



Research Article

Community Waste Sorting Governance from the Perspective of Multi-party Governance: A Case Study of X District, L City

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Abstract

The management of community waste is a key challenge facing ecological civilization construction and urban sustainable development, its complexity and public nature requiring collaborative governance among multiple stakeholders. The article conducts a systematic analysis of the current waste sorting governance status in X District of L City, combining the theory of multi-stakeholder governance. This article uses method of induction, questionnaire survey, field research, and other methods to conduct a comprehensive assessment of the current state of urban waste management in X District. The main investigation directions are: the various measures currently used for waste management in X District, the actual level of residents' acceptance and compliance, and the shortcomings of the waste management model at the practical level. Research results indicate that X District in L City has initially formed a waste sorting governance model characterized by "government leadership, business operations, and public participation," but there still exist shortcomings, such as inadequate waste sorting supervision and untimely maintenance of waste collection facilities, which require greater collaboration among all governance entities: Government should further ensure the implementability of policies and improve the professional competence of relevant personnel, proposing incentive mechanisms for enterprises and community entities. Government must guide these entities to participate in governance voluntarily and in an orderly manner, thereby helping the local waste classification governance advance to a new stage.

Keywords

Multi-stakeholder Governance, Community Waste Sorting Governance, Environmental Protection

1. Introduction

With the ongoing development of our society and economy and the significant improvement in urbanization levels, cities are facing an increasing garbage volume, which contradicts the citizens pursuit of a healthier lifestyle and living environment. Such contradictions require the government to uphold

the principles of sustainable development theory to coordinate various entities in urban management to classify and manage community waste. The Ministry of Housing and Urban-Rural Development of China and other relevant departments have issued a notice requiring the comprehensive implementation

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of domestic waste classification in cities at the prefecture level and above. The notice emphasizes the need to "accelerate the establishment of a domestic waste classification system based on the rule of law, government promotion, public participation, urban-rural coordination, and local adaptation. It calls for speeding up the establishment of a domestic waste management system that includes classified disposal, collection, transportation, and treatment, striving to improve the coverage of domestic waste classification, and making domestic waste classification an important part of the 'Jointly Build a Beautiful Environment and Happy Life' initiative." But currently, China's various cities have not yet formed a comprehensive, standardized waste classification governance system. This not only requires establishing nationwide, standardized reference standards for waste classification governance, but also formulating local differentiated policies that align with the development of each region and the awareness of its residents.

Community waste classification governance plays a significant role in China's urban environmental protection. Achieving effective waste classification governance not only greatly optimizes residents' living conditions but is also an important component of the sustainable development strategy. Currently, X district of L City has introduced a series of incentive measures for waste sorting and launched promotional campaigns: introducing new equipment and point redemption systems to encourage residents' participation in waste sorting and management; government departments have signed contracts with multiple qualified waste disposal companies, and each company treats the collected waste to ensure harmless disposal. By studying the current policies and conditions in the area, it is also possible to better integrate theory and practice. Through researching the current situation and problems of a region and combining relevant theories of waste classification and management, more practical and effective policies, regulations, and governance plans can be formulated.

2. Literature Review

In recent years, scholars' attitudes toward community waste classification governance have gradually shifted from the perspective of a mandatory classification model to support administrative mobilization and multi-stakeholder governance. Academics believe that various stakeholders in community waste sorting should participate collaboratively to establish coordinated development. Liu Hongwei and Zhang Qi (2024) [1] argue that the management of domestic waste is no longer an obligation undertaken by the government under a single dimension, but rather an obligation of domestic waste generators under a multi-dimensional perspective. The key to maintaining the effective operation of domestic waste management lies in reducing the implementation costs for waste generators. Liu Jianguo (2023) [2] emphasized the importance of multi-stakeholder governance, believing that waste sorting has a long chain, many links, a broad scope, strong system characteristics, and involves numerous stakeholders. Stakeholders

such as the government, enterprises, individuals, and social organizations must strictly fulfill their respective legal responsibilities for waste sorting, achieves "social collaboration and diverse co-governance." Yang Hongshan (2021) [7] believes that waste classification management involves four main entities: jurisdiction, departments, units, and communities, and it is necessary to find appropriate leverage to effectively stimulate the enthusiasm of all parties. However, there are still some shortcomings in the current waste sorting policy in China: Gu Limei and Li Huanhuan (2021) [3] argue that existing literature has overlooked the process of participatory governance, with few studies characterizing the actors and their action strategies in participatory governance; secondly, it overlooks the trigger mechanisms influencing actor participation in participatory governance. They believe that domestic research still needs further detailed supplementation.

