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Exploring Factors Influencing Community Participation in Responsible E-Waste Management: A Case Study of Ibadan Metropolis, Nigeria.

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Abstract

This study examines factors influencing community participation in e-waste management in Ibadan metropolis, Nigeria, amidst challenges such as urbanization, population growth, and rising demand for electronic goods. E-waste, a growing issue, presents significant health and environmental risks, particularly at the household and community levels. Using random sampling, 135 household members from selected areas of Ibadan participated in the study, with data collected through interviews, questionnaires, observations, and documentary reviews. The findings show that 92% of participants are willing to pay for e-waste management services, with females expressing a higher willingness. However, only 24% of participants were satisfied with current services. About 70% recognized the public health risks linked to improper e-waste disposal, yet 28% still believe that the government should take full responsibility for e-waste management. The study also revealed concerns about weak enforcement of e-waste regulations, with 41% of respondents identifying this issue and 88% criticizing the leniency of penalties for violations. Based on these findings, the study recommends that local government authorities strengthen the enforcement of existing e-waste regulations, increase funding for e-waste management, and improve public education on responsible disposal practices. It also calls for further research to develop a model for effective and coordinated e-waste management.

Keyword: E-waste management, Community participation, Ibadan metropolis, Public health risks, Enforcement, Regulations, Household.

INTRODUCTION

The global electronics sector has rapidly expanded to become the largest manufacturing industry worldwide, driven by continuous technological advancements (Hula *et al.*, 2003; Omoyajowo *et al.*, 2017). This growth has significantly increased the demand for consumer electronics and electrical products, leading to the accumulation of obsolete, discarded, broken, or abandoned devices that require proper disposal. Electronic waste (e-waste), also known as waste electrical and electronic equipment (WEEE), consists of products that are no longer in use and contain hazardous substances such as mercury, cadmium, lead, brominated flame retardants (BFRs), and polychlorinated biphenyls (PCBs) (Wath *et al.*, 2010; Omoyajowo *et al.*, 2017). These substances pose serious health risks, including neurotoxicity, kidney damage, and endocrine disruption when improperly managed. In Nigeria, substantial quantities of e-waste are imported illegally, contributing to environmental degradation and public health concerns due to inadequate disposal methods such as open burning and dumping in landfills (Nnorom *et al.*, 2009; Omoyajowo *et al.*, 2024a, b, c).

Poor e-waste management exacerbates these challenges, as many of the imported secondhand electronics, particularly in cities like Ibadan, are non-functional and end up as waste. Without stringent regulations or effective enforcement, informal and unsafe recycling practices persist, exposing communities to toxic chemicals. The lack of awareness and community participation further aggravates the issue, as improper disposal continues unchecked. While local governments bear the responsibility for managing household and institutional waste, hazardous waste from commercial and industrial sectors often lacks systematic oversight (Awunyo *et al.*, 2013). Additionally, weak institutional frameworks, corruption, and limited technical expertise hinder the implementation of proper waste management policies (Omoyajowo *et al.*, 2024a, b, c). Addressing these issues requires a shift towards responsible e-waste management through public education, policy enforcement, and improved infrastructure to minimize environmental and health risks.

Nigeria faces significant challenges in managing e-waste due to increasing imports, poor disposal methods, and limited public awareness (Nnorom & Osibanjo, 2005; Omoyajowo *et al.*, 2017). The informal sector plays a major role in handling e-waste, yet unsafe practices persist, leading to severe environmental consequences. Despite the government's responsibility, the burden of proper waste disposal should not rest solely on local authorities; rather, community engagement and participation are crucial for sustainable solutions. This study explores the willingness of households in Ibadan, Oyo State, to engage in responsible e-waste management by assessing their level of awareness, perception, and readiness to pay for structured waste management services. Specifically, this research aims to (i) assess public awareness of responsible e-waste management, (ii) evaluate public perception of e-waste disposal, (iii) determine the influence of socio-demographic and economic factors on community participation, and (iv) analyze attitudes and willingness to adopt responsible e-waste management practices. The findings will contribute to a better understanding of the socio-demographic and economic factors influencing community participation, providing insights for improving e-waste management policies and fostering environmental sustainability (Subash, 2002).

