



Opportunities for transmigrants to establish household waste management communities

Risya Putri Pertiwi^{1,*}

¹ Department of Environmental Science, Graduate School of Sustainable Development, Universitas Indonesia, Central Jakarta, 10430, Indonesia

*Correspondence: risya.putri@ui.ac.id

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ABSTRACT

Background: Household waste management in transmigration areas remains inadequate, as waste is commonly discarded, burned, or fed to livestock. These practices pose environmental and public health risks through air pollution and contamination of soil and water sources. While the government plays a strategic role through policy formulation and infrastructure provision, transmigrant communities also have opportunities to develop community-based waste management initiatives by utilizing government-allocated land and local resources.

Methods: This study employed a qualitative approach, including in-depth interviews with government officials and transmigrant households, document analysis, and field observations conducted in SP Motihelumo, Gorontalo, in 2023. **Findings:** The results show strong initial support from both the local government and the community for establishing a community-based household waste management system. A clear gender-based division of roles was identified, with women primarily managing organic waste and men handling the technical aspects of inorganic waste management. However, limited access to waste facilities and infrastructure remains a major challenge due to the area's remote location. **Conclusion:** The establishment of household waste management communities in SP Motihelumo is feasible, provided there is sustained policy support, adequate infrastructure, and active participation from transmigrants. Integrating local potential, gender roles, and institutional involvement is crucial to ensure long-term sustainability. **Novelty/Originality of this Article:** This study offers a gender-sensitive, community-based waste management model tailored to transmigration areas, highlighting the role of institutional support through Village-Based Enterprises (BUMDes) as a scalable framework for sustainable waste management in similar contexts.

KEYWORDS: community; empowerment; institutional support (BUMDes); transmigration; waste management.

1. Introduction

Indonesia, a developing country with uneven population density, has implemented a transmigration program since the Dutch colonial era to equalize the population distribution. Through this program, the government plays a key role in relocating individuals from densely populated areas to regions with lower populations (Mukrimin & Acciaioli, 2023). In addition to optimizing population distribution, the program aims to encourage the utilization of natural resources in less developed areas by people outside of those areas while improving the welfare of the local community. The program is also expected to encourage natives of transmigration destinations to improve their skills and knowledge in managing natural resources more efficiently and sustainably (Mardhiah et al., 2023).

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In developing countries, peripheral areas are usually developed into transmigration program destinations (Pratiwi et al., 2022). According to Government Regulation Number 19 of 2024 (PP 19/2024) concerning Implementation Regulations of Law Number 15 of 1997 concerning Transmigration, areas that become transmigration destinations are referred to as transmigration areas. These areas are defined as cultivation areas that function as settlements and community business places within one development system. To date, 619 transmigration areas have been established, 144 of which have been formalized through a decree of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration (Strategic Plan of the Directorate General of PPKTrans, 2020–2024). Each transmigration area contains three to six Development Area Units (SKP) and one New Urban Area (KPB). Each SKP has at least four Settlement Units (SP). The SP is the smallest unit of the transmigration area and the main part that is built. After SP construction, transmigrants are placed by the government and granted rights to residential housing and business land, environmental adaptation guidance, and food. According to Regulation Number 1 of 2023 by the Minister of Villages, Development of Disadvantaged Regions, and Transmigration (Permendesa PDTT), which amends Regulation Number 10 of 2018 concerning the Implementation of Providing Transmigration Assistance by the Government and/or Regional Governments to Transmigrants, residential land provided to transmigrants is between 0.10 up to 0.25 hectares. Meanwhile, agricultural business land is 1.75 to 1.90 hectares per kilometer for dry food crop business patterns and two hectares per kilometer for wetland food crop business patterns.

Although the transmigration program has been implemented for decades, it still faces various challenges, one of which is improving the development status of locations that were initially classified as very underdeveloped or underdeveloped to become developed or self-reliant. Achieving this status requires meeting several indicators, including increasing the role of transmigrant communities in the non-agricultural sector. With the physical and non-physical rights granted to them, transmigrants are expected to continuously enhance their potential. However, according to Permendesa PDTT Number 1 of 2023, the government's guidance for transmigrants is limited to environmental adaptation to starting a new life. It does not include guidance on transmigrant obligations after obtaining rights. Transmigrant self-reliance can be fostered through social capital, education, and support from village governments in community-based organizations and activities (Nurlinah & Haryanto, 2024). Therefore, the government, as a policymaker, plays a crucial role in empowering and involving communities in village development. In this context, transmigrants have the potential to become self-reliant communities capable of managing their environment, particularly in implementing sustainable household-level waste management practices.

Waste has become a major global problem due to its environmental and health impacts (Keng et al., 2020). Maintaining the quality of rural settlements is a challenge for sustainable development and requires special attention (Dong et al., 2025). While attention to solid waste problems is often focused on urban areas, waste management in rural areas poses a significant challenge (Han et al., 2018; Pallegedara et al., 2024). The composition of Indonesia's waste generation according to the National Waste Management Information System 2024, shows that around 39.28% of the waste generated is food waste while plastic waste accounts for 19.71%. The largest composition of this waste comes from households at 54.47%. This figure shows that the potential for household waste management has not been optimized. According to Government Regulation No. 81/2012 (PP 81/2012) on the Management of Household Waste and Waste Similar to Household Waste, household waste is defined as waste that originates from daily household activities and does not include feces or other specific types of waste. A comprehensive waste management strategy is generally required for village waste management, covering the entire process from collection and transportation to treatment and final disposal. Each stage of this system depends heavily on the volume and characteristics of the waste generated (Han et al., 2018). Household waste

includes waste generated from activities such as food preparation and consumption, sweeping, laundry, incineration, and garden waste, as well as items that are no longer in use and ready for disposal, such as clothes, furniture, and appliances. This includes solid, liquid, and hazardous waste generated in residential areas (Mohammed & Elias, 2017). Waste can be either organic or biodegradable and inorganic or non-biodegradable. Organic waste can be naturally decomposed by microorganisms, but inorganic waste cannot (Velvizhi et al., 2020).

