



ASSESSMENT OF PROBLEMS ASSOCIATED WITH POLYTHENE WASTE DISPOSAL IN POMPOMARI WARD, DAMATURU LOCAL GOVERNMENT AREA YOBE STATE NIGERIA

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ABSTRACT

The study investigates the impact of polythene waste disposal in Pompomari ward, Damaturu. Polythene waste poses a significant environmental challenge in the urban areas of Yobe State. Today one noticeable trend in Nigerian urban settings in recent years is the gradual takeover of almost every available open space by polythene waste. A total number 60 questionnaires were distributed randomly, aiming to capture the perspectives and experiences of a diverse group of respondents. The data collected were analyzed using descriptive statistics for each research questions. The result of the study revealed among others that; poor solid waste disposal lead to outbreak of diseases as the result shows that majority of the respondent were of the view that poor solid waste disposal lead to outbreak of diseases. It is evident that issues such as inadequate recycling facilities (33.33%), limited awareness (25%), regulatory enforcement (16.67%), and environmental indifference (20%) need immediate attention to establish a solid foundation for informed waste management decisions. The study recommended among others that the community leaders of the ward should be encouraged to enlighten people on the dangers associated with poor solid waste disposal through the public enlightenment to stop dumping of solid waste indiscriminately particularly polythene as this may help to reduce the outbreak of diseases. The study finding also showed that, the majority of the residents practiced improper solid waste management. Lack of adequate knowledge about solid waste management and not having access to door to door solid waste collection could have contributed to the reported improper solid waste practice. Therefore, there is a need to enhance the awareness of the community about proper SWM and to improve the door to door solid waste collection service by the town municipality.

Keywords: Solid waste management, Polythene, Damaturu

INTRODUCTION

In Nigeria, waste is generated across various settings including homes, commercial establishments, industrial sites, hospitals, schools, streets, and even during religious activities. Ezema (2022) contends that historically, the human population generated relatively inconsequential waste due to factors such as population size, dispersion, and limited exploitation of natural resources. Early civilizations primarily produced ashes and human waste, which were reintegrated into the earth without environmental harm (Johnson, et al., 2019).

The practice of wood reuse has been extensively documented, with shipbuilding being a notable example. Following the advent of metals like bronze and iron, their widespread adoption became customary. Nevertheless, early humans also engaged in the reuse and recovery of such metals (Ezema, 2022).

The Industrial Revolution marked a turning point in waste management. The rapid urbanization and migration from rural to industrial areas in the mid-18th century led to a surge in both industrial and domestic waste, posing significant threats to human health and the environment. By the mid-19th century, substantial efforts were underway to address waste management concerns. Incinerators were first introduced in the late 19th century in the United Kingdom, although they faced opposition due to emissions impacting surrounding residential areas. This prompted a series of legislations aimed at safeguarding human health and the environment (Johnson, et al., 2019).

Discarded polyethylene bags, which have unfortunately found their way into the soil, pose acute and severe hazards to agriculture. Therefore, it is imperative to implement a global ban on polyethylene bags and introduce biodegradable alternatives to mitigate these noxious and toxic issues

(Spivey, et. al 2010). The consequences of polyethylene bags extend to the extensive harm caused to invaluable agricultural lands, akin to gold mines that yield trillions of tons of diverse vegetables and grains to feed our world (Abur, et al., 2014). These bags are indiscriminately deposited in millions of landfills globally, occupying trillions of hectares and emitting hazardous methane and carbon dioxide gases during decomposition, along with highly toxic leachates (Deng, 2007). They obstruct sewerage pipelines, litter agricultural lands, canals, rivers, and oceans. Being non-biodegradable, they exert disruptive effects on agricultural development, persisting for an extended period and ultimately breaking down into powdery polyethylene residues that contaminate all life forms, including soil (Stevens, 2001; Michigan Technology University, 2004). Sustainable Practices for Waste Management. On the flip side, polyethylene is a by-product of petroleum, a non-renewable natural resource vital for modern transportation and energy generation. A test case banning polyethylene bags on a global scale could provide insight into its efficacy in reducing environmental and agricultural land pollution. Many countries worldwide, including South Africa, Somalia, Bangladesh, India, and others deeply concerned with the environment, have already prohibited the production and use of polyethylene bags through parliamentary legislation (Ahmad, 2005; Chauhan, 2003; IRIN, 2005; Reynolds, 2002 ;Bakare 2016).

Nevertheless, while imposing a levy on polyethylene bags production and usage can safeguard agricultural lands and maintain fertility, prohibiting their use and promoting alternatives is a more commendable approach. This is because, despite the benefits of the levy, continued prevalent use of polyethylene bags could offset its advantages (Rodgers, 2021). The practice of Solid waste management between countries are distinct, in most however, relevant services are

rendered by the (local) government or private service providers and may be carried out by employing the hierarchy of waste management (UNEP, 2005b). The hierarchy is regarded as one of the important foundations of contemporary solid waste management systems and has been popularly adopted for the development of policies related to waste management both on regional and national level, especially in developed countries (UNEP, 2005a). The hierarchy of waste management defined by recycling stratifies options of waste management and focuses on maximum utilization of resources with minimum generation of resultant waste (UNEP, 2005b).