LITERATURE REVIEW

Effective e-waste management requires accurate identification and categorization of waste types. Townsend (2011) defines e-waste as equipment dependent on electric currents or electromagnetic fields, with voltage ratings not exceeding 1000V for AC and 1500V for DC, while Butu (2015) describes it as discarded electrical and electronic materials, ranging from simple to complex devices. Factors like population growth, economic expansion, technological advancements, and obsolescence accelerate the transformation of

electronic equipment into waste (Ahmad, 2010). In Nigeria, many imported electronics have exceeded their life cycle by the time they arrive, contributing to the growing e-waste burden (Nnorom and Osibanjo, 2008). E-waste includes hazardous and non-hazardous materials such as metals, plastics, circuit boards, and glass (Wang *et al*., 2011; Song *et al*., 2012), and improper disposal methods like open burning or landfilling exacerbate environmental and health risks. Sustainable e-waste management aims to reduce hazardous materials, promote reuse, and optimize resource recovery to minimize pollution (Chan *et al*., 2007). Household participation in e-waste management is influenced by government organization, implementation strategies, and community cultural aspects. The Theory of Planned Behavior (TPB) highlights attitude, subjective norms, and perceived behavioral control shape participation (Fishbein and Ajzen, 1975). In this context, behavioral beliefs (i.e., an individual's perception of the consequences of e-waste management), normative beliefs (i.e., societal expectations), and control beliefs (i.e., factors that facilitate or hinder participation) influence willingness to engage in responsible e-waste practices. Poor local government provisions, inadequate cultural perceptions, and weak enforcement hinder community involvement, but raising awareness about the benefits of proper e-waste management can improve participation.

Demographic and economic factors also significantly influence participation. Studies have shown that higher income levels and education correlate with increased willingness to pay for e-waste management (Awunyo *et al*., 2013). Gender differences are notable, as women often assume primary responsibility for household waste disposal, making them more inclined to support e-waste management services (Ehrampoush and Moghadam, 2005; Addai and Danso-Abbeam, 2014). However, older individuals may view e-waste management as a government responsibility, reducing their willingness to pay, while younger generations are more likely to participate in cost-sharing schemes (Awunyo *et al*., 2013). Furthermore, inadequate waste disposal infrastructure leads many households to resort to open dumping, which impedes proper e-waste handling. Addressing these socio-economic and cultural factors is essential to improving community engagement and enhancing e-waste management initiatives.

MATERIALS AND METHODS

This study employed a structured questionnaire to assess community participation in e-waste management in Ibadan. The questionnaire included questions on awareness of government regulations, adherence to e-waste management practices, environmental concerns, disposal methods, and awareness of e-waste hazards. Data collection involved distributing 135 questionnaires to importers (11), scavengers (14), and householders (110) at Queen Cinema, a key hub for the electronics trade in Ibadan. Primary data were collected through hand-distributed questionnaires, while secondary data were obtained from published and unpublished materials.

The study was conducted in Ibadan Metropolis, Oyo State, Nigeria, specifically targeting Oluyole Local Government Council. Ibadan, the state capital, has a population exceeding six million and coordinates of 7°23′47″N 3°55′0″E. The selected wards-Orisunbare, Orita/Odo Ona-Elewe, and Ayegun-represent diverse socio-economic backgrounds. Based on the 2006 census, Oluyole Local Government had a population of 186,507, which has since grown to an estimated 202,725. The region experiences hot and humid weather with a dry spell from May to October and rainfall from November to April, with annual precipitation ranging from 800 to 1000 mm. The predominant ethnic groups include Yoruba, Hausa, and Igbo, with most residents engaged in small- and large-scale businesses.