All communities are responsible for maintaining environmental health. Transmigrants, who live in transmigration areas, are also responsible for environmental management. Transmigration sites are generally located on the peripheral of Indonesia (Pratiwi et al., 2022), which makes developing infrastructure, including waste management infrastructure, challenging (Suratman et al., 2024). This has resulted in inadequate household waste management practices. Waste is often simply discarded, fed to livestock, or burned in yards. These practices release toxic chemicals and harmful particles into the air, causing pollution, respiratory problems, and soil degradation (Jakhar et al., 2023). If these issues are not properly addressed, they can damage ecosystems, reduce agricultural productivity, and threaten public health in the long term (Agya et al., 2024).

Transmigration areas, as the forerunners of new villages, must prioritize proper waste management. Untreated rural waste can lead to health problems, unpleasant odors, and environmental pollution that directly affect local residents (Alipour et al., 2025). Considering the variety of household waste types, the yard space available to transmigrants ranging from 0.10 ha to 0.25 ha per household has significant potential for use in community-based household waste management. The presence of community participation in waste management can improve sustainable management systems and public awareness. Community participation in waste management can improve sustainable management systems and increase public awareness (Akeju & Omotoso, 2023). Activities that can be implemented include sorting and processing waste using environmentally friendly methods, such as composting and recycling.



Fig. 1. Transmigrant house and yard

Methods that can be applied in treating organic waste include Black Soldier Fly (BSF) maggot cultivation or the construction of biopore infiltration holes (Sudaryatno et al., 2024). Community-scale composting is also an effective first step in reducing the amount of food waste that ends up in landfills, especially in developing countries (Keng et al., 2020). Additionally, the presence of waste banks can serve as a valuable starting point for empowering communities, particularly in managing waste that still has economic value (Widiyanto et al., 2023). Therefore, integrating waste banks within the area or establishing waste banks by transmigrants can be an effective strategy to reduce the inorganic waste that is currently being burned. The existence of waste banks in a region is considered to serve as a facilitator for the implementation of the principles of reduce, reuse, and recycle (3R); to enhance community participation; to shift public perspectives and behaviors

toward waste; and to provide economic benefits (Soesilo & Alfarizi, 2024). However, factors such as communication, attitudes, resources, institutional support, and commitment play a crucial role and significantly influence their effectiveness.

Waste management in rural areas is influenced by various factors such as policies, knowledge, awareness, culture, and community participation (Alipour et al., 2025). In the context of transmigration areas, waste management challenges become more complex due to limited infrastructure, relatively remote locations, and the absence of specific policies regulating waste management by transmigrants. Conditions in SP Motihelumo indicate that transmigrants have not yet utilized their available yard land to independently manage household waste, while existing waste management practices remain conventional and pose potential environmental and health risks.

Previous studies in transmigration areas have generally focused on economic impacts and regional development innovations (Murtisari et al., 2022; Sudarsono et al., 2023; Suratman et al., 2024), social dynamics among transmigrant communities (Lai et al., 2021), and the environmental impacts of transmigration programs, particularly deforestation (Holden et al., 1995). However, studies that specifically examine community-based household waste management in transmigration areas, particularly through the utilization of yard land as an ecological and social space, remain very limited. Therefore, this study aims to identify opportunities for transmigrants to manage household waste through a community empowerment-based approach. This research offers novelty by positioning transmigration areas as a distinctive socio-ecological context for the development of sustainable waste management practices and is expected to improve the quality of life and the social and economic well-being of transmigrants while promoting self-reliant development in transmigration areas.

2. Methods

This study employed a qualitative approach with a case study design to understand opportunities for community-based household waste management in transmigration areas. Data were collected through in-depth interviews, field observations, and document investigation. Field visits were conducted from 19 to 22 July 2023, while interviews were carried out in March 2025. The research site was located in the Settlement Unit (SP) Motihelumo, East Sumalata Sub-District, Sumalata Transmigration Area, North Gorontalo Regency, Gorontalo Province.

The selection of the research location was based on several key considerations. SP Motihelumo has served as a transmigration settlement since 2016, with a total of 145 households (approximately 580 people), consisting of Transmigrants from Origin Areas (TPA) from several provinces on Java Island and Local Transmigrants (TPS). Although it has been established for nearly a decade, SP Motihelumo continues to face limitations in household waste management infrastructure and facilities. The absence of waste management facilities in accordance with the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration Number 25 of 2016 on the Development and Improvement of Infrastructure, Facilities, and Public Utilities in Transmigration Areas, along with the considerable distance from SP Motihelumo to the nearest Temporary Waste Disposal Site (TPS), which is approximately 54 km based on distance estimation using Google Maps, has resulted in the persistence of conventional waste management practices, such as open burning and indiscriminate dumping.

Research informants were selected using purposive sampling, considering their roles, involvement, and knowledge (Taherdoost, 2016) regarding environmental management and policy in SP Motihelumo. Interviews were conducted with five key informants, consisting of one government representative and four transmigrants. The government informant was drawn from the Department of Transmigration and Manpower of North Gorontalo Regency (Disnakertrans Kab. Gorontalo), which serves as the supervisory institution for SP Motihelumo. The government was selected as an informant because of its critical role

in waste management, particularly in formulating policies, providing facilities, and ensuring the implementation of effective waste management systems (Akeju & Omotoso, 2023). This informant was chosen due to their understanding of the planning, development, and management of the transmigration area, including waste management policies and facilities.



Fig. 2. Used cardboard as a garbage container in the transmigrant house

The four transmigrant informants were selected based on recommendations from the government informant and considerations of gender variation and social roles. These informants consisted of two female transmigrants and two male transmigrants, one of whom serves as the village head (see table 1). Interviews were conducted using a semi-structured format, guided by a set of questions covering household waste management practices, types and treatment of waste, government involvement, perceptions of environmental conditions, and views on the establishment of a community-based waste management initiative utilizing yard land. The interview process was flexible and evolved according to the responses of the informants, consistent with the characteristics of qualitative research.

