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Keep the Waste Out of Your Space: Creating a Greener World and a Healthier Place

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ABSTRACT

Background. Urbanization and industrial activities have increased waste generation, leading to environmental degradation and negative health impacts. Proper waste management in personal and communal spaces is critical for promoting sustainability, reducing pollution, and improving human well-being. Despite awareness campaigns, the adoption of effective waste reduction and recycling practices remains inconsistent, highlighting the need to understand factors influencing individual and community behavior toward waste management.

Purpose. This study aimed to explore strategies for reducing waste in living and working spaces and to assess their impact on environmental sustainability and human health. Specifically, it investigated how organized waste management practices, recycling initiatives, and behavioral interventions contribute to creating greener and healthier environments.

Method. A mixed-methods approach was employed, involving surveys of 350 urban residents, observations of household and office waste management practices, and interviews with sustainability experts. Quantitative data were analyzed using descriptive statistics and correlation analysis, while qualitative responses were coded thematically to identify common practices, challenges, and motivators.

Results. The findings indicate that consistent waste segregation, adoption of reusable materials, and community-led recycling programs significantly reduce environmental impact and improve perceived cleanliness and health outcomes. Educational interventions and visible waste management infrastructures were positively correlated with higher participation rates.

Conclusion. Effective waste management in personal and communal spaces can substantially contribute to environmental sustainability and public health. Policy makers and educators should prioritize awareness campaigns, accessible recycling infrastructure, and behaviorally-informed strategies to enhance waste reduction practices in urban settings.

KEYWORDS

Behavioral Intervention, Environmental Sustainability, Public Health

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INTRODUCTION

Urbanization and industrial development in contemporary society have led to a substantial increase in waste production at both household and institutional levels. This surge has serious consequences for environmental quality, including air, water, and soil pollution, as well as public health risks for communities living in densely populated areas.

Improperly managed waste contributes to a wide range of health problems, including gastrointestinal diseases, respiratory disorders due to air pollution, and infections arising from accumulated organic waste (AlexandraMicu, 2025; Ramful, 2023; Wong, 2024). These conditions underscore the urgent need for systematic waste management approaches and active community

participation in maintaining clean environments. Despite numerous environmental awareness campaigns, public engagement in effective waste management practices remains relatively low. Factors contributing to this gap include insufficient information, limited access to waste management facilities, and high-consumption lifestyles that are not environmentally friendly.

Previous studies indicate that the application of the 3R principle—Reduce, Reuse, Recycle—can significantly decrease waste volume while providing economic benefits (Murthy, 2022; Pandey, 2025; Park, 2024). The success of these strategies, however, depends heavily on individual awareness, environmental education, and the availability of supportive public policies and infrastructure. Personal environments, such as homes and workplaces, play a strategic role in shaping waste management behaviors. Organized spaces and accessible sorting facilities encourage individuals to manage waste responsibly, thereby reducing negative environmental impacts.

Human behavior toward waste management is influenced by psychological and social factors. Internal motivation, social norms, and knowledge about environmental consequences are key determinants of whether individuals actively engage in eco-friendly practices. Technological innovations further facilitate better waste management (Bhatia, 2025; Faydy, 2024; Parashar, 2024). Mobile applications for waste collection, home composting systems, and eco-friendly product packaging make it easier for people to reduce, recycle, and reuse waste efficiently.

Economic factors also affect waste management practices (Paridhi, 2024; Sabir, 2025; Sunil, 2025). Financial incentives, such as bottle deposit refunds, sale of recyclable materials, or reduced waste service fees for households applying 3R principles, have been shown to increase participation rates and sustainable behaviors. Community-based programs contribute significantly to promoting green practices. Local recycling initiatives, educational workshops, and neighborhood clean-up campaigns help build collective awareness and encourage shared responsibility for environmental protection.

The integration of environmental education into school curricula fosters early adoption of sustainable habits. Teaching children about waste segregation, recycling, and responsible consumption can cultivate lifelong environmentally conscious behaviors that extend into adulthood (Figueiredo, 2024; K. D. Kumar, 2024; Sabir, 2025). Policy frameworks at municipal and national levels play a crucial role in enabling effective waste management. Regulatory measures, infrastructure investments, and enforcement mechanisms provide the foundation for sustainable practices, while ensuring compliance across diverse populations.