A descriptive cross-sectional survey design was used to gather data efficiently within a specific timeframe. The study employed both qualitative and quantitative approaches for triangulation, ensuring a comprehensive understanding of community participation in e-waste management. Stratified random sampling was applied, categorizing respondents into low-, middle-, and high-income classes based on settlement areas. The sample selection was drawn from ward executive officers and street chairpersons' registers. Data were collected through questionnaires, interviews, and document reviews. Semi-structured interviews were conducted to capture participants' perspectives, while closed-ended questionnaires were used to quantify responses. A documentary review was carried out to analyze information from books, journals, and official reports related to e-waste management.

A pilot study was conducted in Mitwero ward with 20 households to test the research instruments. The findings confirmed the consistency of the questionnaires, though minor modifications were made to eliminate redundancy. To ensure validity and reliability, the dataset underwent cleaning and evaluation, with Cronbach's Alpha used to measure internal consistency of Likert scale questions.

Data analysis was performed using the Statistical Package for Social Sciences (SPSS, version 20), with responses coded, tabulated, and presented in tables and charts for interpretation. Quantitative data were summarized using frequencies, percentages, and cross-tabulations, while Microsoft Excel was employed for chart visualization. Qualitative data analysis involved content analysis to extract key themes from interviews and documentary reviews, aligning with Cohen *et al*. (2000). The integration of both quantitative and qualitative approaches provided a comprehensive assessment of community participation in e-waste management.

RESULTS AND DISCUSSIONS

The study involved 135 participants, predominantly male (62.2%) and mostly aged above 50 years (26.7%), with a significant proportion between 36-40 years (18.5%). The majority were married (68.2%) and had attained at least secondary education (57.8%), while a small fraction held a bachelor's degree or higher (4.4%). Most participants lived in households of 4-6 members (51.9%) and had resided in the area for over 20 years (57.8%), indicating deep community ties. Overall, the demographic profile reflects an experienced, moderately educated farming population with long-term local residency (Table 1).

Table 1: Demographic Characteristics of the Participants (N = 135)

Variable	Category	Frequency	Percentage
Gender	Male	84	62.2
	Female	51	37.8
Age Group (Years)	20 – 25	14	10.4
	26 – 30	19	14.1
	31 – 35	13	9.6
	36 – 40	25	18.5
	41 – 45	9	6.7
	45 – 50	19	14.1
	> 50	36	26.7
Marital Status	Single	25	18.5
	Married	92	68.2
	Divorced	8	5.9
	Separated	2	1.5
	Widower	8	5.9
Education Level	No formal education	10	7.4
	Primary education	32	23.7
	Secondary education	78	57.8
	Certificate	2	1.5
	Diploma	7	5.2
	Bachelor's degree and above	6	4.4
Family Size	1 – 3	37	27.4
	4 – 6	70	51.9
	7 – 9	22	16.3
	10 – 13	6	4.4
Duration of Stay in Area (Years)	≤ 3	16	11.9
	4 – 7	12	8.9
	8 – 11	9	6.7
	12 – 15	11	8.0
	16 – 20	9	6.7
	> 20	78	57.8

As shown in Table 2, most respondents in Oluyole Local Government demonstrated a moderate to strong understanding of E-waste management (72%), yet only 21% reported practicing household waste separation. The key barriers included lack of understanding (58%) and unawareness of the importance (32%). While 81% recognized that individuals contribute to E-waste generation, only 31% were aware of enterprises that collect it. Although 69% knew about existing E-waste regulations, 59% perceived enforcement as weak, and 78% noted that violators were not penalized. These findings highlight a significant knowledge-practice gap and weak institutional enforcement.