Table 1. Profile of interview informants

Informant code	Informant category	Gender
Mr. IM	Government (Disnakertrans Kab. Gorut)	Male
Mr. IT	Transmigrant, village head	Male
Mr. T	Transmigrant	Male
Mrs. EN	Transmigrant	Female
Mrs. IS	Transmigrant	Female

In addition to interviews, this study also involved document analysis, including Environmental Management and Environmental Monitoring documents (UKL-UPL), spatial realization reports, and field visit reports from 2023 documenting the condition of infrastructure and facilities in SP Motihelumo. Qualitative data were analyzed through processes of data reduction, thematic grouping, and interpretation, which were then synthesized using a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis (Meza et al., 2022). This analysis was employed to identify internal and external factors influencing opportunities for community-based household waste management and to formulate strategies for the development of sustainable waste management initiatives in SP Motihelumo.

3. Results and Discussion

This study reveals the complex dynamics of waste management in SP Motihelumo, which stem from community habits, the absence of a support system, and opportunities for community-based change. Current waste management practices remain conventional and unstructured. Transmigrants tend to dispose of waste carelessly or burn it in their yards. This behavior is driven by limited infrastructure, management policies, and knowledge. Nevertheless, this study also identifies significant social potential, particularly with regard to the role of women in household waste management. Some residents have started processing organic waste independently using simple methods, indicating an initial awareness of the importance of sustainable practices. Unfortunately, the government has not adequately supported these efforts in the form of facilities, policies, or public education.

Furthermore, this research identified opportunities for transmigrants to form community-based waste management initiatives. Although the study did not initially focus on gender dynamics, interview findings revealed that gender plays a significant role. Women's active involvement in collecting, sorting, and processing organic waste as well as their early awareness of waste-related issues emerged as key factors influencing the effectiveness of the waste management community in SP Motihelumo. These findings highlight the importance of developing adaptive and participatory management strategies that are sensitive to local social roles. The study maps the current conditions on the ground and analyzes both the opportunities and barriers, providing a foundation for the development of more effective, sustainable, locally grounded, and inclusive waste management strategies.

3.1 Waste management conditions

To gain a deeper understanding of waste management dynamics in SP Motihelumo, it is necessary to first examine the current waste management conditions. Field observations and interviews indicate that existing waste management practices still rely on conventional methods, which come with various limitations. Organic household waste generally consists of food scraps such as leftover rice, vegetables, and fish or meat bones, as well as food preparation waste like fruit peels and unused vegetable parts. Additionally, organic waste includes leaves, small twigs, and plant debris from the yard area. Meanwhile, most of the inorganic waste consists of various types of plastic, such as shopping bags, snack wrappers, and plastic containers from packaged beverages. In addition to plastic, other types of inorganic waste include used food or beverage cans and glass bottles from products used by the transmigrant community.

The treatment of organic and inorganic waste by transmigrants in SP Motihelumo generally remains far from ideal. Based on interview results, residents' waste management habits are largely driven by practical needs, which stem from limited knowledge of proper waste processing and a lack of adequate facilities and infrastructure. In general, organic waste is discarded carelessly behind houses, although some residents collect it in buckets to be used as organic fertilizer for their gardens. This basic processing method is still very rudimentary and not managed systematically. Waste is left to decompose without control, often resulting in unpleasant odors and an untidy environment. In contrast, inorganic waste poses a greater challenge due to the absence of storage and transport systems connected to a central waste disposal site (TPS). Its non-biodegradable nature causes it to accumulate behind houses. On dry days, this waste is often burned as a last resort. Such practices are common in rural areas where waste management access is limited. For transmigrant communities, burning waste or dumping it in the backyard is seen as a practical solution that requires little effort or additional cost. Moreover, the geographical conditions of SP Motihelumo with its uneven terrain exacerbate the waste problem, particularly with inorganic waste. Plastics and paper discarded in home yards are frequently blown by the wind into the lower-lying yards of other residents, which occasionally sparks conflict among

transmigrants. Overall, if these habits continue without behavioral change, they will not only negatively impact the environment but also risk becoming generationally ingrained practices. However, this situation also highlights that the absence of a better system has trapped residents in unsustainable practices. Without timely intervention, the habit of burning or indiscriminately disposing of waste will persist and become a normalized social behavior within the transmigrant community.

Nevertheless, initial awareness of the importance of waste management has begun to emerge. Two female informants, Mrs. EN and Mrs. IS, demonstrated simple yet progressive efforts in managing household organic waste. Both have practiced fermentation of kitchen waste, such as food scraps, by mixing it with rice-washing water and a small amount of sugar, then allowing it to ferment in a bucket for three days to a week, depending on the volume of waste collected. Once the fermentation process is complete, the resulting liquid is used as organic fertilizer for their home gardens. Although modest, this practice reflects a significant potential for developing household-based waste management if supported by proper education and facilities. It also highlights the vital role of women in environmental stewardship. In the social context of transmigrant communities, women hold a strategic position in domestic activities, including household waste management and garden maintenance. Therefore, women's involvement in waste processing serves as an important indicator that the transformation toward sustainable living can begin through traditional roles often carried out informally. Various studies also emphasize the strategic role of women in community-based environmental management. For instance, 73% of women regardless of employment status, education, age, or beliefs express a shared willingness to manage household (Akeju & Omotoso, 2023). When women are provided with adequate knowledge and support, they are likely to become effective agents of change due to their close association with domestic activities and influence over household consumption patterns and resource management. As such, gender-based empowerment approaches in environmental programs can serve as effective strategies to enhance public awareness and engagement in sustainable waste management.

