



Journal of Frontiers in Multidisciplinary Research

Perception, Use, Attitude and knowledge of Stakeholders on Plastic Waste Management: A Novel Evidence from AE-FUNAI Community

Friday Nwankwo Archibong ^{1*}, Robert Ugochukwu Onyeneke ², Obinna Aru Ojeh ³, Kingsley Ekene Nwagu ⁴, Ikenna Chinazaekpere Ijeh ⁵, Job Nworie Ukwa ⁶, Chisom Precious Anyigor ⁷, Frank Ikenna Nwabue ⁸, Nkiru Jacinta Ogbodo ⁹, Chinyere Maureen Oyekezie ¹⁰, Adaeze Chikaosolu Stephen-Emeya ¹¹

¹ Department of Mechanical Engineering, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

² Department of Agriculture, Alex Ekwueme Federal University Ndufu-Alike, Ikwo 482131, Nigeria

^{3,4} Department of Biochemistry, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

⁵ Department of Electrical & Electronic Engineering, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

⁶ Department of Fine and Applied Arts, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

⁷ Department of Science Education, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

^{8,10} Department of Chemistry, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

^{9,11} Department of Chemical Engineering, Alex Ekwueme Federal University Ndufu-Alike Ikwo, 482131, Nigeria

* Corresponding Author: **Friday Nwankwo Archibong**

Article Info

E-ISSN: 3050-9726

P-ISSN: 3050-9718

Impact Factor (RSIF): 7.34

Volume: 07

Issue: 01

Received: 18-01-2026

Accepted: 20-02-2026

Published: 22-03-2026

Page No: 203-214

Abstract

Plastic waste management (PWM) is a serious challenge for most developing countries, as rapidly growing populations and urbanization affect yearly garbage creation, resulting in the proliferation of conventional waste management systems with multiple characteristics that are still unknown. This study used Google Forms to investigate PWM dynamics in AE-FUNAI's community, with lecturers, students, private-sector workers and non-academics serving as a case study. The study investigates (1) types of plastic waste generated, (2) the methods of plastic waste disposal in AE-FUNAI community, and (3) examines how you believe plastic waste affects the environment. The findings show that the total amount of plastics wasted per week is 2985.64 kg, demonstrating the large volume of plastic trash generated in the community. The techniques used for plastic trash removal show that open dumping and burning are the most common procedures. Plastic garbage harms the environment by contaminating it, clogging sewage systems, and polluting aquatic biota. Awareness of the repercussions of plastic trash disposal is relatively high, with 77 percent recognizing the negative consequences. However, respondents' perceptions of how plastic garbage affects the environment vary, with the majority believing it has a considerable impact.

Keywords: Attitude, perception, plastic waste, management, stakeholders

1. Introduction

The relentless use of plastics has led to a proportional rise in plastic waste, presenting intricate environmental, economic, and social issues (Sharif *et al.*, 2023; Machecha *et al.*, 2024) ^[55, 39]. Because plastics are not biodegradable and remain in the environment for long periods of time, they pose an even greater harm to the ecosystem (Filiciotto & Rothenberg, 2021; Dey *et al.*, 2024) ^[25, 18]. When plastics are improperly disposed of, they build up in cities, clog sewage systems, threaten wildlife, contaminate soil, and detract from the visual attractiveness of aquatic bodies (Matavos-Aramyan, 2024) ^[40]. The single-use plastic packaging has dramatically increased in the past few decades, especially in poor African countries (Olatayo *et al.*, 2024; Aragaw, 2025) ^[48, 6]. The general public believes that reducing plastic trash and its negative effects on the environment is crucial, but many people are unaware of what they can do to help (Tang, 2023) ^[60]. Many turned to roasting slaughtered animals for human food using trash plastic, or rubber (Aya & Nwite, 2015; Nnaji *et al.*, 2017; Archibong *et al.*, 2025) ^[10, 45, 7]. Others discard this waste rubber/plastic and let it gather until it catches fire, releasing harmful chemicals into the environment that negatively impact humans (Ferronato & Torretta, 2019; Onuoha *et al.*, 2024) ^[24, 49].

This mindset caused stakeholders to relax about their investments in the recycling company. Plastic/rubber pollution resulting from man's anthropogenic activities has been more obvious in recent years, which has spurred public advocacy against unhealthy practices in Alex Ekwueme Federal University Ndufu-Alike Ikwo (AE-FUNAI). Although the community is dedicated to lessening their impact on the environment, they would like to take further action to address plastic trash. The majority of companies worry about plastic waste, yet many believe their present initiatives fall short. They target companies that deal with plastic, such as baling, which can benefit the community greatly but are frightened of the social amenities that will support them (including water and light). Due to the financial aspects of contemporary living and campus population development, plastics are a part of students' everyday lives (Nielsen *et al.*, 2020; Stoett *et al.*, 2024; Akhwand *et al.*, 2024) [44, 57, 66]. Plastic debris is increasingly being dumped on roads, fields, and waterways as a result of people's attitudes, behaviors, and views about trash (Chukwuone *et al.*, 2022; Rehman *et al.*, 2022) [17, 54]. Plastics are collected, recycled, or burned in countries that have appropriate waste management or training programs (Mihai *et al.*, 2022; Ferronato *et al.*, 2024) [42, 23]. The facilities necessary to handle plastic waste through municipal solid waste management is lacking in the majority of developing countries (Lerpiniere *et al.*, 2025; Zhang *et al.*, 2024) [38, 67]. Numerous factors, such as nearby permitted garbage disposal facilities, people's experiences, and their level of pollution awareness, affect how people respond when they see plastic debris discarded on the ground or come into contact with plastic pollution. Burning, incinerating, or disposing of plastics in landfills or any other public space within their communities is unacceptable (Mihai *et al.*, 2024; Lakhout, 2024) [41, 37]. These plastic disposal practices in Nigeria endanger the ecosystem by releasing dioxins, furan, and other dangerous chemical pollutants into the atmosphere, which can cause major health problems in addition to releasing carbon dioxide (CO₂) (Onuoha *et al.*, 2024; Umaru *et al.*, 2019) [49, 61]. Plastics will keep destroying Nigeria's biological ecology until several towns adopt more innovative recycling strategies and raise awareness of the need for a sustainable plastic waste environment (Egwuatu, 2023) [19]. Plastic-covered food may absorb harmful compounds, which could have detrimental effects on one's health (Lakhiar *et al.*, 2024) [36]. Therefore, promoting alternative food coverage is essential. Meal contamination can occur when plastic is heated because chemicals like phthalates and bisphenol A (BPA) can seep into the meal (Ugoeze *et al.*, 2021) [33]. These substances have been connected to several illnesses, such as immune system damage, cancer, reproductive disorders, and hormone abnormalities (Buoso *et al.*, 2025) [14]. Ajibade *et al.*, (2020) [4] considered pollution as the existence or appearance of materials, foreign matter, or items with negative effects that can interfere with manufacturing processes, biodiversity, structural integrity, aesthetics, and biogeochemical cycles. Similarly, (Chibueze *et al.*, 2023) [16] described environmental pollution as the degradation of the biosphere's elements to the point that it interferes with regular environmental functioning. It is possible to consider individual acts that contribute to environmental deterioration as harmful externalities that have an impact on society. Studies on the production, use, and management of garbage have placed a strong emphasis on the investigation of plastic