Table 2: Knowledge and Practice on Solid Waste Management in Oluyole Local Government (N = 135)

Variable	Category	Frequency	Percentage
Understanding of E-waste management	I understand very well	40	30
	I understand well	57	42
	I understand not well	29	21
	I do not understand	9	7
Household practices waste separation	Yes	28	21
	No	107	79
	I do not know	0	0
Reasons for not practicing waste separation	No understanding	78	58
	Not seen as responsibility	14	10
	Unaware of its importance	43	32
Awareness that E-waste generation is influenced by self	Yes	110	81
	No	16	12
	I do not know	9	7
Presence of enterprises that collect E-waste	Yes	41	31
	No	91	67
	I do not know	3	2
Perception of house location affecting waste collection	Yes	2	2
	No	127	94
	I do not know	6	4
Awareness of E-waste rules and regulations	Yes	93	69
	No	26	19
	I do not know	16	12
Enforcement of rules and regulations	None	18	13
	Regulations are weak	79	59
	Regulations are strong	9	7
	I do not know	29	21
Penalization of rule violators	Yes	18	13
	No	105	78
	I do not know	12	9

Most respondents across all wards (91.9%) expressed willingness to pay for E-waste management, with the highest support in Orisunmibare (93.3%). Gender-wise, males showed slightly greater willingness (94%) compared to females (88.2%) (Table 3).

Table 4 reveals that while 70% of respondents are aware of the public health risks of poor E-waste management, only 30% believe their communities are well informed, and just 27% think the local government has the capacity to manage E-waste. Commonly generated E-wastes include electronic iron (47%), LCDs (46%), and computers (39%). Disposal practices are mostly unsafe, with 49% dumping waste at seashore and 47% using sewerage systems. Lack of waste services (36%) and poor council management (15%) are key barriers. Most households (33%) see themselves as responsible for E-waste, and 64% are motivated to pay for services primarily to keep the environment clean.

Table 5 reveals that most respondents (59%) in Oluyole Local Government are dissatisfied with the E-waste management services provided by the

Table 3: Willingness to Pay for E-waste Management by Ward and Gender (N = 135)

Variable	Yes (%)	No (%)	Total (%)
Ward			
Orisunmibare	28 (93.3)	2 (6.7)	30 (100)
Orita/Odo Ona-Elewe	36 (90.0)	4 (10.0)	40 (100)
Ayegun	60 (92.3)	5 (7.7)	65 (100)
Subtotal by Ward	124 (91.9)	11 (8.1)	135 (100)
Gender			
Female	45 (88.2)	6 (11.8)	51 (100)
Male	79 (94.0)	5 (6.0)	84 (100)
Subtotal by Gender	124 (91.9)	11 (8.1)	135 (100)

Table 4: Summary of Opinions, Practices, and Attitudes on E-Waste Management in Oluyole Local Government (N = 135)

Category	Variable/Question	Response	Frequency	Percentage
Opinions on E-Waste Management	Knowledge of public health problems from poor E-waste management	Yes	95	70
	Local government can provide E-waste services	Yes	37	27
	Community can pay for E-waste services	Yes	63	47
	Laws are enforced for E-waste management violations	Yes	56	41
	Community is well informed on E-waste management	Yes	40	30
Monthly Average Household E-Waste Generated	Computers	High	52	39
	Mobile Phones	High	28	21
	Radio	Very Small	40	30
	T.V. Set	High	35	26
	Photocopier	Very Small	30	22
	Electronic Iron	Very Small	63	47
	LCD	Very Small	62	46
	Circuit Boards	High	40	30
Reasons for Lack of Waste Collection Services	No service available	-	49	36
	No motivation/payment for collectors	-	35	26
	Poor council waste management	-	21	15
	Area still under development	-	21	15
	Poor waste collection equipment	-	13	10
	I don’t know	-	12	9
Household E-Waste Disposal Methods	Store at home until collected	-	52	39
	Burn at home	-	35	26
	Dump in open spaces far from roads	-	47	35
	Dump in sewerage systems	-	63	47
	Dump at seashores	-	66	49
	Dig and burn in holes near houses	-	44	33
Perceived Responsible Parties for Disposal	Household members	-	44	33
	Local Government Council	-	38	28
	Both council and households	-	27	20
	All stakeholders	-	26	19
Motives for Willingness to Pay	Ability to pay	-	20	15
	To keep environment clean	-	87	64
	To prevent infectious diseases	-	15	11
	Law and regulations enforcement	-	4	3
	To have time for other activities	-	9	7