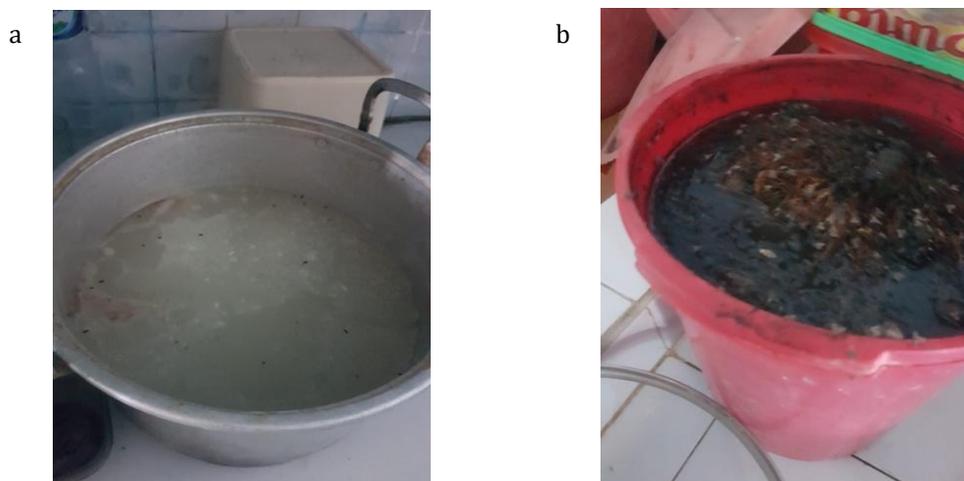


Fig. 3 Organic waste processed using a simple method

- (a) rice washing water stored as a mixture with leftover food waste and food preparation scraps;
(b) food preparation scraps (banana peels) mixed with rice washing water

Unlike organic waste, both informants admitted that they still have difficulty handling it. Currently, waste such as plastic and paper is usually collected in closed containers, such as buckets or plastic baskets, and burned when it is not raining. Burning is considered the easiest solution because it is inexpensive and can be done independently. Unfortunately, this practice poses health risks and contributes to air pollution and long-term environmental problems. Evidence from Ghana further demonstrates that inadequate household waste management can lead to serious environmental consequences, including

soil contamination, clogged drainage systems, and increased public health risks. Although the environmental impacts in SP Motihelumo manifest in different forms—such as social conflict, air pollution, and river contamination—the underlying drivers are comparable, namely weak institutional support, limited infrastructure, and the absence of effective community-based waste management systems (Barimah et al., 2025).

The difficulties transmigrants face in managing waste are a domino effect of several interrelated factors. The absence of specific regulations that encourage a circular economy-based approach to waste management can lead to poor waste management practices at the household level (Dlamini & Zikhali, 2024). This condition is exacerbated by the lack of policies favoring waste management in transmigration areas and the absence of adequate supporting facilities, infrastructure, and systematic socialization and education efforts related to ideal waste management.



Fig. 4 Transmigrant's waste storage at home (a) Organic and inorganic waste to be burned are still mixed, (b) Waste stored in a bucket is covered to prevent exposure to rainwater

The following are the types of waste and their management by transmigrants in SP Motihelumo:

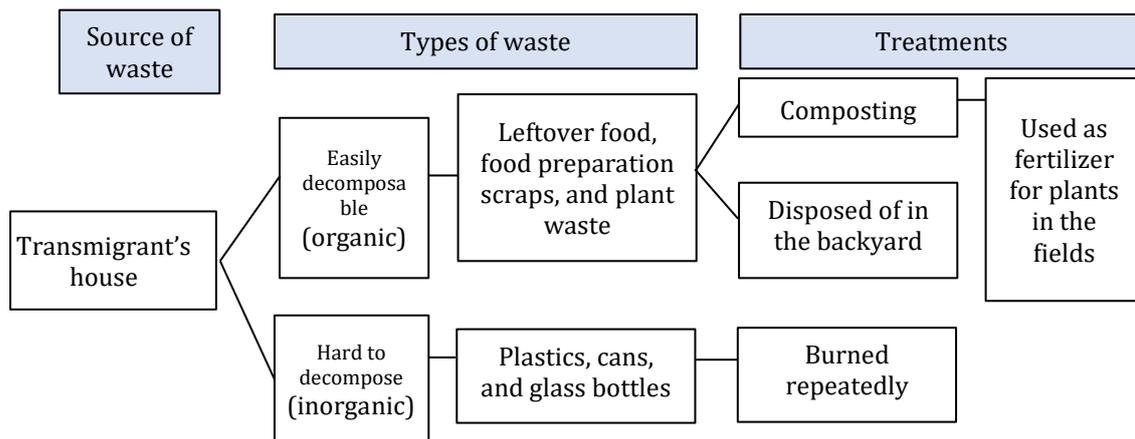


Fig. 5 Waste treatments based on waste types at SP Motihelumo

The impact of inadequate waste management is becoming increasingly evident within the community. Based on interview findings, several interconnected issues were identified. First, conflicts among transmigrants arise due to inorganic waste being carried by wind from higher-elevation yards to lower-elevation areas, creating tension as affected residents are forced to clean waste they did not generate. In addition, unpleasant odors frequently

emerge from backyards as a result of unmanaged or improperly stored organic waste used for composting without adequate control. Moreover, repeated burning of inorganic waste, such as cans and glass bottles, contributes to air pollution, as residents expect these materials to eventually burn completely. Furthermore, water pollution in nearby rivers is exacerbated by habitual disposal of plastic waste by children into the streams.

Despite some residents being aware of these issues, a portion of the community remains indifferent. This is largely because the effects are not immediately or individually felt. A lack of understanding about the long-term cumulative impacts, coupled with the absence of comprehensive interventions from the authorities, hinders the development of collective awareness. This presents a challenge for the government when it comes to fostering behavioral and perceptual changes regarding waste among transmigrants. While some view waste merely as a nuisance or environmental pollutant, others, such as waste pickers or individuals with greater awareness of its economic potential, recognize it as a resource (Akeju & Omotoso, 2023). Therefore, strengthening educational efforts is crucial—not only to provide technical knowledge, but also to foster a deeper understanding that, when managed properly, waste holds economic value and environmental benefits. Such educational initiatives should strategically target domestic roles typically held by women. Supported by the provision of basic waste management infrastructure, this approach can encourage behavioral changes toward more environmentally friendly and sustainable living. However, without sustained interventions through environmental education and the development of structured waste management systems, these outdated practices are likely to persist and be passed down to future generations, thereby entrenching unsustainable behavior within the transmigrant community.