pollution (Moshood *et al.*, 2022) [43]. It has been determined that raising public awareness of plastic management issues can affect perceptions of plastic waste management (Heidbreder *et al.*, 2019; van Oosterhout *et al.*, 2022) [29, 63]. Gleason *et al.*, (2018) [28] reaffirmed the importance of both formal and informal education in raising awareness, which is made possible by print and digital media. Encouraging people to manage garbage properly and forming attitudes toward preserving a clean and safe environment requires thorough environmental education on plastic waste management. Furthermore, it encourages the ethical use of plastic, creates accountability, and advances sustainable management (Aithal, 2025) [3]. Research shows that students around the world have misunderstandings regarding a range of environmental and social issues (Popa, 2025) [51]. In order to clear up students' misconceptions regarding environmental issues, it is imperative that these classroom myths be addressed. Multiple research (Talwar *et al.*, 2024; Woodcock & Anderson, 2025) [59, 65] have drawn attention to how common misconceptions kids have about environmental issues are, frequently resulting from views passed down from their teachers. People are less likely to take the proper preventive action to solve environmental concerns when persistent misconceptions persist (Putri *et al.*, 2025) [52]. Collective Action Theory and the Theory of Planned Behavior (TPB) provide insightful models for comprehending and analyzing university instructors' opinions, knowledge, and practices about plastic trash management. TPB asserts that three primary factors: attitude toward the conduct, subjective standards, and perceived behavioral control, influence people's intentions to engage in a given behavior (Aswar Iskandar, 2018) [9]. When it comes to managing plastic waste, university instructors' views on waste reduction, recycling, and disposal methods, their assessments of social pressures from peers, superiors, students, and communities, and their belief in their own capacity to manage plastic waste in their classrooms all play a significant role in determining their intentions and subsequent behavior. Additionally, Collective Action Theory highlights the value of teamwork and collaboration among people with similar objectives in order to address shared problems, including the environmental damage brought on by plastic garbage (Belontz *et al.*, 2019; Swarga, 2024) [12, 58]. The development and execution of sustainable waste management projects, such as curriculum integration, community cleanup crusades, and recycling programs, can be facilitated within the framework of the university by motivating group action among educators, students, administrators, and community participants. In order to inform focused interventions and instructional strategies that support sustainable (plastic) waste education and management practices, this study uses these theoretical frameworks to explain the factors influencing university teachers' attitudes and behaviors toward plastic waste management.

The majority of what is currently known about the connection between consumer attitudes and environmentally harmful behaviors, like plastic pollution, comes from studies carried out in developed countries using a combination of qualitative and quantitative research techniques, including regression analysis and structural equation models (Fu *et al.*, 2024) [27]. On the other hand, quantitative studies in Africa, where qualitative approaches are used in the majority of research in this field are limited (Kreshpaj *et al.*, 2020) [35]. African study

on plastic pollution, attitudes, and education is still in its infancy. Asamoah *et al.* (2022) ^[8] carried out a thorough analysis of the problems associated with managing plastic trash in sub-Saharan Africa, illuminating the socioeconomic and environmental effects of plastic pollution in the area. Van Rensburg *et al.* (2020) ^[64] examined how the African public views and behaves in relation to plastic pollution, offering important insights into the variables affecting consumer attitudes about the use and disposal of plastic. Despite these efforts, there is still little quantitative research on attitudes, education, and plastic pollution in Africa. Although qualitative research has shed important light on the behavioral and sociocultural aspects of plastic pollution (Brennan & Portman, 2017; Nuojuua *et al.*, 2024) ^[13, 46], African quantitative research frequently restricts analysis to descriptive statistics and simple measures of association; more thorough quantitative studies are required to use (advanced) analytical tools to make these correlations obvious (Frisby, 2024) ^[26]. Nonetheless, this study uses

severity indexes, chi-square analysis, and descriptive statistics to examine stakeholders' perceptions, attitudes, and knowledge on plastic waste management.

2. Materials and Methods

2.1. Study area

Alex Ekwueme Federal University Ndufu-Alike Ikwo (AE-FUNAI), located in the central region of Ebonyi State, was the site of the study (Fig. 1). According to the National Population Commission's (NPC) classification, the study area, AE-FUNAI, is situated in Ikwo, in the rural community of Ndufu-Alike. According to the NPC's rural-urban categorization approach, AE-FUNAI, which had 384,400 residents as of March 21, 2022, is classified as a semi-urban community (Ewah and Chukwuemeka, 2023) ^[20]. The research area's rural setting is important because it offers a distinctive framework for analyzing stakeholders' and students' views and awareness of the negative environmental effects of plastic garbage.



Fig 1: Geographical location of Ikwo (Housing AE-FUNAI)

Each of the two main demographics inside this university community; staff and students contribute to the social dynamics. To put the research findings in context, it is crucial to comprehend the sociocultural background of the studied region. It makes it possible to investigate how social life, behavioral attitudes, and social norms may affect how students and stakeholders view and handle plastic garbage.

Recognizing the cultural and ethnic diversity of AE-FUNAI personnel and students, the study seeks to offer pertinent and useful insights to comparable university communities dealing with plastic trash issues in Nigeria and elsewhere. The investigation focuses on plastic waste from water bottles, local alcoholic drinks, and bottles from energy drink (Fig. 2).



Fig 2: Various plastic waste bottles found in the community

2.2. Research population, sampling and sample size

According to administrative records, the research population consisted of all AE-FUNAI stakeholders and students, as this is the makeup of all universities worldwide. A sample size of

56 was established using the size determination table developed by (Althubaiti, 2023; Rahman, 2023) ^[5, 53] to capture a wide variety of perspectives among stakeholders and students in the study community. The study's sample size

is suitable due to population characteristics (the uniformity of the students and staff), ethical considerations, and resource limitations (finances, personnel, the sparse dispersion of the staff in AE-FUNAI, and timescale) (Agya *et al.*, 2024) [2]. Since all of the participants were students and staff, Sim *et al.* (2018) [56] and Hennink & Kaiser. (2022) [30] asserted that even if the sample size of 97 was small, it was still sufficient. It's possible that the homogeneous population required a smaller sample size. Therefore, the study's anticipated theoretical sample size may not have a significant effect on the survey's conclusions (Holtom *et al.*, 2022) [31].

To choose members from the intended population, the researchers decided on a purposeful non-probability sampling method. Given all personnel and students of the same university, the intended population showed homogeneity in traits (Keskes *et al.*, 2025) [34], thus this sampling technique was judged appropriate. It also lets researchers choose subjects depending on particular criteria pertinent to the study goals, therefore ensuring the inclusion of people with the intended experiences (Azlina *et al.*, 2025) [11]. Given their common professional background and experiences within the educational setting, the researchers used this sampling method to choose lecturers who could

offer insightful analysis of the attitudes and awareness of plastic trash management.

2.3. Research design

The study employed a case study research methodology to assess respondents' comprehension of solid waste management (SWM) and PWM system approaches. The questions focused on understanding rural SWM systems, their assessed environmental impact by rural community members, and their degree of knowledge and comprehension of the repercussions of poor waste management on human health and the environment. The study also examined their understanding of their communities' SWM policies. The data was collected using a combination of techniques that included both qualitative and quantitative research methodologies. The quantitative data were collected by giving google forms to the respondents to determine their socio-demographic background and other important information. The qualitative data gathered by questions included the respondents' views on PWM practices, preparedness, and willingness to sort out garbage, along with additional vital details, such as the usefulness of waste classification to them.