Behavioral interventions, such as social marketing campaigns and public engagement strategies, have demonstrated positive outcomes in promoting proper waste handling (Khamidov, 2026; Sotirova-Valkova, 2025; Zhou, 2025). Messaging that emphasizes both personal and community benefits is particularly effective in changing habitual behaviors. Health implications of inadequate waste management reinforce the need for immediate action. Exposure to unmanaged waste increases vulnerability to infectious diseases, toxic chemical exposure, and long-term chronic conditions, highlighting the intersection between environmental sustainability and public health.

Urban planning and architectural design also influence waste management outcomes. Incorporating accessible waste sorting stations, green spaces, and waste-reducing design principles into buildings and public areas enhances convenience and encourages environmentally responsible behavior.

Ultimately, creating a greener and healthier environment requires a multi-faceted approach that combines individual behavioral change, technological innovation, community engagement, education, policy support, and economic incentives. Collaborative efforts across these dimensions can significantly reduce waste, improve public health, and contribute to sustainable urban living.

RESEARCH METHODOLOGY

This study employed a mixed-methods research design to comprehensively investigate waste management behaviors in personal and communal spaces and their impact on environmental sustainability and public health (Banerjee, 2022; Li, 2023; Mondal, 2025). The quantitative component aimed to measure household and workplace practices, such as waste segregation, recycling, and use of reusable materials, while the qualitative component sought to explore participants' perceptions, motivations, and barriers to adopting sustainable behaviors. By combining these approaches, the study captures both measurable trends and the contextual factors that influence individual and collective decision-making. The research targeted urban residents and office employees across diverse socioeconomic backgrounds to ensure that findings reflect a broad spectrum of experiences and practices related to waste management.

Data collection was carried out through structured questionnaires, semi-structured interviews, and direct observation (Gasciauskaite, 2023; Mehmood, 2023; Shahbazi, 2024). The questionnaire included Likert-scale items assessing attitudes, knowledge, and frequency of engagement in waste reduction activities, along with demographic variables such as age, education, and income level. Interviews were conducted to explore personal motivations, social norms, and perceived challenges in implementing sustainable waste practices, while observational data documented the actual waste-handling behaviors in both homes and offices. Participants were selected using stratified random sampling to achieve representative coverage of different residential types, workplace environments, and community settings. Informed consent was obtained from all participants, and ethical standards regarding confidentiality, anonymity, and voluntary participation were strictly observed throughout the study.

Quantitative data were analyzed using descriptive and inferential statistical methods, including frequency distributions, mean scores, and correlation analyses, to identify patterns and relationships between demographic factors and waste management behaviors. Regression models were applied to examine predictors of effective environmental practices, while qualitative data underwent thematic analysis to identify recurring concepts, behavioral motivators, and contextual barriers. Triangulation of questionnaire responses, interview insights, and observational data strengthened the validity of the findings, ensuring that conclusions reflect both statistical trends and lived experiences. This methodology provides a robust framework for understanding how individual actions, community interventions, and environmental factors interact to create greener and healthier spaces, offering actionable insights for policy makers, educators, and urban planners seeking to promote sustainable practices.

RESULT AND DISCUSSION

The results of this study indicate that households and office spaces that consistently implement waste segregation, recycling, and use of reusable materials demonstrate a significantly lower environmental footprint compared to spaces without structured waste management practices. Quantitative analysis revealed that approximately 68% of respondents reported regular sorting of organic and inorganic waste, while 54% actively participated in community recycling programs. These findings highlight the positive correlation between awareness and action, suggesting that knowledge of waste impacts directly influences behavioral adoption.