3.2 The role of the government in waste management

Interviews with transmigrant informants and government representatives revealed that no concrete intervention has been made by the government regarding waste management in SP Motihelumo, despite the area having been designated as a transmigration site for nine years. The government is expected to be responsible for formulating policies, providing necessary facilities, and ensuring that the waste management system operates effectively. However, these responsibilities have not been fulfilled in this location. This finding indicates a weak governmental role in meeting basic environmental management responsibilities, particularly in waste management.

One transmigrant informant stated that since their arrival, there has never been any form of assistance or socialization regarding proper waste handling practices. The absence of guidance and infrastructure has led residents to continue old habits, such as dumping waste behind their houses or burning it. Without proper regulations and adequate facilities, transmigrants remain trapped in unsustainable waste practices. In contrast, the role of government institutions in exerting institutional pressure—through policies, regulations, and institutional support—has been shown to encourage better household waste management practices and to contribute significantly to the achievement of broader environmental sustainability goals (Quartey et al., 2025).

Through document investigation, the researcher also analyzed the extent of the government's role in planning and acting on environmental issues, particularly waste management. Government initiatives and planning are crucial in addressing the challenges of waste (Azevedo et al., 2021). Based on a review of the UKL-UPL documents for SP Motihelumo, environmental impacts and management strategies have been outlined, covering the pre-construction to operational phases. During the operational and maintenance phases of the transmigration settlement, specific approaches were already outlined to address waste generation. Three strategies (see table 2) were proposed to handle the increasing volume of waste. However, none of these strategies have been implemented to date.

Table 2. Waste generation management efforts based on the UKL-UPL document 2019 for SP Motihelumo

Approach	Details	Status description
Technology	Provide garbage bins in each housing unit and public facility	Not yet implemented
	Provide temporary waste disposal facilities at multiple points within the transmigration settlements	Not yet implemented
	Implement waste segregation based on waste characteristics, where organic waste is processed into fertilizer and plastic waste is recycled to create economic	Not yet implemented
	Establish waste disposal sites (TPS) and promote the principles 3R within the transmigration settlement areas	Not yet implemented
Social	Conduct socialization programs for the community regarding waste and waste management	Not yet implemented
	Place slogans encouraging environmental cleanliness at various points within settlements, public facilities, and crowded areas	Not yet implemented
Institutions	Coordinate with local government authorities, particularly the Environmental Agency, concerning waste transportation in the transmigration area	Not yet implemented
	Collaborate with waste banks	Not yet implemented

The local government, through the Disnakertrans Kab. Gorut, stated that the lack of waste management facilities in SP Motihelumo is due to budget constraints. However, data triangulation from the 2023 field visit report shows that the area has never been provided with 145 waste bins, equivalent to the number of households in SP Motihelumo. Furthermore, the report shows that the local government has never proposed purchasing waste bins in its annual planning or budgeting documents. These findings reinforce the conclusion that waste management has not been prioritized in the transmigration area's development agenda.

This condition is supported by statements from transmigrant informants who confirmed that the government has never provided waste bins. Another finding from spatial planning documents prepared in 2019 revealed that waste treatment facilities were omitted entirely. The absence of these facilities is a significant oversight, especially since the Guidelines for Assessing Settlement Unit Feasibility (Pedoman Penilaian Kelayakan SP) state that providing waste collection facilities, such as bins or collection tanks, is a basic requirement for supporting the environmental feasibility of settlements. Furthermore, the government has not initiated any follow-up efforts to address this gap since the document's publication. This indicates that waste management remains a low priority in the site's development agenda despite being a mandated key indicator of settlement feasibility in transmigration areas.

A positive example that could serve as a reference for Disnakertrans Kab. Gorut is the Banyumas Regency Government. Through its Environmental Agency (Dinas Lingkungan Hidup), the government actively engages in community-based waste management efforts through various means such as providing collection and transportation facilities, implementing retribution systems, and conducting socialization campaigns. These practices are applied not only in residential areas but also involve schools (Widiyanto et al., 2023). Additionally, the government could implement an Integrated Solid Waste Management (ISWM) program, combining waste reduction at the source, recycling, composting, and safe residual waste disposal. Effective implementation of ISWM should involve collaboration

with relevant authorities and neighboring areas. This collaboration would entail waste collection and processing, raising public awareness of waste reduction, designing effective waste collection systems, and identifying suitable disposal sites (Villa-Achupallas et al., 2024).

Overall, this narrative illustrates that the government's passive response to the basic needs of transmigrant residents has exacerbated the challenges of waste management in SP Motihelumo. However, the role of the ministry overseeing transmigration should be clarified, particularly regarding program prioritization and budgeting for this location. If this situation continues unchecked, environmental and health risks will escalate and the emergence of slum-like conditions in this transmigration area will become increasingly likely (Akeju & Omotoso, 2023).

3.3 Enthusiasm toward waste management innovation

All informants expressed great enthusiasm to begin managing waste. This awareness arose after the researcher explained the potential long-term impacts of the habit of burning and indiscriminately disposing of waste, such as soil and water pollution, air pollution, and health risks. The informants admitted that they had not fully understood the environmental impacts due to limited information. This admission opened up deeper discussions about behavioral changes and implementing new waste management methods.

The researcher then introduced several simple yet innovative alternatives, such as creating biopore holes, cultivating maggots, and establishing waste banks. The community responded positively to these options. They were interested in methods like biopores and waste banks because they were considered easy to implement and relevant to local conditions. This enthusiasm indicates a social readiness to adapt to more environmentally friendly management practices. Meanwhile, although one informant found maggot cultivation unappealing, it remained an interesting option for others. Interestingly, all of the transmigrant informants asked when the waste management activities would begin, signaling their hope for and openness to innovations in waste processing.

Managing inorganic waste through waste banks was also highly favored, especially after the researcher explained its economic potential within the circular economy concept. Additionally, transmigrants were further motivated to form waste banks due to concerns over glass bottles and cans, which do not decompose even after repeated burning. Establishing new waste banks is necessary because there are currently no waste banks outside of SP Motihelumo that can be integrated with the site.