3. Results and Discussion

3.1. Sex and age distribution of participants

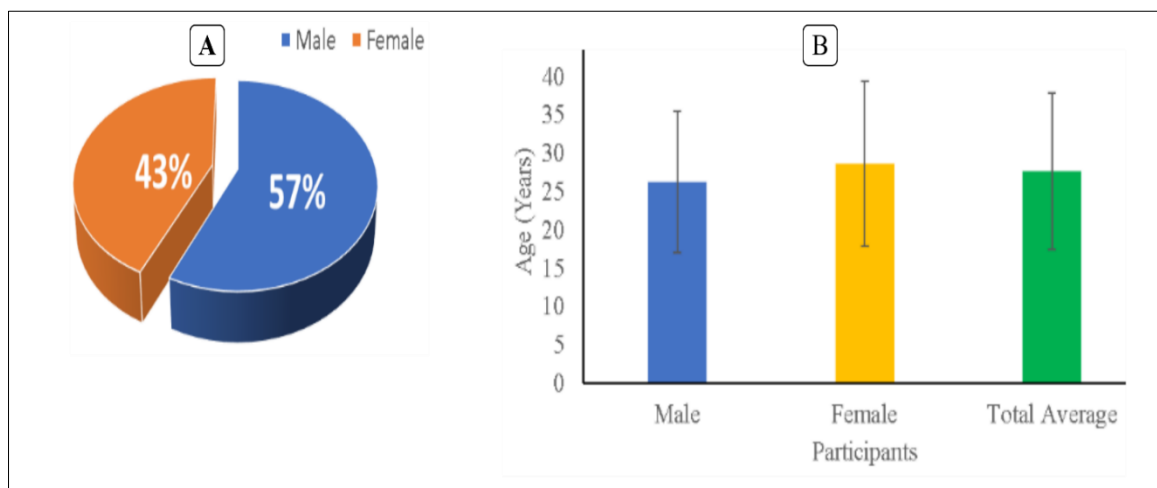


Fig 3: A The sex distribution of participants and B. The age distribution of participants

The survey results provide an overview of the perception, use, attitude, and knowledge of stakeholders in the AE-FUNAI community regarding plastic waste management. The demographic data (Figs. 1-3) reveal that the respondents are predominantly young, educated, and single, with a significant proportion being students. This demographic profile suggests that the community is relatively young and educated, which could influence their awareness and attitudes towards plastic waste management (Abushammala & Ghulam, 2023) [1]. The Fig. 3a presents the sex distribution in percentage of the respondents which shows that 57% of the respondents are males while 43% are female. The average age of the respondents was found to be 27.67 ± 10.18 years (Fig. 3b), indicating a relatively young demographic Educational Qualification.

3.1.1. Educational qualification of participants

Participants' educational qualifications included the highest standard of formal schooling, such as a Bachelor's degree, Diploma, or Certificate, as well as the specific expertise, abilities, and knowledge they have earned and may demonstrate through these credentials. This data provides insight into a participant's human capital and is frequently utilized as a control factor in statistical analyses to more effectively assess trends in education, skills, and performance across groups. Fig. 4 shows the educational background of respondents. The majority of the respondents males (29.03%) and females (46.24%) of the population hold a B.Sc degree, followed by SSCE (secondary education). Advanced qualifications (M.Sc and Ph.D) are less common, with 15 males and 8 females in total. This suggests that the sampled population are moderately educated.

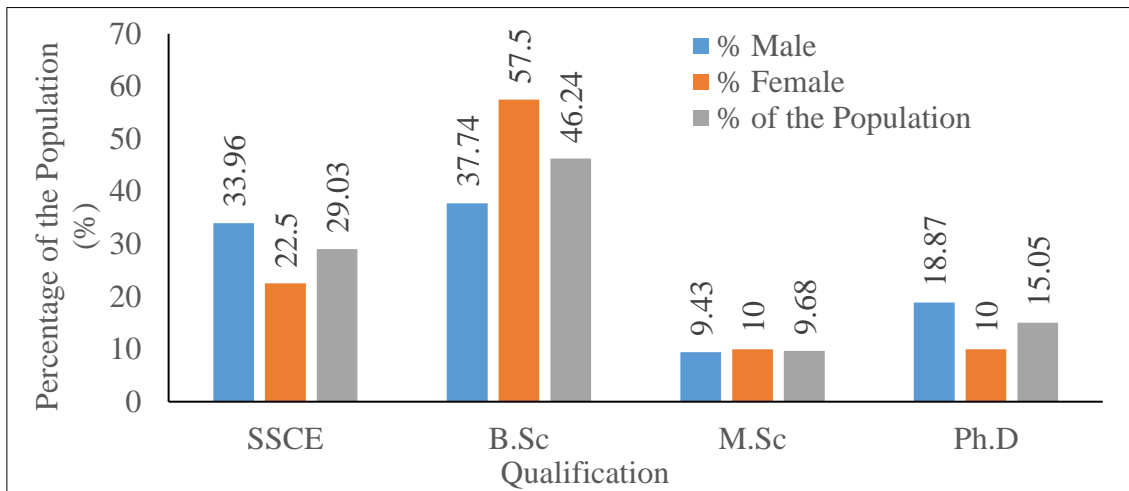


Fig 4: Educational Qualification

3.1.2. Marital status of participants

Participants' marital status corresponds to their officially recognized relationship status, which is commonly indicated as single, married, divorced, widowed, or separated. This data is frequently collected in research and surveys to gain insight into various social and medical problems, as it can be

correlated with factors such as social integration, loneliness, and access to services. Most respondents are single (75.27%), with fewer married individuals (24.73%). 43.01% are of single males while 32.26% are single females. This aligns with the young age profile, as younger populations typically have lower marriage rates (Fig. 5).

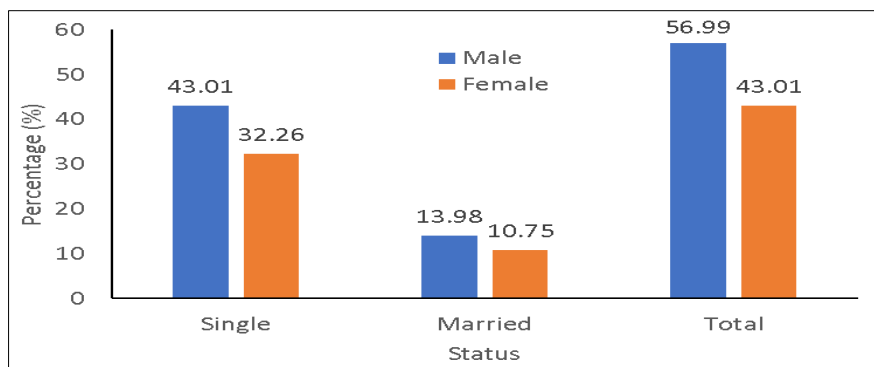


Fig 5: Marital Status

3.1.3. Occupational status of participants

The "occupational status of participants" refers to the occupations, responsibilities, and positions that participant hold in their work or primary activities, which sometimes indicate their participation in paid employment or a specific occupation for pay. This status is a significant measure of socioeconomic standing, prestige, power, and privilege within a hierarchical hierarchy. To establish participants'

occupational status, one could look at their individual employment role, such as farming, trading, or public service, to determine where they fit within the larger economic and social structure of the examined group. Fig. 6 shows that the majority of respondents are students (61.19%), followed by lecturers (22.58%) and private-sector workers (10.75%). Non-academics are rare (5.38% males only). This reflects the academic setting of the AE-FUNAI community.