Edmore Shamu et al. (2025) [4] focus on community participation in community work management, using waste management as an example, and believe that the integration of private enterprise, resident participation, government guidance, and community participation is of great significance for the governance model of waste sorting and recycling. Muhammad Farid Ma'ruf (2025) [5] and others conducted formative design, in-depth interviews, field observations, and literature analysis on the Bintang Mangrove Waste Bank (BMWB) in Surabaya, Indonesia, and concluded that a waste management system operating at the decision-making center, which integrates environmental bureau regulatory promotion, financial and capacity support from corporate social responsibility programs, and community-led recycling practices, demonstrates enhanced coordination, strengthened incentive mechanisms, and deeper community management authority. Agnieszka and Ciechelska (2023) [6] use the example of the developed country of Poland to argue that municipal waste management systems in developed countries, operating as multi-center systems, can exhibit higher adaptability and lower environmental risks. Through case studies from different countries, we can all recognize that multi-party governance is more efficient and better coordinated than governance by a single entity.

3. Current Status of Community Waste Sorting Governance in X District, L City

In 2020, L City formulated the "Implementation Plan for L City's Urban Household Waste Sorting Work" based on the notice and implementation plan for the classification of urban household waste issued by relevant departments of the Ministry of Housing and Urban-Rural Development and the Department of Housing and Urban-Rural Development of Province S, considering the actual conditions of L City. Then X District publicly released the "Implementation Plan for Urban Living Waste Classification Work in X District" in June of the same

year, which is based on four core working principles of "Government promotion, public participation; Planning guidance, systematic advancement; Pilot first, gradual progress; Collaborative advancement, effective connection," aims to help the area improve its urban environmental standards.

3.1. The Four-category System for Household Waste and the Nine-category System for Decoration and Construction Waste

In accordance with the four-category classification system for household waste in X district of L City, units and individuals generating household waste are required to classify it into four categories: hazardous waste, recyclables, kitchen waste, and other waste. The district emphasizes that the classification system not only involves disposal but also collection, transportation, and treatment, ensuring a comprehensive and meticulous guarantee of the entire waste classification and management chain. The Comprehensive Administrative Law Enforcement Bureau and other relevant bureaus in X district have improved the awareness and proactiveness of community residents regarding household waste classification by setting up intelligent waste classification bins and classification sheds within the community and introducing waste classification points and an credit exchange system.

Community waste management should extend beyond household refuse. In X District, efforts also focus on decoration and construction waste, which is sorted into nine subcategories according to the nine-category system: waste cardboard boxes, metals, waste wood planks, plastics, concrete blocks, lightweight bricks and stones, waste insulation materials, waste plaster, and other items. Homeowners or construction companies are required to sort their decoration and construction waste, pack them into different colored woven bags, and then dispose of them at the designated decoration waste recycling station. A "four-in-one" community decoration and construction waste sorting work pattern has been formed, featuring government leadership, resident self-governance, neighborhood committee coordination, and property participation. It helps achieve diversified co-governance in waste sorting.

3.2. The Awareness of Community Residents Regarding Waste Sorting Is Initially Forming

Nowadays, most community residents support the waste sorting model and have developed a certain level of awareness about waste sorting. However, there is a gap between residents' awareness and their actual actions. According to our questionnaire survey and field research, residents of X District have maintained a positive response toward waste sorting and management efforts, expecting the district to achieve better performance in these areas. However, there is a significant gap between residents' actual behavior and the positive response

they exhibit: Although some residents say they can sort their waste, they actually only perform basic sorting and cannot accurately classify the waste according to the standards. Secondly, some residents still have a weak awareness of waste sorting; although they hope the system will continue, they have not truly put it into practice, and their habit of not sorting waste is difficult to change in the short term.

3.3. Gradually Build a Diversified Collaborative Waste Management

Through market competition, District X has contracted several qualified waste disposal enterprises to operate specialized projects, focusing on the harmless treatment and reuse of waste. From 2021, X District regulated that household waste treatment is authorized to an Energy Company for transportation. Recyclable household waste is sorted again by the company for resource utilization, while kitchen waste is transported by professional vehicles to a kitchen waste treatment plant for specialized processing. Hazardous waste is collected, treated, and made harmless by enterprises designated by the environmental protection department, and other waste is incinerated by waste incineration plants. Meanwhile, the district's urban management bureau, in conjunction with a franchised construction waste management company, has constructed intelligent decoration and construction waste collection bins to collect waste at the source, with substandard waste not being recycled.