council, highlighting widespread concern over the adequacy and quality of service delivery. Only 23.7% of participants expressed satisfaction, while 17.8% remained undecided, suggesting a general lack of confidence and possible gaps in service awareness or consistency. These findings underscore the need for improved waste management strategies and stronger community

Table 5: Level of Satisfaction with E-waste Management Services in Oluyole Local Government

Satisfaction Level	Number of Respondents	Percentage
Dissatisfied	79	59
Satisfied	32	23.7
Undecided	24	17.8

engagement to enhance satisfaction and environmental outcomes.

DISCUSSION

Promoting environmental sustainability is a shared responsibility that hinges not only on individual awareness but also on the presence of effective institutional frameworks and enabling conditions (Omoyajowo *et al.*, 2024a, b, c). Findings from Oluyole Local Government Area underscore this dynamic, revealing a community characterized by long-term residency, moderate education levels, and relatively stable household structures-factors that, in theory, should foster responsible e-waste management. Yet, a considerable gap persists between awareness and practice. Although 72% of respondents displayed a moderate to strong understanding of e-waste issues, only 21% reported engaging in basic practices such as household waste separation. This discrepancy is largely attributed to a lack of practical knowledge and undervaluation of the importance of individual actions a trend similarly documented by Mengistie and Baraki (2010) in Ethiopia, where women were primarily responsible for waste management but lacked the institutional support to manage it effectively.

The high willingness to pay for improved services (91.9%) especially among married individuals mirrors findings from Okot *et al.* (2012), suggesting that when people feel a sense of responsibility or shared household duty, they may be more inclined to support environmental initiatives financially. Gender dynamics also play a critical role. While women are more often involved in direct waste handling, as noted by Poswa (2004) in Durban, South Africa, men in the Oluyole study demonstrated a higher willingness to pay (94% vs. 88.2%), possibly reflecting broader patterns in financial decision-making authority within households.

Educational attainment further emerged as a key determinant of pro-environmental behavior. Respondents with higher education levels were more likely to understand the consequences of unsustainable waste practices and to express willingness to act responsibly supporting Niringiye's (2010) findings that education correlates with formal choices in environmental behavior. Similarly, larger households, more prevalent in the study area, were linked to higher waste generation and greater readiness to pay for improved services, reinforcing the practical pressure for sustainable solutions.

These findings resonate strongly with Kaso *et al.* (2022), who identified education, access to services, and level of awareness as significant predictors of community support for improved waste management systems in Southern Ethiopia. Both studies point to the latent potential for behavior change, provided that enabling structures are in place.

Nevertheless, willingness and awareness alone are insufficient without robust institutional support. The study revealed that 78% of respondents believe violators of e-waste regulations go unpunished, while 73% doubt the capacity of local authorities to manage e-waste effectively. Such perceptions of weak enforcement and governance severely undermine collective action and long-term sustainability. Therefore, bridging the knowledge-practice gap in Oluyole will require a multifaceted approach: enhancing public education, strengthening regulatory enforcement, and institutionalizing community participation through well-structured and adequately resourced programs.

CONCLUSION

This study reveals a critical disconnect between community awareness, willingness, and the actual implementation of responsible e-waste management in Oluyole Local Government.