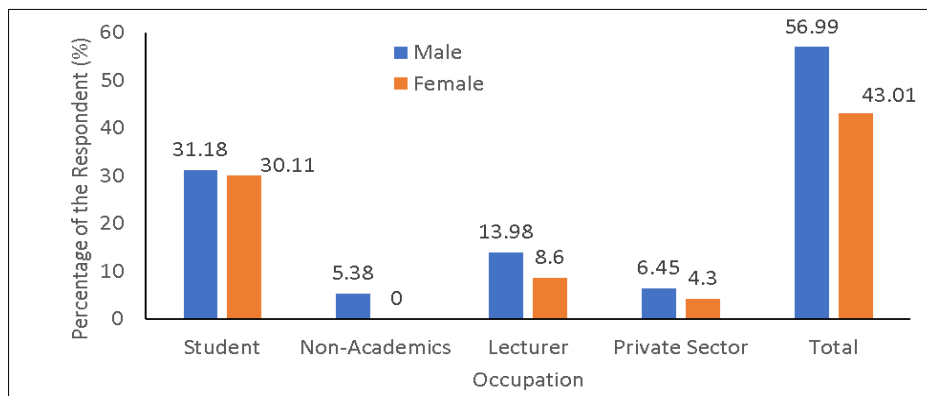


Fig 6: Occupational Status

3.2. Types of plastics used

Data on the types of plastics used and discarded (Table 1) indicate that plastic bags and bottles are the most commonly used and discarded items. This phenomenon aligns with global trends wherein single-use plastics constitute a predominant component of household waste. The total weight of plastics discarded per week (2985.64 kg) highlights the significant volume of plastic waste generated in the community, underscoring the need for effective waste

management strategies. The respondent reveals that the use of different plastics in different homes as seen in the results and the approximate mass of the amount disposed. The Table 1 reveals the types of plastics discarded and their mean weekly weight. Plastic bottles (8.23 kg) and bags (7.85 kg) are the most discarded, followed by buckets (6.67 kg). The total discarded plastic weight is 2,985.64 kg, highlighting significant plastic waste generation in AE-FUNAI (Oladipupo *et al.*, 2024) ^[47].

Table 1: Weight of plastics discarded per week

Plastic Type	Mean weight (Kg)	Total (Kg)
Plastic Bags	7.85 ± 12.17	502.21
Plastic Bottles	8.23 ± 11.88	535.21
Plastic Bucket	6.67 ± 17.06	400.30
Plastic Basket	4.51 ± 14.47	257.60
Plastic Basin	3.65 ± 8.73	197.00
Plastic Plate	3.95 ± 7.64	221.45
Plastic Shoes	2.15 ± 9.19	92.6
Plastic Folder	3.45 ± 11.03	141.6
Plastic Straw	6.00 ± 24.94	391.8
Plastic Cups	4.57 ± 10.41	245.87
		2985.64

3.2.1. Reasons for Plastic usage

The rationale for utilizing plastics is predominantly influenced by economic feasibility, accessibility, and practicality (Ezeudu *et al.*, 2024) ^[21]. These factors constitute common determinants of plastic utilization globally, as plastics are cost-effective, readily obtainable, and facile to employ. On the reasons for plastic use, the results show that

Affordability (75 respondents) and availability (66) are the top reasons for plastic use. Convenience (51) and lightweight nature (60) also rank highly, while durability (27) and personal preference (26) are less reason (Fig. 7). This indicates that practical motivations dominate plastic consumption.

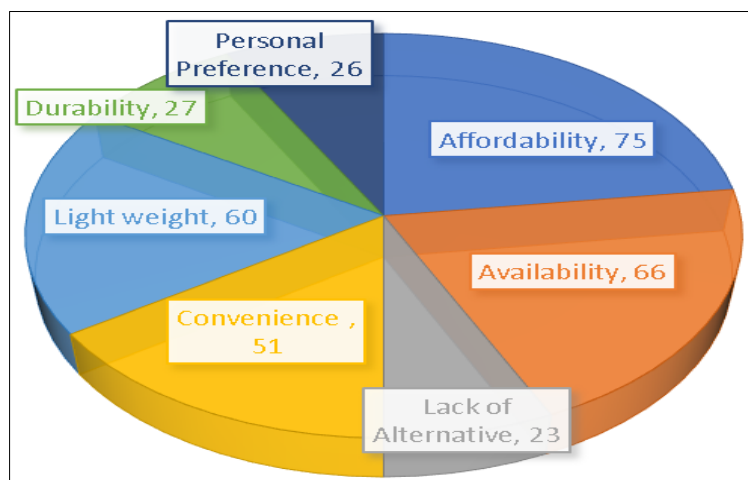


Fig 7: Reasons for using Plastic

3.2.2. Methods of Disposal of Plastic wastes

The methods of plastic waste disposal indicate that open dumping and burning are the predominant practices (Fayshal, 2024; Aragaw, 2025) ^[2, 6]. These methods are environmentally detrimental, as they contribute to atmospheric and soil pollution and can release toxic substances into the ecosystem. The limited number of

respondents who engage in burying their plastic waste suggests a deficiency in awareness or accessibility to more sustainable disposal methods. As seen from Fig. 8, the most common disposal methods are open dumping (56% respondents) and burning (41.33%). Burying is rare (2.67%), suggesting limited awareness or access to proper waste management infrastructure.

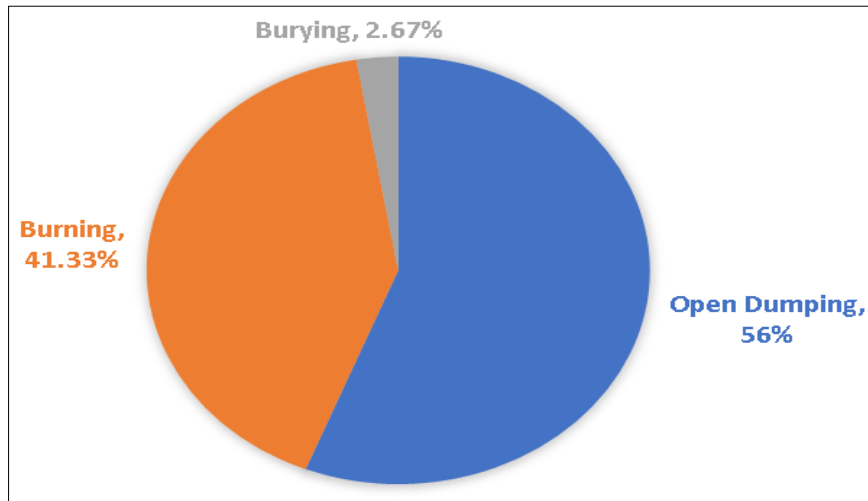


Fig 8: Response to plastic disposal

3.3. Number of respondents that are aware of the effects of plastic waste disposal

Awareness of the effects of plastic waste disposal is relatively high, with 77 respondents acknowledging the negative

impacts. Fig. 9 reveals that most respondents (83%) are aware of the negative impacts of plastic waste, while 17% are unaware. This highlights a gap in education for a small but significant portion of the population.