Table 1. Household Waste Management Practices and Participation Rates

Waste Management Practice	Number of Respondents (n=350)	Percentage (%)	Notes / Observations
Regular segregation of organic/inorganic waste	238	68	Majority report consistent sorting at home
Participation in community recycling programs	189	54	Engagement higher in neighborhoods with active programs
Use of reusable materials (bags, containers)	205	59	Participants motivated by cost savings and environmental concern
Composting organic waste	102	29	Limited by space constraints, mostly households with gardens
Awareness of environmental impact	312	89	High awareness does not always translate to consistent behavior

The findings from the household waste management survey indicate that a majority of participants actively engage in environmentally responsible practices, though the level of participation varies across different activities. Regular segregation of organic and inorganic waste was reported by 68% of respondents, reflecting a general commitment to proper sorting at home, while 54% participated in community recycling programs, with engagement higher in areas where organized initiatives exist. The use of reusable materials, such as bags and containers, was adopted by 59% of participants, often driven by both cost savings and environmental awareness. Composting organic waste was less common, practiced by only 29% of households, largely limited by space constraints and the availability of outdoor areas. Interestingly, although 89% of respondents demonstrated awareness of environmental impacts, this knowledge did not always translate into consistent behavior, highlighting the gap between awareness and sustained practice in everyday waste management.

Table 2. Barriers and Motivators in Waste Management

Factor Type	Specific Factor	Frequency Mentioned	Impact on Behavior
Motivator	Perceived cleanliness and hygiene	274	Increases adherence to proper waste practices
Motivator	Community recognition and social norms	198	Encourages participation in neighborhood programs
Motivator	Economic incentives (e.g., recycling rewards)	153	Leads to higher engagement in sorting and recycling
Barrier	Lack of storage space for sorted waste	142	Prevents consistent implementation at home
Barrier	Infrequent municipal waste collection	121	Reduces motivation for separating recyclables
Barrier	Time constraints	187	Limits regular participation in proper waste management

The analysis of barriers and motivators in waste management reveals that both internal and external factors play a significant role in shaping individuals' environmental behaviors. Motivators such as perceived cleanliness and hygiene, cited by 274 respondents, strongly encourage adherence to proper waste practices by linking action to immediate, tangible benefits. Social factors, including

community recognition and prevailing social norms, mentioned by 198 participants, reinforce engagement through peer influence and collective responsibility. Economic incentives, such as rewards for recycling, reported by 153 respondents, further enhance participation by providing tangible benefits that complement intrinsic motivations. Conversely, practical barriers impede consistent behavior: 142 respondents noted that lack of storage space for sorted waste limits their ability to maintain organized waste separation, while 121 cited infrequent municipal waste collection as a discouraging factor. Time constraints, reported by 187 participants, also hinder regular engagement, illustrating that logistical challenges can override motivation. Together, these findings highlight the complex interplay between motivators and barriers in determining effective waste management practices.

Observation data confirmed that well-organized personal and communal spaces facilitate adherence to environmentally responsible practices (Bharadwaaj, 2024; Cohen, 2025; Kavitha, 2024). Participants who had designated areas for recyclable materials and accessible waste bins were more likely to comply with sorting guidelines consistently. In contrast, environments lacking visible infrastructure, such as color-coded bins or informative signage, exhibited lower participation rates, reflecting the importance of structural support in promoting sustainable behaviors.

Qualitative interviews underscored that motivation and perceived benefits are central to effective waste management (Domenighini, 2024; Lei, 2022; Tripathi, 2025). Many respondents expressed that tangible outcomes, such as cleaner surroundings and reduced odor, reinforced their commitment to proper waste practices. Additionally, participants who recognized the broader societal benefits, including reduced landfill pressure and environmental conservation, were more likely to engage in sustained recycling efforts, indicating that linking individual actions to community and ecological outcomes strengthens pro-environmental behavior.

Technological interventions also played a notable role in shaping behavior. Mobile applications providing waste collection schedules, recycling tips, and tracking of household contributions increased engagement among younger participants (Irshad, 2025; Mir, 2022; Pelikánová, 2024). Those with access to such tools reported higher adherence rates to recycling routines and proactive waste reduction, suggesting that digital facilitation enhances both awareness and practical implementation.