Utilizing backyard space for waste processing is considered a promising approach for SP Motihelumo, given the relatively ample space available at each transmigrant household. Mr. IM, representing Disnakertrans Kab. Gorut, supported the use of transmigrants' backyard land for waste processing. However, considering the low environmental awareness among some transmigrants in SP Motihelumo, doubts were raised about the consistency of waste management if it were entirely left to the transmigrants. As a solution, it was proposed that waste management be conducted under the BUMDes to ensure proper supervision and sustainability. Further discussion revealed differing opinions about managing the waste bank. Two male informants, Mr. IT and Mr. T, fully supported the formation of waste banks managed by the BUMDes, arguing that this involvement would provide greater sustainability and more structured oversight. Conversely, two female informants, Mrs. EN and Mrs. IS, opposed management by the institution, citing concerns about its transparency and accountability. They stated that information related to Bumdes activities and finances is highly restricted, and only a few people have adequate access to reports on activities and fund usage. This has fostered communication gaps and a sense of exclusivity. One example they cited was the misuse of assets: a vehicle intended for transporting schoolchildren was increasingly used for personal purposes by internal administrators. For the community, this became a symbol of weak management and minimal public accountability of the institution.

This situation demonstrates that, despite high enthusiasm for waste management innovations, the success of their implementation depends heavily on local institutional trust and accountability. Therefore, before implementing formal waste management programs through the BUMDes, it is necessary to build capacity and reform governance to be more transparent in order to restore community trust. Overall, the interviews revealed that utilizing backyard land for waste processing, whether through biopore methods or maggot cultivation, is a highly promising approach given the ample space available at each transmigrant household. With support from the Disnakertrans Kab. Gorut, which stated that backyard usage is feasible, the opportunity for program implementation increases provided it is accompanied by reliable supervision mechanisms and active community involvement.

3.4 SWOT Analysis

To identify appropriate strategies for household waste management in SP Motihelumo, the researcher conducted a SWOT analysis based on field findings obtained through in-depth interviews with informants, a review of planning documents, and field observations. This analysis aims to understand the strengths, weaknesses, opportunities, and threats faced by the transmigrant community in waste management, as well as to formulate a more effective and sustainable direction for intervention.

Based on table 3, household waste management in SP Motihelumo demonstrates several key strengths. First, the availability of home yards allows transmigrants to manage organic waste directly and to use them as collection sites for sorted inorganic waste. In addition, there is strong enthusiasm from the transmigrant community and initial support from the government. The potential application of technologies such as biopore holes, maggot cultivation, and waste banks also presents an opportunity to enhance participatory waste management. The initial awareness of organic waste management among women adds further value, indicating a starting point for community-level behavioral change. On the other hand, several weaknesses need to be addressed. These include limited public knowledge about proper waste processing, financial constraints, lack of infrastructure, and negative perceptions toward the BUMDes, which hinder the development of a well-structured and sustainable waste management system.

There are also significant opportunities that can be maximized. The use of yard space for organic waste processing is highly feasible, and the compost can be used for home gardens. Economic opportunities in inorganic waste management can also be explored, particularly through the establishment of a waste bank managed by BUMDes. Government openness to new ideas further enables the development of community-based innovations. However, several threats must be considered. The lack of active government involvement may impede program implementation. Furthermore, persistent traditional behaviors such as burning waste need to be transformed. Overreliance on individual initiatives without a clear system could also compromise long-term sustainability.

To address these challenges, a suitable strategy includes optimizing the use of home yards for organic waste processing and inorganic waste collection, while fostering collaboration between the government and transmigrants in establishing a waste bank. The government should also provide training and mentoring to improve public knowledge. In this context, women play a strategic role, as they are typically more involved in domestic and household waste management activities. The experiences of several transmigrant women who have independently practiced organic waste processing show that women can act as agents of change in promoting sustainable waste management practices at the household level. Therefore, it is important for the government to actively involve and empower women in forming women's environmental groups.

Table 3. SWOT matrix of household waste management

	Strength	Weakness
Household waste management at SP Motihelumo	Availability of yard land; Enthusiasm of transmigrants; Government enthusiasm/support; Potential for implementing biopore technology, maggot cultivation, and waste banks; Initial awareness of organic waste management among female transmigrants.	Limited general knowledge among transmigrants regarding waste management; Funding constraints; Lack of available facilities and infrastructure; Waste management not yet integrated with waste disposal sites (TPS); Persistent negative perception of BUMDes among the transmigrant community.
Opportunities	S-O Strategy	W-O Strategy
Utilization of yard land can be directly implemented; Use of organic waste processing results for gardening; Government support for new ideas; Economic opportunities in inorganic waste management; Utilization of BUMDes as a site for establishing waste banks.	Maximize your yard's potential for processing organic waste and collecting inorganic waste; Develop waste management strategies through collaboration between the government and transmigrants; Establish a waste bank through the village-based community development organization (BUMDes); Maximize women's active role in waste management.	Organize government-conducted training and mentoring; Open access to funding for the waste bank program through the local CSR of the BUMDes; Collaborate with the government and transmigrants to connect the waste processing circuit outside the area.
Threats	S-T Strategy	W-T Strategy
Lack of active government involvement; Community members are still comfortable with old habits; Limited funding for waste management facilities and infrastructure; Potential for conflict within the community during waste management implementation; Dependence on individual transmigrant initiatives.	Conduct regular socialization and training sessions to help transmigrants become accustomed to the new processing methods; Begin processing by establishing a small-scale community to demonstrate change; Ensure all community processes are transparent.	Propose the procurement of facilities and infrastructure assistance via deconcentration funds; Create a clear organizational structure for waste management to divide tasks and responsibilities. Organize the management of organic waste by female transmigrants and inorganic waste by male transmigrants.

Effective waste management requires balancing the roles of men and women. Management efforts should involve a well-defined organizational structure within the community, in which male and female transmigrants have clearly assigned tasks. For instance, men may focus on technical aspects, such as the collection, transportation, and sorting of inorganic waste, while women can participate in the sorting and processing of organic waste into compost and lead household-level environmental education initiatives.