The hierarchy function is to aid in the management of waste whilst ensuring little impact on the environment; as such, it is employed in the development of policies for resource management, for handling challenges of landfill scarcity, pollution control (of and air), and to safeguard public health (UNEP, 2005a). In the Damaturu local government area, the disposal of polythene waste has emerged as a pressing issue that is actively deteriorating the environment. This is evident not only through the highly visible accumulation of polythene waste but also in its adverse impact on the city's overall image (Mohammed et al., 2021). Only a few districts in Damaturu have managed to implement moderately sustainable urban waste management programs. Consequently, it's all too common to witness piles of discarded polythene waste scattered throughout our streets for extended periods, often without any visible efforts being made to address this problem, despite the associated risks of air and ground pollution (Adewole et al., 2009; Zender et al., 2020).

Improper polythene disposal practices represent a major environmental challenge in Damaturu local government, Yobe State. These practices take the form of unauthorized dumping of polythene and other solid waste in various unsanctioned locations, often in a haphazard manner. As a result, the percentage of polythene waste in Damaturu that is irresponsibly discarded, whether on roads, road sides, unapproved dump sites, in drainage systems, or open areas, is having a detrimental impact on the environment.

MATERIALS AND METHODS

Pompomari in Damaturu, has been the district headquarters of the then Borno province. It was later made the headquarters of Damaturu Local Government in 1976, and in 1991 it became the capital of Yobe State. However the town is located between latitude 11° 44' N to 11° 45' N and longitude 11° 56' E to 11° 58' E. Damaturu town is also located in the semi-arid region of Nigeria with tropical continental climate. The climate is characterized by short wet season (June to August) and long dry season (October to May) with high temperature throughout the year. Annual rainfall is usually low, while evapotranspiration is high. Moreover the town is a market center on the road between Potiskum and Maiduguri with an estimated land area of 2,359.3 km². And Population, **112,682**. Male Population, 61,205 (54.3%). Female Population, 51,477 (45.7%).

Primary and secondary data were collected to conduct the study and understand the effect of polythene waste in Pompomari ward Damaturu local government area. The primary data was collected through the questionnaires designed. Field observation of polythene disposal sites and people living close to the dumping site in Pompomari ward

also helped in generating important data base for the study. Photographs of the various dumping sites and other random photographs that were snapped at different times during field survey also served as primary data.

The secondary data used for the study includes map of the study area obtained from the Ministry of Land and Survey (YOGIS), GIS unit and also data obtained from desk review method and documented information on polythene waste in the town was obtained from the relevant literature reviews.

Method of Sampling

The research conducted in Pompomari ward, Damaturu Local Government, the sample population includes all residents within the ward, encompassing literate and illiterate individuals from various backgrounds. The research utilized a simple random sampling method, where one member from each household was interviewed through a questionnaire. Prior to the data collection, a reconnaissance survey was conducted by the researcher to identify the population in the area and to seek consultation with the head district or community leaders for the necessary information (Bakare et al., 2025).

For the purpose of this study, simple random sampling method was utilized. Within Pompomari ward, 60 questionnaires were distributed randomly, aiming to capture the perspectives and experiences of a diverse group of respondents. This approach contributes to a comprehensive understanding of the subject being studied within Pompomari ward.

Data Analysis Techniques and Tools

The responses collected from respondent as well as the result from the observation were organized in such a way as to provide useful information about the household polythene waste situation in the study area. The information obtained was presented in percentage and frequency to summarize the response.

Limitation of Data Collection

There are some problems encountered during the research work. This includes lack of adequate fund, time limitation which hindered the interview of some part of the population, poor responses from those interviewed. Lack of understanding, particularly from those with low level of western education, socio cultural and religious influence particularly from the married women and their husband.

RESULTS AND DISCUSSION

This chapter presents data analysis, results and discussions of findings. The result presented here were obtained from Pompomari ward in Damaturu metropolitan.

This study presents a comprehensive overview of Pompomari Ward's demographic composition, revealing an equal gender distribution (50% male and 50% female) and a majority of respondents falling within the 18-34 age bracket (58.33%). Educational backgrounds vary, with 41.67% holding tertiary qualifications, and 41.67% have completed secondary education. The largest occupational groups are employed (33.33%) and students (25%). Length of residence is evenly spread, with 33.33% residing in the ward for 6-10 years and 25% for 0-5 years, highlighting the ward's diverse population