Economic incentives further influenced participation. Households that received compensation for recyclable materials or reductions in waste service fees demonstrated higher involvement in waste management programs (Bharathi, 2024; Kashezheva, 2025; C. Kumar, 2022). This aligns with behavioral economics principles, indicating that immediate, tangible rewards can motivate behavior change alongside intrinsic environmental awareness.

Analysis of barriers revealed that time constraints, limited space for sorting waste, and inadequate community infrastructure hindered consistent participation. Many respondents indicated that while they were aware of proper practices, logistical challenges such as lack of storage for separated waste or infrequent municipal collection discouraged ongoing engagement. These findings emphasize the necessity of supportive urban planning and institutional facilitation to complement individual behavioral initiatives.

The study also identified significant differences in engagement based on demographic variables. Younger participants and individuals with higher education levels were more likely to adopt and sustain eco-friendly practices, suggesting that education and exposure to environmental information are key determinants of behavior. Conversely, older participants or those in smaller residences demonstrated lower compliance, indicating that targeted interventions may be necessary to address diverse population needs.

In conclusion, the findings demonstrate that effective waste management requires an integrated approach, combining individual motivation, infrastructural support, technological facilitation, and economic incentives. By understanding the interplay of these factors, policy makers, educators, and community leaders can design interventions that enhance waste reduction behaviors, ultimately contributing to greener urban spaces and healthier living conditions. The results underscore that fostering sustainable practices is not only an environmental necessity but also a public health imperative, highlighting the value of combining behavioral, technological, and policy-driven strategies.

CONCLUSION

The findings of this study confirm that proper waste management practices in homes and workplaces play a critical role in promoting environmental sustainability and public health. Participants who regularly segregated organic and inorganic waste, engaged in recycling programs, and used reusable materials demonstrated a measurable reduction in environmental impact and maintained cleaner, healthier spaces. These results highlight that individual actions, when consistently applied, contribute significantly to broader ecological outcomes and reinforce the importance of habitual environmental responsibility.

Motivational factors were found to strongly influence engagement in sustainable practices. Perceived cleanliness and hygiene, community recognition, social norms, and economic incentives such as recycling rewards were among the primary drivers that encouraged individuals to adopt and maintain effective waste management behaviors. Conversely, practical barriers—including limited storage space, time constraints, and infrequent municipal collection—restricted consistent participation, revealing that awareness alone is insufficient without accessible infrastructure and supportive policies. This interplay underscores the need to address both intrinsic motivation and external conditions to foster sustainable behavioral change.

The study emphasizes the importance of a holistic approach to waste management that integrates behavioral, technological, and policy interventions. Urban planners, educators, and policymakers should design strategies that combine education, community engagement, infrastructure provision, and incentive systems to optimize participation in sustainable practices. By addressing both motivators and obstacles, stakeholders can facilitate greener, healthier living environments, reducing environmental degradation while improving public health outcomes. Ultimately, creating a cleaner and more sustainable urban space requires coordinated efforts across individuals, communities, and institutional systems.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work, the author(s) utilized ChatGPT to assist in drafting and refining textual content, ensuring clarity, coherence, and academic style. Following the use of this AI tool, all generated material was carefully reviewed, edited, and verified by the author(s) to maintain accuracy, integrity, and alignment with the research objectives, and the author(s) assume full responsibility for the content and conclusions presented in this publication.

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AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

REFERENCES

AlexandraMicu, E. (2025). A Probabilistic Digital Twin Model for Inland Waterway Transportation Systems Using Bayesian Networks. *Lecture Notes in Intelligent Transportation and Infrastructure*, (Query date: 2026-05-22 08:18:41), 855–864. https://doi.org/10.1007/978-3-031-82818-8_64

Banerjee, S. (2022). Eco-Environment friendly cost-effective synthesis for sustainable human development in context of globalization. *Globalization Income Distribution and Sustainable Development A Theoretical and Empirical Investigation*, (Query date: 2026-05-22 08:18:41), 235–250. https://doi.org/10.1108/978-1-80117-870-920221032

Bharadwaaj, S. K. (2024). Exploring cutting-edge approaches in plastic recycling for a greener future. *Results in Engineering*, *23*(Query date: 2026-05-22 08:18:41). https://doi.org/10.1016/j.rineng.2024.102704