4. Problems in Community Waste Sorting and Management in X District, L City

4.1. The Practice Level of Community Residents' Waste Sorting Is Still Relatively Low

The main behavioral subject of community waste sorting lies in the practice of community residents, but residents have already formed fixed habits of waste disposal and sorting over the years, making it difficult to change their behavior in a short period. Although most residents approve of waste sorting systems, the number of residents who actually dispose of waste according to waste sorting methods is much less than the number of residents who support sorting waste, indicating a problem of "knowing but not doing". Although the X district has a strong public understanding of waste sorting, residents' own mixed waste disposal habits are difficult to change, and the government and community lack effective means to ensure the proper implementation of the waste sorting system. Therefore, the area needs to adopt more convenient sorting methods and implement various measures to ensure residents practice waste sorting and improve public awareness

and understanding of the waste sorting policy.

4.2. Inadequate Facilities at the Collection Place and Low Collection Frequency at Garbage Collection Stations

Based on the field survey, some communities have problems such as damaged trash bins, dilapidated recycling facilities, and poor cleanliness at collection points. Inadequate trash collection points cause a negative impact on trash sorting and disposal. Furthermore, some community residents are dissatisfied with the frequency of garbage collection and transportation, demanding more frequent cleaning to ensure the cleanliness of garbage disposal points. Additionally, due to financial constraints, some communities lack routine maintenance of their smart sorting equipment, resulting in reduced actual operational capacity. These hardware issues hinder the practical implementation of garbage sorting and disposal.

4.3. Constraints in the Centralized Collection and Supervision of Waste Sorting

During the field research, we found that some smart waste-sorting bins are struggling to distinguish the types of waste residents actually dispose of, such as packaged waste. However, supplementing this with manual supervision is also quite difficult.

Due to factors such as high population density in each community, inconsistent waste-disposal times among residents, and limited supervision personnel and quality due to insufficient community budgets, it is difficult to conduct collective waste collection and assign personnel for supervision. Finding an effective and practical management measure is extremely necessary.

4.4. Issues of Overlapping Responsibilities and Constraints on Development in Waste Sorting Governance Among Departments

Waste sorting and management are of paramount importance to urban development and community resident satisfaction in all cities, and it is also a crucial component of a sustainable development strategy. Currently, in X District, the urban management department, housing and construction department, towns and streets offices, communities, and property management companies all have their own responsibilities for waste sorting and management. However, problems such as overlapping responsibilities, low efficiency, and buck-passing exist, hindering the efficient operation of waste sorting and management in the area.

5. Materials and Methods

According to research, X District has a relatively good

foundation of public awareness regarding multi-stakeholder governance, with most residents expecting a multi-stakeholder governance model for community waste sorting and management involving government leadership, enterprise operation, and public participation. In practice, although the urban management department has established cooperative relationships with some qualified enterprises and has played a role in community governance to some extent, further cooperation with qualified enterprises is needed to attract more businesses to participate. Communities, property management companies, and social organizations should also participate efficiently and proactively in waste sorting and management. Simultaneously, it is crucial to better mobilize and supervise residents' behavior, using publicity and policy measures to raise residents' hygiene awareness, ultimately achieving the ideal state of residents' self-sorting of waste and conscious protection of public health.

5.1. Encourage Qualified Enterprises to Participate in Waste Sorting and Management

Due to its low-income and long-term operating cycle, the waste sorting and management industry only attracts a few private enterprises to invest or participate. However, relying solely on government investment and state-owned enterprise participation is far from sufficient. Currently, the main entities responsible for the operation and implementation of waste sorting in X District are still limited to government departments and state-owned enterprises. A few private enterprises only participate in community decoration and renovation waste sorting projects, and very few private enterprises participate in household waste sorting and treatment projects. It requires government departments to introduce incentive policies to encourage more qualified private enterprises to participate in public services and promote the improvement of management and technology levels of state-owned enterprises. This will create a win-win industrial chain where "government support, society benefits, and enterprises develop."

5.2. Improve and Refine Relevant Policies for Waste Sorting and Management

Relevant government departments, as policymakers, need to ensure that corresponding policies are practically applicable and that leadership methods and policies are scientific. Only scientific and implementable policies can improve the public's acceptance and effectiveness in implementing waste sorting and management. Government decision-making requires scientific justification, and policy piloting begins after evaluating the four major factors: environmental factors, target groups, implementing agencies, and idealized policies. Before further implementation, the feasibility of the policy is considered by assessing the effects of the pilot.

5.3. Enhance the Professional Quality of Staff

The implementation of waste sorting in X District is still relatively recent, currently in its initial promotion phase, and a comprehensive and precise system for the classification and management of community household and construction waste has not yet been established. The government needs to improve its supervision and management capabilities, clearly define the responsibilities of each government department, and gradually establish a clear and comprehensive supervision and management system to manage and supervise the implementation of policies. This is to avoid negative situations, such as overlapping management. So, the government should ensure clear job responsibilities and reasonable staffing. Regarding enforcement personnel, the professional competence of government policy implementers should be improved to ensure that staff in relevant departments can enforce regulations and policies in a standardized manner. Government departments should conduct regular training and annual assessments for staff, encourage implementation personnel, cultivate their sense of responsibility, and ensure that they have a sufficient understanding of the industry.