Despite high levels of awareness, 69% recognizing existing regulations and 70% acknowledging health risks poor infrastructure, weak enforcement, and inadequate government capacity undermine progress. The absence of organized collection systems and limited involvement of community-based organizations exacerbate these challenges. Yet, the strong willingness to pay for improved services among 91.9% of participants, especially those with higher education and larger households, signals untapped potential for behavioral change. Gender and educational dynamics also shaped participation, with men showing greater financial commitment and education fostering responsible attitudes. The findings make clear that sustainable e-waste management requires more than awareness it demands strong institutional frameworks, consistent policy enforcement, structured public engagement, and collaborative action across stakeholders to close the gap between knowledge and practice.

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REFERENCES

Addai, K. N., & Danso-Abbeam, G. (2014). Determinants of Willingness to Pay for Improved E-waste Management in Dunkwa-on-Offin, Ghana. *Journal of Agriculture and Environmental Sciences*.

Afroz, R., Hanaki, K., & Hasegawa-Kurisu, K. (2009). Willingness to pay for waste management improvement in Dhaka city, Bangladesh. *Journal of Environmental Management*, 90(1), 492-503.

Awunyo-Vitor, D., Ishak, S., &Seidu, J., G. (2013). Urban Households' Willingness to Pay for Improved E-waste Disposal Services in Kumasi Metropolis, Ghana. Urban Studies Research

BAN, "The Digital Dump: Exporting Re-Use and Abuse to Africa," Basel Action Network, 2005. www.ban.org.

Butu, A. W. (2015). Assessment of electronic waste management and the environmental impact on Kaduna Metropolis, Nigeria. *Proceedings of International Academic Conferences*, 2604734.

Chi X., Streicher-Porte M., Wang M.Y.L., Reuter M.A. 2011. Informal electronic waste recycling: a sector review with special focus on China, Waste Manage. (Oxford), **31**(4): 731–742.

Cohen, L., Manion, L. and Morrison, K. (2000) Research Methods in Education. 5th Edition, Routledge Falmer, London. http://dx.doi.org/10.4324/9780203224342

Diamantopoulos, A., Schlegelmilch, B. B., Sinkovics, R. R., & Bohlen, G. M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business research*, 56(6), 465-480.

Ehrampoush, M. H., & Moghadan, H. B. (2005). Survey of knowledge, attitude and practice of Yazd university of medical sciences students about solid wastes disposal and recycling. Iranian J Env Health Sci Eng., 2(2), 26-30.

Fishbein, M. and Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Hong, J., Shi, W., Wang, Y., Chen, W., & Li, X. (2015). Life cycle assessment of electronic waste treatment. *Waste Management*, *38*, 357–365. https://doi.org/10.1016/j.wasman.2014.12.020

Hula, A. Jalali, K. Skerlos, S. J. and Saitou, K. 2003.Multi Criteria Decision Making for Optimization of Products Disassembly under Multi Situations. *Environmental Science Technology*, (23):5303- 5313.

Kaso, A. W., Hareru, H. E., Ashuro, Z., & Soboksa, N. E. (2022). Assessment of households' willingness to join and pay for improving waste management practices in Gedeo Zone, Southern Ethiopia. *BioMed Research International, 2022*, Article 9904665.

Licy, C. D., R. Vivek, K. Saritha, T. K. Anies, and C. T. Josphina. 2013. "Awareness, Attitude and Practice of School Students Towards household Waste Management." *Journal of Environment*, 2 (6):147–150.

Niringiye, A. (2010). Determinants of willingness to pay for E-waste management in Kampala city. *Current Research Journal of Economic Theory*, 2(3), 119-122.

Nnorom, I. C., & Osibanjo, O. (2008). Electronic waste (E-waste): Material flows and management practices in Nigeria. *Waste Management*, *28*(8), 1472–1479.

Nnorom, I. C., Ohakwe, J., & Osibanjo, O. (2009). Survey of willingness of residents to participate in electronic waste recycling in Nigeria—A case study of mobile phone recycling. *Journal of Cleaner Production*, *17*(18), 1629–1637. http://dx.doi.org/10.1016/j.jclepro.2009.08.009

Okot, J. (2012). Households' Willingness to Pay for Improved Local E-waste Management Services in Kampala, Uganda.