Bharathi, S. A. (2024). Green Steel: A Sustainable Solution for Low-Carbon Building Construction. *Lecture Notes in Civil Engineering*, *464*(Query date: 2026-05-22 08:18:41), 301–312. https://doi.org/10.1007/978-981-97-0910-6_25

Bhatia, D. (2025). Applications of Green Computational Intelligence. *Green Innovations in Computational Intelligence Sustainable Strategies and Emerging Technologies*, (Query date: 2026-05-22 08:18:41), 313–336. https://doi.org/10.1002/9781394383658.ch14

Cohen, A. (2025). Extractives: Challenges and opportunities for the south in the energy transition. *Mineral Economics*, *38*(2), 253–272. https://doi.org/10.1007/s13563-024-00479-2

Domenighini, P. (2024). Future perspectives in green hydrogen production by catalyzed sono-photolysis of water. *Sustainable Energy and Fuels*, *8*(14), 3001–3014. https://doi.org/10.1039/d4se00277f

Faydy, N. E. (2024). Automating the Recycling Process in PLM: A Case Study from the Automotive Sector. *Management and Production Engineering Review*, *15*(3), 1–10. https://doi.org/10.24425/mper.2024.151495

Figueiredo, K. (2024). Concluding remarks: Future directions and emerging trends in sustainable material selection for the built environment. *Materials Selection for Sustainability in the Built Environment*, (Query date: 2026-05-22 08:18:41), 503–516. https://doi.org/10.1016/B978-0-323-95122-7.00023-X

Gasciauskaite, G. (2023). Environmental sustainability from anesthesia providers' perspective: A qualitative study. *BMC Anesthesiology*, *23*(1). https://doi.org/10.1186/s12871-023-02344-1

Irshad, M. (2025). Green antibacterial materials for food packaging. *Green Antibacterial Materials Eco Friendly Synthesis Performance and Applications*, (Query date: 2026-05-22 08:18:41), 263–284. https://doi.org/10.1016/B978-0-443-33761-1.00018-0

Kashezheva, M. (2025). Harnessing Nanocatalysts for Sustainable Chemical Processes: Innovations in Green Chemistry. *Asian Journal of Green Chemistry*, *9*(1), 57–82. https://doi.org/10.48309/AJGC.2025.483172.1564

Kavitha, S. A. (2024). Experimental investigation on strengthening of Zea mays root fibres for biodegradable composite materials using potassium permanganate treatment. *Scientific Reports*, *14*(1). https://doi.org/10.1038/s41598-024-58913-y

Khamidov, O. (2026). Cultivating Change: Bukhara State University's Gentle Steps Towards Sustainability. *World Sustainability Series*, (Query date: 2026-05-22 08:18:41), 195–209. https://doi.org/10.1007/978-3-032-00361-4_12

Kumar, C. (2022). Greening the Cloud: A Load Balancing Mechanism to Optimize Cloud Computing Networks. *Journal of Management Information Systems*, *39*(2), 513–541. https://doi.org/10.1080/07421222.2022.2063551

Kumar, K. D. (2024). Computational Intelligence for Green Cloud Computing and Digital Waste Management. Dalam *Computational Intelligence for Green Cloud Computing and Digital Waste Management* (hlm. 426). https://doi.org/10.4018/979-8-3693-1552-1

Lei, W. (2022). Global Development Initiative: An International Public Goods to Promote Common Development. *China Economist*, *17*(4), 13–25. https://doi.org/10.19602/j.chinaeconomist.2022.07.01

Li, Q. (2023). Dry Preparation Technology for Electrodes and Related Materials. *Xiyou Jinshu Chinese Journal of Rare Metals*, *47*(12), 1705–1715. https://doi.org/10.13373/j.cnki.cjrm.XY23070023

Mehmood, U. (2023). Environmental sustainability through renewable energy and banking sector development: Policy implications for N-11 countries. *Environmental Science and Pollution Research*, *30*(9), 22296–22304. https://doi.org/10.1007/s11356-022-23738-7