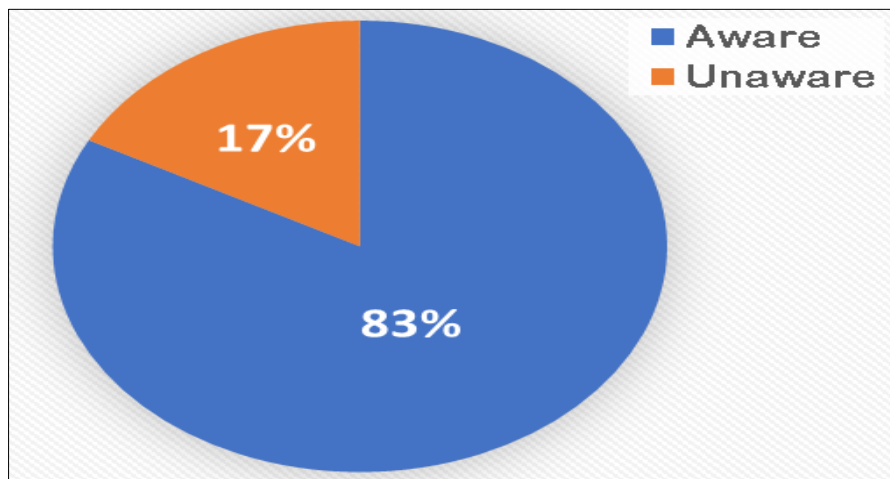


Fig 9: Number of respondents Aware of plastic waste disposal

3.3.1. Problem associated with plastic waste disposal

Nevertheless, the environmental ramifications of such extensive usage are substantial, as evidenced by the challenges associated with plastic waste management. The most frequently cited issues encompass environmental contamination, obstruction of sewage systems, and pollution of aquatic ecosystems (Padmanabha *et al.*, 2025) ^[50]. These concerns are of critical importance as they not only impact the environment but also have direct implications for human

health and aquatic biota. Fig. 10 depicts various problems associated with plastic waste disposal (PWD) as follows: environmental pollution (71) and blockage of sewage passages (64) are the most cited problems. While other issues include pollution of water bodies (57), soil degradation (53), microplastic contamination (39), and harm to aquatic life (44). This underscores the multifaceted environmental risks of improper disposal of plastics.

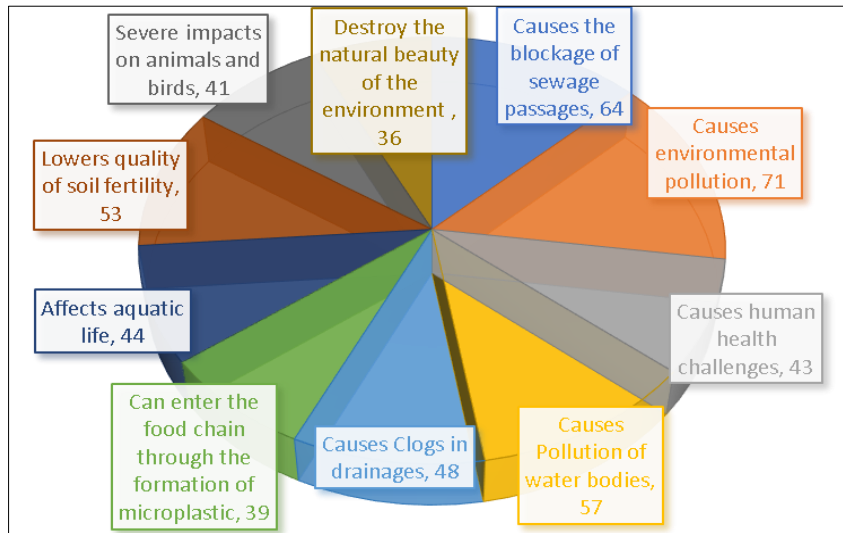


Fig 10: Problem associated with plastic waste disposal

3.3.2. To what extent do you think that plastic waste can affect the environment

The extent to which respondents perceive plastic waste as affecting the environment varies (Caminiti *et al.*, 2025; Ibrahim *et al.*, 2025) ^[15, 32] with a majority considering it to have a significant effect. This indicates that while awareness

is present, there may be varying levels of comprehension or concern regarding the severity of the issue. Fig. 11 showed that a majority of 51% believe plastic waste has a high environmental impact, while 28% see it as moderate. Only 1% respondent sees no impact, reflecting widespread recognition of plastic pollution’s severity.

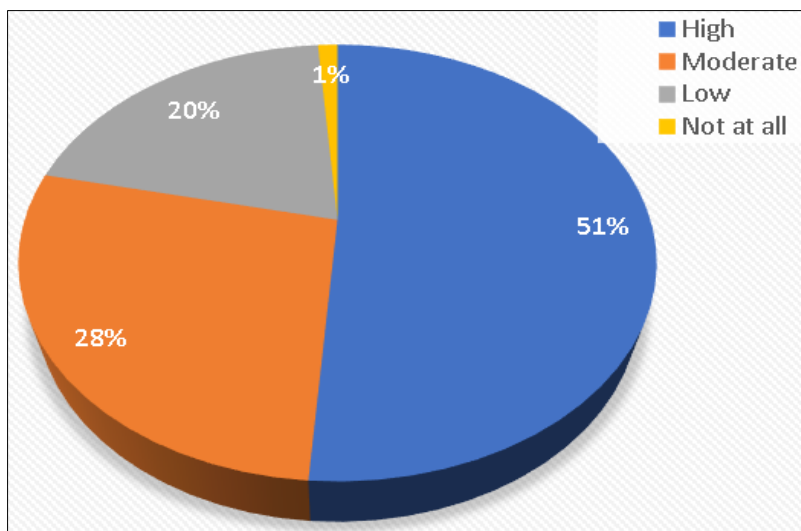


Fig 11: To what extent do you think that plastic waste can affect the environment

3.3.3. Causes of plastic waste pollution

The causes of plastic waste pollution are attributed to single-use plastics, insufficient recycling practices, and improper disposal methods (Valavanidis, 2024) ^[62]. These findings are consistent with global challenges in plastic waste management, wherein single-use plastics and inadequate recycling infrastructure constitute significant contributors to

environmental pollution. Fig. 12 summarizes the breakdown of causes of plastic waste pollution as: single-use plastics (65) and lack of recycling (65) are identified as primary causes of plastic waste disposal. Other factors include improper disposal (70), inefficient waste collection (64), and inconvenient trash can locations (43). This points to systemic failures in waste management.

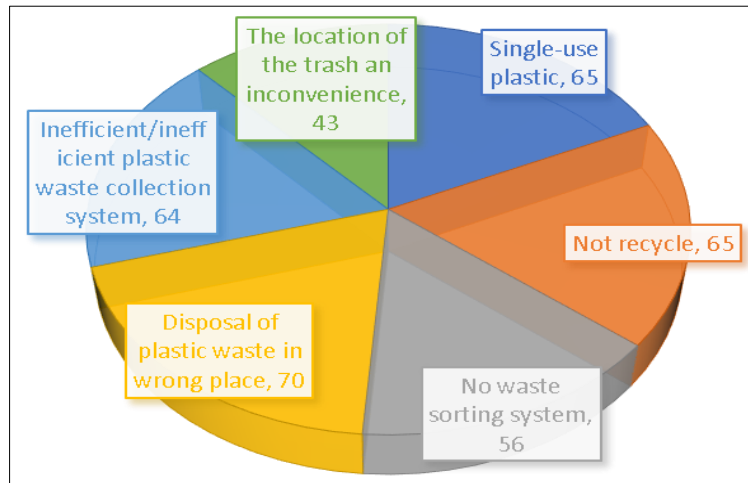


Fig 12: Causes of plastic Waste Pollution

3.3.4. Have you received information about plastic waste

The receipt of information about plastic waste shows that a majority of respondents have received some form of information, primarily through lectures, television, and social media as illustrated in Fig. 14. This suggests that educational campaigns and media are effective tools for raising awareness about plastic waste issues. However, the fact that

28 respondents have not received any information indicates a gap that needs to be addressed to ensure comprehensive awareness across the community. Fig. 13 is a clear cut on how the respondents receive information which reveals that 69.57% respondents have received information about while 30.43% respondents have not received information about plastic wastes.

