*, *6*(2), C131--C134. https://doi.org/10.12962/j23373539.v6i2.24934

Siriratpiriya, O. (2014). *Municipal Solid Waste Management in Asia and the Pacific Islands: Challenges and Strategic Solutions*. Springer. https://doi.org/10.1007/978-981-4451-73-4_17

Sriyanto, D., & Intan, T. K. (2019). Household waste management to improve the community economy via waste bank in Medan City. *IOP Conference Series: Earth and Environmental Science*, *245*(1), 12038. https://doi.org/10.1088/1755-1315/245/1/012038

Susilowati, S., & Herdiansyah, H. (2019). Application of waste bank use in reducing household waste in sub-urban area? *Journal of Physics: Conference Series*, *1381*(1), 12050. https://doi.org/10.1088/1742-6596/1381/1/012050

Tarigan, L. B., & Dukabain, O. M. (2023). *Pengelolaan Sampah Kreatif*. Rena Cipta Mandiri.

Taufani, M. R. (2023). *Teknologi Ramah Lingkungan*. Nuansa Cendekia.

Troschinetz, A. M. (2005). *Twelve factors influencing sustainable recycling of municipal solid waste in developing countries*. Retrieved from https://core.ac.uk/download/pdf/151507495.pdf