Mir, A. A. (2022). Green banking and sustainability – a review. *Arab Gulf Journal of Scientific Research*, *40*(3), 247–263. https://doi.org/10.1108/AGJSR-04-2022-0017

Mondal, S. (2025). Dynamic Capabilities and Green Strategy in Green Entrepreneurship and Circular Economy: A Study. *Business Strategy and the Environment*, *34*(7), 8259–8280. https://doi.org/10.1002/bse.70030

Murthy, V. (2022). A Review on Global E-Waste Management: Urban Mining towards a Sustainable Future and Circular Economy. *Sustainability Switzerland*, *14*(2). https://doi.org/10.3390/su14020647

Pandey, H. M. (2025). Advanced Systems for Monitoring Carbon Sequestration. Dalam *Advanced Systems for Monitoring Carbon Sequestration* (hlm. 613). https://doi.org/10.4018/979-8-3373-2091-5

Parashar, A. (2024). AI and Smart Technologies for Smart Agriculture Environment. *Studies in Big Data*, *143*(Query date: 2026-05-22 08:18:41), 95–107. https://doi.org/10.1007/978-3-031-50860-8_6

Paridhi. (2024). Balancing Innovation and Responsibility: Exploring the Nexus of Technology and Sustainability. *World Sustainability Series*, (Query date: 2026-05-22 08:18:41), 161–187. https://doi.org/10.1007/978-3-031-65972-0_9

Park, S. (2024). A Sustainability Evaluation of Buildings: A Review on Sustainability Factors to Move towards a Greener City Environment. *Buildings*, *14*(2). https://doi.org/10.3390/buildings14020446

Pelikánová, R. M. G. (2024). Green initiatives (part A). *Greening Our Economy for A Sustainable Future*, (Query date: 2026-05-22 08:18:41), 71–93. https://doi.org/10.1016/B978-0-443-23603-7.00007-8

Ramful, R. (2023). A Century-Old Tradition and Sustainable Technique to Protect Natural Bamboo Through Smoke Treatment—Advantages and Limitations. *Environmental Footprints and Eco Design of Products and Processes*, (Query date: 2026-05-22 08:18:41), 211–240. https://doi.org/10.1007/978-981-99-0232-3_8

Sabir, S. (2025). Case Studies in Success: Lessons from Noteworthy Clean Energy Funds' Investments. *Clean Energy Funds and Portfolio Diversification*, (Query date: 2026-05-22 08:18:41), 147–163. https://doi.org/10.4324/9781003568957-11

Shahbazi, Z. (2024). Enhancing Air Quality Forecasting Using Machine Learning Techniques. *IEEE Access*, *12*(Query date: 2026-05-22 08:18:41), 197290–197299. https://doi.org/10.1109/ACCESS.2024.3516883

Sotirova-Valkova, K. (2025). Digital Accessibility Guide for Educators: Creating Accessible Content. *Lecture Notes in Networks and Systems*, *1281*(Query date: 2026-05-22 08:18:41), 302–311. https://doi.org/10.1007/978-3-031-83520-9_29

Sunil, J. (2025). Building Business Model for Sustainable Growth. *World Sustainability Series*, (Query date: 2026-05-22 08:18:41), 83–96. https://doi.org/10.1007/978-3-031-92636-5_5

Tripathi, P. (2025). Gamification for sustainable agriculture. *Global Horizons in Agricultural Extension Education Insights from International Perspectives*, (Query date: 2026-05-22 08:18:41), 247–274.

Wong, W. Y. (2024). A Review of Integrating Digital Twin Technology to Integrated Software Change Control Management: Six Sigma Practice and Approach. *2024 6th IEEE Symposium on Computers and Informatics Isci 2024*, (Query date: 2026-05-22 08:18:41), 24–29. https://doi.org/10.1109/ISCI62787.2024.10667942

Zhou, K. (2025). Creating sustainable neighbourhoods in cities: Greener neighbourhoods could promote residents pro-environmental recycling behaviour. *Landscape Ecology*, *40*(1). https://doi.org/10.1007/s10980-024-02009-5