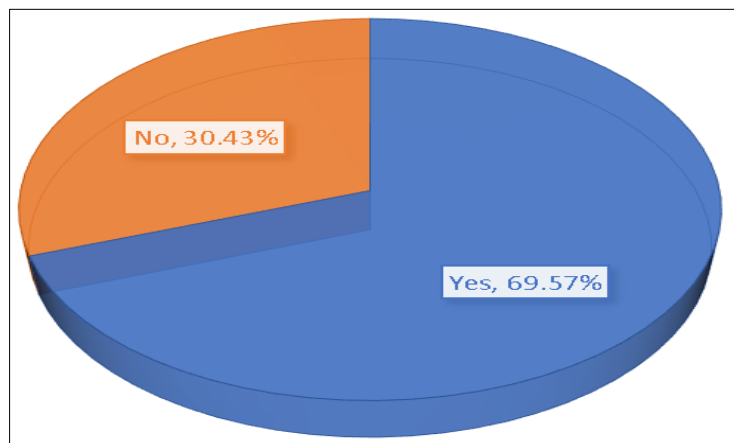


Fig 13: Have you received information about plastic waste

3.3.5. How did you receive information about plastic waste

Sources for information about disposable plastics include research articles, scientific journals, and reports from organizations like United Nation Environment Program (UNEP) and other media outlets. This enables it to provide comprehensive answers regarding the sources, impacts, and

management of plastic garbage using global data and scientific expertise. Fig. 14 shows that the television (61) and lectures (75) are the most common sources of information. Social media (48) and radio (28) are secondary, while government agencies (13) and print media (17) are least cited. This suggests reliance on traditional media over digital or institutional channels.

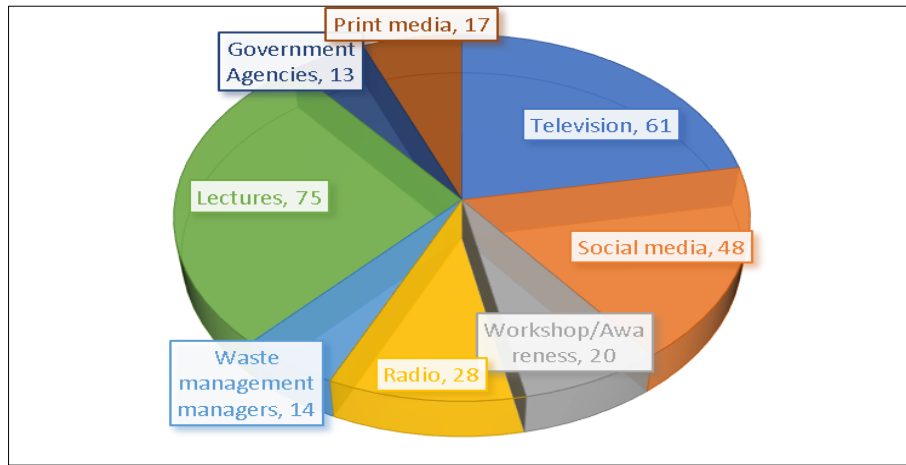


Fig 14: How did you receive information about plastic waste

4. Conclusions

According to the findings of this study, the survey results highlight the need for targeted interventions to address plastic waste management in the AE-FUNAI community. While awareness is relatively high, there is a clear need for improved waste disposal methods, increased recycling efforts, and continued education to mitigate the environmental and health impacts of plastic waste. The findings also underscore the importance of addressing the root causes of plastic pollution, such as single-use plastics and inadequate waste management systems, to achieve sustainable outcomes. These findings can help shape future policies, community activities, and educational efforts to increase public engagement and commitment to sustainable behaviors.

References

- Abushammala H, Ghulam ST. Impact of Residents' Demographics on Their Knowledge, Attitudes, and Practices towards Waste Management at the Household Level in the United Arab Emirates. *Sustainability*. 2023;15(1):1-14. doi:10.3390/su15010685
- Agya BA, Rückert A, Dornack C. Effectiveness of traditional solid waste management system of rural communities: A case study in the Kwahu East District, Ghana. *Environ Challenges*. 2024;15:1-13. doi:10.1016/j.envc.2024.100869
- Aithal S. Strategic and Sustainable Plastic Management: Promoting Awareness Over Bans for Responsible Usage. *Poornaprajna Int J Philos Lang*. 2025;1(1):1-36. doi:10.5281/zenodo.14585304
- Ajibade FO, Adelodun B, Lasisi KH, Fadare OO, Ajibade TF, Nwogwu NA, *et al*. Environmental pollution and their socioeconomic impacts. In: *Microbe Mediated Remediation of Environmental Contaminants*. 2020. p. 321-354. doi:10.1016/B978-0-12-821199-1.00025-0
- Althubaiti A. Sample size determination: A practical guide for health researchers. *J Gen Fam Med*. 2023;24(2):72-78. doi:10.1002/jgf2.600
- Aragaw TA. Plastic waste management strategies toward zero waste: Status, perspectives and recommendations for Ethiopia. *Cambridge Prisms: Plastics*. 2025;2018(2024):1-7.
- Archibong FN, Orakwe LC, Ubah JI, Okafor VCO, Mbam SO. Menace of waste rubber contamination in public health and environment around world of automobile industrialization: a review. *Int J Environ Sci Technol*. 2025;1-18. doi:10.1007/s13762-025-06706-9
- Asamoah SP, Adom D, Kquofi S, Nyadu-Addo R. Recycled art from plastic waste for environmental sustainability and aesthetics in Ghana. *Res J Adv Humanit*. 2022;3(3):29-58. doi:10.58256/rjah.v3i3.872
- Aswar Iskandar RS. The Influence of attitude, subjective norms and perceived behavioral control on intention. *Am J Econ*. 2018;4(1):63-84. doi:10.5923/j.economics.20170706.02
- Aya FC, Nwite JN. Implication of Roasting Goats with Tyre on Human Health and the Environment in Abakaliki, Ebonyi State, Nigeria. *J Pollut Eff Control*. 2015;4(1):1-4. doi:10.4172/2375-4397.1000153
- Azlina N, Mokmin M, Rassy RP, Yie DL. Evaluating augmented reality in physical education for dyslexic students from the perspectives of teachers and students. *Sci Rep*. 2025;15(7682):1-15.
- Belontz SL, Corcoran PL, Davis H, Hill KA, Jazvac K, Robertson K, *et al*. Embracing an interdisciplinary approach to plastics pollution awareness and action. *Ambio*. 2019;48(8):855-866. doi:10.1007/s13280-018-1126-8
- Brennan RE, Portman ME. Situating Arab-Israeli artisanal fishermen's perceptions of marine litter in a socio-institutional and socio-cultural context. *Mar Pollut Bull*. 2017;115(1-2):240-251. doi:10.1016/j.marpolbul.2016.12.001
- Buoso E, Masi M, Limosani RV, Oliviero C, Saeed S, Iulini M, *et al*. Endocrine Disrupting Toxicity of Bisphenol A and Its Analogs: Implications in the Neuro-Immune Milieu. *J Xenobiot*. 2025;15(13):1-31.
- Caminiti C, Diodati F, Puntoni M, Balan D, Maglietta G. Surveys of Knowledge and Awareness of Plastic Pollution and Risk Reduction Behavior in the General Population: A Systematic Review. *Int J Environ Public Health*. 2025;22(2):1-20. doi:10.3390/ijerph22020177
- Chibueze S, Matthew I, Ogwu C. Sustainable Development and Biodiversity Sustainable Utilization and Conservation of Africa's Biological Resources and Environment. 2023. p. 1-690.
- Chukwuone NA, Amaechina EC, Ifelunini IA. Determinants of household's waste disposal practices and willingness to participate in reducing the flow of