Omoyajowo, K. O., Adewunmi, M. A., Omoyajowo, K. A., Ogunyebi, A. L., Njoku, K. L., Makengo, B. M., Babalola, O. O., & Ojo-Emmanuel, G. (2024c). Transitioning to a Climate-Resilient Society: Empirical Evidence on What Drives the Adoption of Green Computing Policies in Nigerian Organisations. Trends in Ecological and Indoor Environment Engineering, 2(1), 28–34.

Omoyajowo, K. O., Ogidan, J. A., & Akas, P. C. (2017). Crucial concerns on computing and electronic waste

management: From an environmental health perspective. *World Scientific News*, *67*(2), 291–302.

Omoyajowo, K. O., Raimi, M. O., Omoyajowo, K. A., Makengo, M. B., Adegboyo, S., Innocent, D. C., Oni, S., Oguntuyi, J., Oyediran, A., Ogunyebi, A. L., & Kakwi, D. (2024b). Towards a reduced pollution society: Systematic review on the role of storytelling, social media, humor and celebrities' influence for research communication. *Journal of Applied Sciences and Environmental Management*, *28*(2), 603–623.

Omoyajowo, K., Danjin, M., Omoyajowo, K., Odipe, O., Mwadi, B., May, A., Ogunyebi, A., & Rabie, M. (2024a). Exploring the interplay of environmental conservation within spirituality and multicultural perspective: Insights from a cross-sectional study. *Environment, Development and Sustainability*, *26*(7), 16957–16985.

Omoyajowo, K., Raimi, M., Waleola, T., Odipe, O., & Ogunyebi, A. (2022). *Public awareness, knowledge, attitude and perception on microplastics pollution around Lagos Lagoon*. *Ecological Safety and Balanced Use of Resources*, *2*(24), 35–46.

Poswa, T. T. 2004. The Importance of Gender in Waste Management Planning: A Challenge for Solid Waste Managers." In Proceedings: 8th World Congress on Environmental Health, 22–27 February 2004. Durban, South Africa. https://www .academia .edu /6889691 /Importance _of _Gender _in _Waste _Management-_A _Challenge _for _Solid _Waste_Managers (accessed on 15 April 2020)

Shen, J. &Saijo, T. (2008). Re-examining the relations between socio-demographic characteristics and individual environmental concern: Evidence from Shanghai data. *Journal of Environmental Psychology*, 28(1), 42-50.

Siringo, R. Herdiansyah, H. Kusumastuti R.D. Underlying factors behind the low participation rate in electronic waste recycling.

Subash, A. (2002). Community participation in E-waste management. Office of Environmental Justice, Washington, DC.

Tiep Ho, David Yoon Kin Tong, Elsadig Musa Ahmed and CheeTeck, Lee. Factors Influencing Household Electronic Waste Recycling Intention Sew

Townsend, T. G. (2011). Environmental issues and management strategies for waste electronic and electrical equipment. *Journal of the Air & Waste Management Association*, *61*(6), 587–590. https://doi.org/10.3155/1047-3289.61.6.587

United Nations Environment Programme (UNEP). Nigeria Turns the Tide on Electronic Waste. 2019. Retrieved https://www.unep.org/news-and-stories/press-release/nigeria-turns-tide-electronic-waste/

Wong, M. H., Wu, S. C., Deng, W. J., Yu, X. Z., Luo, Q., Leung, A. O., Wong, C. S., Luksemburg, W. J., & Wong, A. S. (2007). Export of toxic chemicals: A review of the case of uncontrolled electronic-waste recycling. *Environmental Pollution*, *149*(2), 131–140. https://doi.org/10.1016/j.envpol.2007.01.044