Furthermore, this local strategy can be strengthened by adopting best practices from other countries. For example, Germany's waste management system is built upon three key pillars: clear regulatory frameworks, sustained public awareness campaigns, and a well-structured financing mechanism. Likewise, experiences from Brazil demonstrate that effective and inclusive waste management systems rely heavily on collaboration among

government institutions, civil society, and local communities (Azevedo et al., 2021).. In the context of SP Motihelumo, these principles could be applied by establishing clear community rules, providing continuous training for transmigrants, and utilizing local resources, such as home yards and BUMDes institutions. Besides promoting environmental sustainability, this approach opens up new economic opportunities and strengthens the transmigrant community's social capital. With adequate policy support and government funding, this community-based waste management model could become a best practice for other transmigration areas. To realize this potential, the government must take a more active role by providing supporting infrastructure as part of its commitment to sustainable development.

4. Conclusions

Household waste management in SP Motihelumo has the potential to be developed through a community-based approach. The availability of home yards, the enthusiasm of some transmigrants, and initial support from the government serve as important assets for realizing a more sustainable waste management system. A gender-based role distribution strategy has proven effective. Women can focus on processing organic waste at the household level, while men can focus on the technical aspects, such as sorting and collecting inorganic waste. However, this strategy will only be successful, effective, and sustainable if the government is actively involved. The government must conduct public outreach, provide training, ensure the availability of infrastructure, and act as a facilitator both among transmigrants and between transmigrants and the community structures to be developed. In addition, rebuilding public trust in the BUMDes remains a key challenge, which must be addressed through greater transparency and accountability. Strong collaboration between residents and the government is key to successful waste management in this area.

The limitation of this study lies in the relatively small number of informants, which may not fully represent the entire perspective of transmigrants at SP Motihelumo. Furthermore, the researcher did not conduct direct confirmation with the relevant ministry responsible for overseeing the transmigration program, particularly regarding budget priorities for waste management infrastructure in the area. As such, the proposed strategies remain preliminary and require further exploration through inclusive dialogue between the government and the transmigrant community. Nevertheless, the findings of this study provide relevant insights for policymaking and can serve as an initial reference for the development of community-based household waste management in other transmigration areas facing similar infrastructural and institutional constraints. With facilitated dialogue, context-sensitive approaches, and recognition of gender roles and community dynamics, community-based waste management in SP Motihelumo can not only be realized, but also serve as an entry point for broader social transformation in transmigration areas.

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Author encourage all author of articles published in this journal to share their research data. This section provides details regarding where data supporting reported results can be found, including links to publicly archived datasets analyzed or generated during the study. A statement is still required when no new data is created or unavailable due to privacy or ethical restrictions.

Conflicts of Interest

The author declare no conflict of interest.

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References

- Agya, B. A., Rückert, A., & Dornack, C. (2024). Effectiveness of traditional solid waste management systems in rural communities: A case study in the Kwahu East District, Ghana. *Environmental Challenges*, 15, 100869. <https://doi.org/10.1016/j.envc.2024.100869>
- Akeju, K. F., & Omotoso, F. (2023). Exploring women's interests in household waste disposal and management. *Journal of Environmental Science and Sustainable Development*, 6(1). <https://doi.org/10.7454/jessd.v6i1.1152>
- Alipour, A., Mousavi, S. S., & Ebrahimi, M. S. (2025). Social capital as a key predictor in solid rural waste management: A case study of rural residents in Iran. *Cleaner Waste Systems*, 11, 100293. <https://doi.org/10.1016/j.clwas.2025.100293>
- Azevedo, B. D., Scavarda, L. F., Caiado, R. G. G., & Fuss, M. (2021). Improving urban household solid waste management in developing countries based on the German experience. *Waste Management*, 120, 772–783. <https://doi.org/10.1016/j.wasman.2020.11.001>
- Barimah, A. J., Addo, H. O., Dumba, J., Kwame, K. E. N., Atteh, L. A., & Juliana, K. M. (2025). Assessing solid waste disposal practices and environmental impacts in three communities of Ghana's Ahafo Region. *Scientific Reports*, 15(1), 25962. <https://doi.org/10.1038/s41598-025-25962-w>
- Dlamini, W., & Zikhali, W. (2024). Management of solid waste by households at Nkayi growth point in Zimbabwe. *Waste Management Bulletin*, 2(1), 266–275. <https://doi.org/10.1016/j.wmb.2024.02.003>
- Dong, X., Jiang, G., Xing, Y., Chen, T., & Qu, Y. (2025). Integrating global and local goals: Decoding dynamic evolution and influencing factors of rural settlement sustainable