- plastics into the ocean: Evidence from coastal city of Lagos Nigeria. *PLoS One*. 2022;17:1-23. doi:10.1371/journal.pone.0267739
18. Dey S, Veerendra GTN, Babu PSSA, Manoj AVP, Nagarjuna K. Degradation of Plastics Waste and Its Effects on Biological Ecosystems: A Scientific Analysis and Comprehensive Review. *Biomed Mater Devices*. 2024;2(1):1-44. doi:10.1007/s44174-023-00085-w
 19. Egwuatu VO. The Feasibility and Impact of Implementing the Finnish Method of Plastic Recycling in Nigeria [thesis]. 2023. p. 1-56.
 20. Ewah Ofodire Innocent, Chukwuemeka E. Assessment of Local Government and Community Cooperation in Rural Development: A Study of Ikwo Local Government Area of Ebonyi State. *Int J Res Innov Soc Sci*. 2023;VII(2454):1175-1189. doi:10.47772/IJRISS
 21. Ezeudu OB, Tenebe IT, Ujah CO. Status of Production, Consumption, and End-of-Life Waste Management of Plastic and Plastic Products in Nigeria: Prospects for Circular Plastics Economy. *Sustainability*. 2024;16(18):1-25. doi:10.3390/su16187900
 22. Fayshal MA. Current practices of plastic waste management, environmental impacts, and potential alternatives for reducing pollution and improving management. *Heliyon*. 2024;10(23):e40838. doi:10.1016/j.heliyon.2024.e40838
 23. Ferronato N, Maalouf A, Mertenat A, Saini A, Khanal A, Copertaro B, *et al*. A review of plastic waste circular actions in seven developing countries to achieve sustainable development goals. *Waste Manag Res*. 2024;42(6):436-458. doi:10.1177/0734242X231188664
 24. Ferronato N, Torretta V. Waste mismanagement in developing countries: A review of global issues. *Int J Environ Res Public Health*. 2019;16(6):1-28. doi:10.3390/ijerph16061060
 25. Filicetto L, Rothenberg G. Biodegradable Plastics: Standards, Policies, and Impacts. *ChemSusChem*. 2021;14(1):56-72. doi:10.1002/cssc.202002044
 26. Frisby MB. Critical Quantitative Literacy: An Educational Foundation for Critical Quantitative Research. *AERA Open*. 2024;10(1):1-13. doi:10.1177/23328584241228223
 27. Fu C, Wang J, Qu Z, Skitmore M, Yi J, Sun Z, *et al*. Structural Equation Modeling in Technology Adoption and Use in the Construction Industry: A Scientometric Analysis and Qualitative Review. *Sustainability*. 2024;16(9):1-21. doi:10.3390/su16093824
 28. Gleason BW, Von Gillern S, Gillern V. Digital citizenship with social media: Participatory practices of teaching and learning in secondary education. *Int Forum Educ Technol Soc*. 2018;21(1):200-212. Available from: https://lib.dr.iastate.edu/edu_pubs/100
 29. Heidbreder LM, Bablok I, Drews S, Menzel C. Tackling the plastic problem: A review on perceptions, behaviors, and interventions. *Sci Total Environ*. 2019;668:1077-1093. doi:10.1016/j.scitotenv.2019.02.437
 30. Hennink M, Kaiser BN. Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523. doi:10.1016/j.socscimed.2021.114523
 31. Holtom B, Baruch Y, Aguinis H, Ballinger GA. Survey response rates: Trends and a validity assessment framework. *Hum Relat*. 2022;75(8):1560-1584. doi:10.1177/00187267211070769
 32. Ibrahim MA, Saba AO, Mohammed M, Ojewole AE. Public awareness and perception of the ecological impacts and responsibility for plastic pollution in Nigeria. *Environ Socio-econ Stud*. 2025;13(1):15-27. doi:10.2478/enviro-2025-0002
 33. Ugoeze KC, Amogu EO, Oluigbo KE, Nwachukwu N. Environmental and public health impacts of plastic wastes due to healthcare and food products packages: A Review. *J Environ Sci Public Health*. 2021;5(1):1-31. doi:10.26502/jesph.96120114
 34. Keskes MI, Mohamed AH, Borz SA, Niț MD. Improving National Forest Mapping in Romania Using Machine Learning and Sentinel-2 Multispectral Imagery. *Remote Sens*. 2025;17(4):1-26. doi:10.3390/rs17040715
 35. Kreshpaj B, Orellana C, Burström B, Davis L, Hemmingsson T, Johansson G, *et al*. What is precarious employment? A systematic review of definitions and operationalizations from quantitative and qualitative studies. *Scand J Work Environ Health*. 2020;46(3):235-247. doi:10.5271/sjweh.3875
 36. Lakhari IA, Yan H, Zhang J, Wang G, Deng S, Bao R, *et al*. Plastic Pollution in Agriculture as a Threat to Food Security, the Ecosystem, and the Environment: An Overview. *Agronomy*. 2024;14:1-36.
 37. Lakhout A. Mitigating landfill emissions strategies for effective waste management in tabuk. *Cleaner Waste Syst*. 2024;9:100187. doi:10.1016/j.clwas.2024.100187
 38. Lerpiniere DJ, Wilson DC, Velis CA. Official development finance in solid waste management reveals insufficient resources for tackling plastic pollution: A global analysis of two decades of data. *Resour Conserv Recycl*. 2025;212:107918. doi:10.1016/j.resconrec.2024.107918
 39. Macheca AD, Mutuma B, Adalima JL, Midheme E, Lúcas LHM, Ochanda VK, *et al*. Perspectives on Plastic Waste Management: Challenges and Possible Solutions to Ensure Its Sustainable Use. *Recycling*. 2024;9(5):77.
 40. Matavos-Aramyan S. Addressing the microplastic crisis: A multifaceted approach to removal and regulation. *Environ Adv*. 2024;17:100579. doi:10.1016/j.envadv.2024.100579
 41. Mihai FC, Meidiana C, Elagroudy S, Ulman SR, Gutberlet J, Carvalho C. Plastic Waste Management for Zero Waste to Landfills: Potential, Challenges, and Opportunities. In: *Zero Waste Management Technologies*. 2024. p. 97-136. doi:10.1007/978-3-031-57275-3_6
 42. Mihai FC, Gündogdu S, Markley LA, Olivelli A, Khan FR, Gwinnett C, *et al*. Plastic Pollution, Waste Management Issues, and Circular Economy Opportunities in Rural Communities. *Sustainability*. 2022;14(1):1-48. doi:10.3390/su14010020
 43. Moshood TD, Nawanir G, Mahmud F, Mohamad F, Ahmad MH, AbdulGhani A. Sustainability of biodegradable plastics: New problem or solution to solve the global plastic pollution? *Curr Res Green Sustain Chem*. 2022;5:1-18. doi:10.1016/j.crgsc.2022.100273
 44. Nielsen TD, Hasselbalch J, Holmberg K, Stripple J. Politics and the plastic crisis: A review throughout the plastic life cycle. *Wiley Interdiscip Rev Energy Environ*. 2020;9(1):1-18. doi:10.1002/wene.360
 45. Nnaji J, Madu E, Chukwuemeka-Okorie H. Polycyclic Aromatic Hydrocarbons (PAHs) Content in Cattle Hides and Meat Singed with Scrap Rubber Tyres. *J Appl Sci*