5.4. Enhance Residents' Awareness of Waste Sorting Governance Practices

Although the residents in this area have initially formed a solid grassroots foundation for waste sorting governance, there is still a lack of practical implementation in waste sorting and an insufficient understanding of related policies and regulations among the residents. To address this issue, relevant departments need to build on the current strong public foundation and adopt more effective promotional methods to enhance residents' awareness of waste sorting governance. For example, schools can be used as important promotional platforms, and the promotional strength can be strengthened through home-school collaboration. It is also necessary to leverage various media platforms as focal points and adopt practical measures for promotion.

5.5. Clarify the Relevant Responsibilities of Each Department for Waste Classification Governance

The key to resolving the inconveniences caused by overlapping responsibilities and improving the efficiency of waste sorting governance lies in the government's increased emphasis. It is necessary to clarify the specific responsibilities and work content of each department and bureau, and to hold accountable those units that perform inadequately. Secondly, we should establish recurring waste sorting governance meetings to strengthen inter-departmental collaboration. These meetings will serve as a platform to address current issues and coordinate upcoming work plans. Furthermore, to guarantee the implementation of these plans, weekly on-site inspections

should be carried out. This includes monitoring progress and urging all units to engage proactively, with the goal of enhancing operational efficiency.

6. Conclusion

As an important means of environmental protection and pollution control, waste sorting and management are conducive to the continued implementation of the sustainable development strategy, achieving the reduction of hazardous substances and promoting the development of a circular economy. This article uses systematic analysis and concludes that X District has already fostered a strong awareness of waste sorting among residents and has initially established a governance structure of "government leadership, enterprise operation, and public participation," promoting a multi-stakeholder approach. The article also identifies shortcomings such as low resident participation and low waste collection frequency, and proposes practical countermeasures. X District has achieved some success, laying the foundation for further development of waste sorting and management. However, due to its late start and limitations in human and financial resources, it still needs to introduce advanced policies and technologies from well-performing districts in waste sorting and management to form a comprehensive multi-stakeholder governance system.

Author Contributions

Ruitong Liu: Writing – original draft, Writing – review & editing

Ningning Wei: Data curation, Methodology

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Hongwei Liu, Qi Zhang. On the Obligations of Waste Producers to Be Fulfilled: Challenges and Solutions [J]. *Management and Administration*, 2024, (03): 108-113. <https://doi.org/10.16517/j.cnki.cn12-1034/f.2024.03.005>
- [2] Jianguo L. Waste Sorting: Realizing the Chinese Modernization in Systematic Promotion and Pluralistic Co-governance Ways [J]. *Urban Management and Technology*, 2023, 24(02): 10-13. <https://doi.org/10.16242/j.cnki.umst.2023.02.003>
- [3] Limei G, Huanhuan L, Affairs P & R I O S, et al. Administrative Mobilization and Multiple Participation: The Way to Realize Participatory Governance of Garbage Classification-Based on Shanghai's Practice [J]. *Journal of Public Management*, 2021, 18(02): 83-94+170. <https://doi.org/10.16149/j.cnki.23-1523.2021.02.005>

- [4] Edmore Shamu, Thabang Maphanga, Boredi S Chidi, Patience Mbola, Babalwa Gqomfa, Xolisiwe Sinalo Grangxabe, Karabo Concelia Malakane, Bennett Siyabonga Madonsela, and Terry Takalani Phungela. "The Impact of Fostering Public Participation in Improving Waste Quality in a Comprehensive Solid Waste Management System." *International Journal of Global Environmental Issues* (Geneva) 24, no. 5 (2025): 1–16.
<https://doi.org/10.1504/IJGENVI.2025.146568>
- [5] "Polycentric Collaborative Governance and Circular Economy in Urban Waste Systems: Public Value Co-Creation Through CSR–Community Partnerships in Surabaya, Indonesia". 2025. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*9(3): 408-21.
<https://doi.org/10.36574/jpp.v9i3.781>
- [6] Ciechelska, Agnieszka, Marta Kusterka-Jefmańska, and Sabina Zaremba-Warnke. 2023. "Municipal Waste Management As a Polycentric System –the Example of Poland". *Economics and Environment* 83(4): 76-90.
<https://doi.org/10.34659/eis.2022.83.4.541>
- [7] Hongshan Y. Innovating Working Mechanism to Improve the Sustainability of Waste Sorting [J]. *Urban Management and Science & Technology*, 2021, 22(01): 23-24.
<https://doi.org/10.16242/j.cnki.umst.2021.01.008>

Biography



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Research Field

Ruitong Liu: Public Management, Public Policy, Urban-rural Integration, Urban Management

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