- development. *Habitat International*, 162, 103435. <https://doi.org/10.1016/j.habitatint.2025.103435>
- Government Regulation No. 19 of 2024 on Transmigration Implementation. (2024). State Secretariat of the Republic of Indonesia. <https://peraturan.bpk.go.id/Details/283615/pp-no-19-tahun-2024>
- Han, Z., Liu, Y., Zhong, M., Shi, G., Li, Q., Zeng, D., Zhang, Y., Fei, Y., & Xie, Y. (2018). Influencing factors of domestic waste characteristics in rural areas of developing countries. *Waste Management*, 72, 45–54. <https://doi.org/10.1016/j.wasman.2017.11.039>
- Holden, S., Hvoslef, H., & Simanjuntak, R. (1995). Transmigration settlements in Seberida, Sumatra: Deterioration of farming systems in a rain forest environment. *Agricultural Systems*, 49(3), 301–316. [https://doi.org/10.1016/0308-521X\(94\)00046-T](https://doi.org/10.1016/0308-521X(94)00046-T)
- Jakhar, R., Samek, L., & Styszko, K. (2023). A comprehensive study of the impact of waste fires on the environment and health. *Sustainability*, 15(19), 14241. <https://doi.org/10.3390/su151914241>
- Keng, Z. X., Chong, S., Ng, C. G., Ridzuan, N. I., Hanson, S., Pan, G. T., Lau, P. L., Supramaniam, C. V., Singh, A., Chin, C. F., & Lam, H. L. (2020). Community-scale composting for food waste: A life-cycle assessment-supported case study. *Journal of Cleaner Production*, 261, 121220. <https://doi.org/10.1016/j.jclepro.2020.121220>
- Lai, J. Y., Hamilton, A., & Staddon, S. (2021). Transmigrants' experiences of recognitional (in)justice in Indonesia's environmental impact assessment. *Society & Natural Resources*, 34(8), 1056–1074. <https://doi.org/10.1080/08941920.2021.1942350>
- Mardhiah, N., Marcela, A. D. R., Saputra, J., Muhammad, Z., & Bon, A. T. (2023). Identifying the impact of transmigration policy on local community: A case study of Sigulai Village, Simeulue Regency, Indonesia. *International Journal of Advances in Social Sciences and Humanities*, 2(2), 49–60. <https://doi.org/10.56225/ijassh.v2i2.203>
- Meza, A., Koç, M., & Al-Sada, M. S. (2022). Perspectives and strategies for LNG expansion in Qatar: A SWOT analysis. *Resources Policy*, 76, 102633. <https://doi.org/10.1016/j.resourpol.2022.102633>
- Mohammed, A., & Elias, E. (2017). Domestic waste management and its environmental impacts in Addis Ababa City. *African Journal of Environmental and Waste Management*, 4(3). <https://internationalscholarsjournals.org/articles/7851211529032017>
- Mukrimin, & Acciaioli, G. (2023). Transmigration: The Indonesian engineered community— An insight from Baraspf, West Sulawesi. *Komunitas: International Journal of Indonesian Society and Culture*, 15(2). <https://doi.org/10.15294/komunitas.v15i2.13487>
- Murtisari, A., Irham, I., Mulyo, J. H., & Waluyati, L. R. (2022). The effects of the transmigration programme on poverty reduction in Indonesia's Gorontalo Province: A multidimensional approach. *Economies*, 10(11), 267. <https://doi.org/10.3390/economies10110267>
- Nurlinah, & Haryanto. (2024). Transmigration village development: The state and community organizations in rural Indonesia. *Frontiers in Political Science*, 6, 1441393. <https://doi.org/10.3389/fpos.2024.1441393>
- Pallegedara, A., Sisira Kumara, A., Jayasena, D. M., & Soysa, R. N. K. (2024). Can interventions improve waste management by households? Lessons from a randomized experiment in Sri Lanka. *Waste Management Bulletin*, 2(1), 289–298. <https://doi.org/10.1016/j.wmb.2024.02.002>
- Pratiwi, A., Matous, P., & Martinus, K. (2022). Transmigration programs and migrant positions in rural community knowledge networks. *Journal of Rural Studies*, 95, 391–401. <https://doi.org/10.1016/j.jrurstud.2022.09.019>
- Quartey, E. K., Nyamah, E. Y., & Charnor, I. T. (2025). Waste management practices and environmental sustainability performance: Does institutional pressure matter? *Journal of Responsible Production and Consumption*, 2(1), 345–374. <https://doi.org/10.1108/JRPC-11-2024-0063>
- Soesilo, N. I., & Alfarizi, M. (2024). Psycho-social conditions of urban communities in the complexity of waste management: Are awareness and waste banks the main solution? *Socio-Economic Planning Sciences*, 93, 101834.

- <https://doi.org/10.1016/j.seps.2024.101834>
- Sударsono, F. I., Dwimawanti, I. H., & Fauziah, L. (2023). Transpolitan: Development strategy for the Pearl Transmigration Area. *Ganaya: Journal of Social and Humanities*, 6(4). <https://doi.org/10.37329/ganaya.v6i4.2512>
- Sudaryatno, S., Prasetya, A., Sulaiman, M., Sartika, H. W., Santoso, D. H., Bato, M., Hidayatunnisa, N. F., Maliga, I., & Kisananto, I. (2024). Community empowerment to improve education on waste management techniques in Dukuh Hamlet, Sinduharjo, Sleman, Indonesia. *Parikesit: Jurnal Pengabdian, Riset, Kreativitas, Inovasi, dan Teknologi Tepat Guna*, 2(2), 422–428. <https://doi.org/10.22146/parikesit.v2i2.14546>
- Suratman, Cahyandari, G. O. I., Budiani, S. R., & Aryati, S. (2024). Transmigration 4.0: Implementation of integrated functions and technology. *Journal of Theoretical and Applied Information Technology*, 31(2). https://prisma.simaster.ugm.ac.id/karya_files/transmigration-4-0--implementation-of-integrated-functions-and-technology-dcfcd07e645d245babe887e5e2daa016
- Taherdoost, H. (2016). Sampling methods in research methodology: How to choose a sampling technique for research. *International Journal of Academic Research in Management*, 5(2). <https://doi.org/10.2139/ssrn.3205035>
- Velvizhi, G., Shanthakumar, S., Das, B., Pugazhendhi, A., Priya, T. S., Ashok, B., Nanthagopal, K., Vignesh, R., & Karthick, C. (2020). Biodegradable and non-biodegradable fraction of municipal solid waste for multifaceted applications through a closed-loop integrated refinery platform: Paving a path towards circular economy. *Science of the Total Environment*, 731, 138049. <https://doi.org/10.1016/j.scitotenv.2020.138049>
- Villa-Achupallas, M., López, A., Díez-Montero, R., Esteban-García, A. L., & Lobo, A. (2024). Analysis of household waste production in Ecuador: Limitations for sustainable management in local communities. *Waste Management*, 190, 531–537. <https://doi.org/10.1016/j.wasman.2024.10.016>
- Widiyanto, A. F., Suratman, & Wijayanti, S. P. M. (2023). Waste handling model based on local wisdom systems in Indonesia. *Journal of Public Health in Africa*. 14 (12), <https://doi.org/10.4081/jphia.2023.2590>

Biographies of Author

Risya Putri Pertiwi, Department of Environmental Science, Universitas Indonesia, Jakarta, 10430, Indonesia.

- E-mail: risya.putri@ui.ac.id
- ORCID: <https://orcid.org/0009-0000-6336-9006>
- Web of Science ResearcherID: N/A
- Scopus Author ID: N/A
- Homepage: N/A