- Environ Manage. 2017;21(6):1105.
46. Nuojuua S, Cracknell D, Heske A, Pahl S, Wyles KJ, Thompson RC. Global scoping review of behavioral interventions to reduce plastic pollution with recommendations for key sectors. *Conserv Sci Pract.* 2024;6(8):1-18. doi:10.1111/csp2.13174
 47. Oladipupo SB, Ayanshola AM, Adeleye AT, John KI. Assessment of plastic waste generation and management in residential locations, Ilorin, Nigeria: DPSIR analysis and circular economy pathway. *J Umm Al-Qura Univ Appl Sci.* 2024;10(4):624-639. doi:10.1007/s43994-024-00130-4
 48. Olatayo KI, Mativenga PT, Marnewick AL. Pathways to zero plastic waste landfill: Progress toward plastic circularity in South Africa. *J Ind Ecol.* 2024;28:1270-1288. doi:10.1111/jiec.13533
 49. Onuoha DC, Odoh CC, Odoh G. A Review of the Environmental and Health Implications of Plastic Wastes Pollution in Nigeria. *IIARD Int J Geogr Environ Manage.* 2024;10(3):258-300. doi:10.56201/ijgem.v10.no3.2024.pg258.300
 50. Padmanabha A, Animal KV, Maurya NK, Borichangar RV, Parmar JN. Aquatic Pollution: Sources, Effects, and Biotechnological Approaches for Remediation. *J Adv Biol Biotechnol.* 2025;28(7):1-18. doi:10.9734/jabb/2025/v28i72670
 51. Popa S. Towards 2030 and beyond: Challenges, constants, and the need to transform education. *Prospects.* 2025;54(3):507-513. doi:10.1007/s11125-024-09715-7
 52. Putri LD, Agustin H, Bakti I, Suminar JR. Genetic Perception Versus Nutritional Factors: Analyzing the Indigenous Baduy Community's Understanding of Stunting as a Health Issue. *Int J Environ Res Public Health.* 2025;22:1-20.
 53. Rahman MM. Sample Size Determination for Survey Research and Non-Probability Sampling Techniques: A Review and Set of Recommendations. *J Entrep Bus Econ.* 2023;11(1):42-62.
 54. Rehman WU, Iqbal KMJ, Khan MI, Ullah W, Shah AA, Tariq MAR. Multi-Criteria Relationship Analysis of Knowledge, Perception, and Attitude of Stakeholders for Engagement towards Maritime Pollution at Sea, Beach, and Coastal Environments. *Sustainability.* 2022;14(24):1-17. doi:10.3390/su142416443
 55. Sharif A, Sadaf F, Aman E. Domestic Plastic Consumption Patterns: A Data-Informed Sociological Analysis of Education and Behaviour Among Homemakers. *Asian Bull Big Data Manag.* 2023;3(1):197-211. doi:10.62019/abdbm.v3i1.47
 56. Sim J, Saunders B, Waterfield J, Kingstone T. Can sample size in qualitative research be determined a priori? *Int J Soc Res Methodol.* 2018;21(5):619-634. doi:10.1080/13645579.2018.1454643
 57. Stoett P, Scrich VM, Elliff CI, Andrade MM, de M Grilli N, Turra A. Global plastic pollution, sustainable development, and plastic justice. *World Dev.* 2024;184:1-9. doi:10.1016/j.worlddev.2024.106756
 58. Swarga AB. Building Bridges, Clearing Waste: A Multi-Stakeholder Collaboration to Fishing Village Cleanup. *Local Adm J.* 2024;17:499-520.
 59. Talwar V, Crossman AM, Block S, Brubacher S, Dianiska R, Espinosa Becerra AK, *et al.* Urgent issues and prospects on investigative interviews with children and adolescents. *Leg Criminol Psychol.* 2024;30:61-82. doi:10.1111/lcrp.12269
 60. Tang KHD. Attitudes towards Plastic Pollution: A Review and Mitigations beyond Circular Economy. *Waste.* 2023;1(2):569-587. doi:10.3390/waste1020034
 61. Umaru IJ, Joel AE, Habibu B, Umaru KI, Chizaram BC. Toxicity and environmental plastic disposal, its death and survival rate. *Int J Adv Biochem Res.* 2019;3(2):64-75. doi:10.33545/26174693.2019.v3.i2a.136
 62. Valavanidis PA. Plastic Pollution, Unsustainable Environmental Problem? Industry and academic research must co-operate to short out the pervasive global problem of plastic waste. National and Kapodistrian University of Athens; 2024. p. 1-44. Available from: <https://www.researchgate.net/publication/378610346>
 63. van Oosterhout L, Dijkstra H, van Beukering P, Rehdanz K, Khedr S, Brouwer R, *et al.* Public Perceptions of Marine Plastic Litter: A Comparative Study Across European Countries and Seas. *Front Mar Sci.* 2022;8:1-14. doi:10.3389/fmars.2021.784829
 64. Van Rensburg ML, Nkomo SL, Dube T. The 'plastic waste era'; social perceptions towards single-use plastic consumption and impacts on the marine environment in Durban, South Africa. *Appl Geogr.* 2020;114:102132. doi:10.1016/j.apgeog.2019.102132
 65. Woodcock S, Anderson J. Conceptions to classrooms: The influence of teacher knowledge on inclusive classroom practice. *Int J Educ Res.* 2025;8:100412. doi:10.1016/j.ijedro.2024.100412
 66. Zainab Akhwand, Muhammad Ali Tarar, Sohail Akhtar, Anum Zahra, Sharjeel Saleem, Ayesha Anwar. Perception, Attitude, and Practice about Environment Conservation through Plastic Waste Management among Students in Ghazi. *J Soc Sci Arch.* 2024;2(2):190-211.
 67. Zhang Z, Chen Z, Zhang J, Liu Y, Chen L, Yang M, *et al.* Municipal solid waste management challenges in developing regions: A comprehensive review and future perspectives for Asia and Africa. *Sci Total Environ.* 2024;930:172794. doi:10.1016/j.scitotenv.2024.172794

How to Cite This Article

Archibong FN, Onyeneke RU, Ojeh OA, Nwagu KE, Ijeh IC, Ukwa JN, Anyigor CP, Nwabue FI, Ogbodo NJ, Oyekezie CM, Stephen-Emeya AC. Perception, use, attitude and knowledge of stakeholders on plastic waste management: A novel evidence from AE-FUNAI community. *J Front Multidiscip Res.* 2026;7(1):203–14.

Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.