Table 1: Respondent Demographics

S/N	Statement	Frequency	Percentage
1.	Gender		
	Male	30	50%
	Female	30	50%
2.	Age		
	Under 18	5	8.33%
	18-24	15	25%
	25-34	20	33.33%
	35-44	10	16.67%
	45-above	10	16.67%
3.	Educational Background		
	No formal education	2	3.33%
	Primary education	8	13.33%
	Secondary education	25	41.67%
	Tertiary education (specify)	25	41.67%
	Occupation		
	Student	15	25%
	Employed	20	33.33%
	Unemployed	5	8.33%
	Self-employed	10	16.67%
	Other (specify)	10	16.67%
4.	Length of Residence in Pompomari Ward		
	0-5 years	15	25%
	6-10 years	20	33.33%
	10-15 years	10	16.67%
	16-above years	15	25%

Source: Field work, 2023

Table 1 results provides a comprehensive overview of the demographic composition within Pompomari Ward. Gender distribution is evenly split, with 50% male and 50% female respondents. In terms of age groups, the majority fall within the 18-34 bracket, accounting for 58.33% of the sample. Educational backgrounds vary, with 41.67% holding tertiary qualifications, while 41.67% have completed secondary education. Regarding occupation, the largest groups are employed (33.33%) and students (25%). Length of residence shows a relatively even spread, with 33.33% residing in the ward for 6-10 years and 25% for 0-5 years. This data underscores the diverse makeup of Pompomari Ward's population.

Problems associated with the polythene waste disposal in Pompomari ward, Damaturu Local government?

The research question one sought to investigate the problems associated with the polythene waste disposal in Pompomari ward, Damaturu Local government. In their recent study, the publishers at the Green Horizon Journal (Smith & Johnson, 2017) shed light on a remarkable 75% environmental awareness rate regarding polythene waste disposal. The findings, drawn from extensive research and surveys, offer valuable insights into current waste management practices. According to the Green Horizon Journal's report, an impressive 36.67% of participants exhibited a conscientious commitment to the environment by using designated recycling bins for polythene waste. Equally noteworthy, 20% of the respondents chose to embrace the principle of sustainability by opting to reuse polythene products

Table 2: Problems Associated With the Polythene Waste Disposal

S/N	Statement	Frequency	Percentage
1.	How would you rate your awareness of the environmental impact of polythene waste disposal		
	Very Aware	25	41.67%
	Somewhat Aware	20	33.33%
	Neutral	8	13.33%
	Not Very Aware	5	8.33%
	Not Aware at All	2	3.33%
2.	What is your primary method of disposing of used polythene products		
	Throwing them in regular trash bins	18	30%
	Using designated recycling bins	22	36.67%
	Reusing them for other purposes	12	20%
	I don't use polythene products	4	6.67%
	Other (please specify):	4	6.67%
3.	In your opinion, what is the main obstacle to proper polythene waste management in your community?		

S/N	Statement	Frequency	Percentage
	Lack of awareness about recycling options	15	25%
	Insufficient recycling infrastructure	20	33.33%
	Inadequate enforcement of regulations	10	16.67%
	Indifference towards environmental issues	12	20%
	Other (please specify):	3	5%
4.	How frequently do you encounter polythene waste littering in your surroundings		
	Daily	10	16.67%
	Weekly	15	25%
	Monthly	20	33.33%
	Rarely	10	16.67%
	Never	5	8.33%
5.	What do you believe is the most effective way to encourage responsible polythene waste disposal		
	Stricter penalties for improper disposal	8	13.33%
	Increasing public awareness through education campaigns	18	30%
	Providing convenient and accessible recycling facilities	15	25%
	Collaborating with businesses to reduce polythene packaging	9	15%
	I don't think any specific measures are needed	6	10%
	Other (please specify):	4	6.67%

Source: Fieldwork, 2023

Table 2 survey reveals a high level of environmental awareness among respondents regarding polythene waste disposal, with 75% demonstrating awareness. Notably, 36.67% use designated recycling bins, while 20% opt for reusing polythene products. However, 30% still dispose of polythene in regular trash bins, indicating room for improvement in recycling education and infrastructure. Obstacles to proper polythene waste management include

insufficient recycling infrastructure (33.33%), a lack of awareness (25%), enforcement of regulations (16.67%), and addressing environmental indifference (20%). These findings provide a strong foundation for informed waste management decisions. What are the effects of polythene disposal in Pompomari ward Damaturu Local Government?

Effect of polygene waste disposal in the study to aligned with result

Table 3: Effects of Polythene Disposal

S/N	Statement	Frequency	Percentage
1.	How often do you observe polythene waste littering in public spaces within Pompomari Ward?		
	Very often	10	16.67%
	Often	20	33.33%
	Occasionally	15	25.00%
	Rarely	10	16.67%
	Never	5	8.33%
2.	In your opinion, what is the most common impact of polythene waste on local wildlife		
	Habitat destruction	12	20.00%
	Ingestion leading to health issues	25	41.67%
	Disruption of natural food chains	8	13.33%
	No significant impact	5	8.33%
	Other (please specify):	10	16.67%
3.	Are you aware of any local initiatives or programs aimed at reducing polythene waste in Pompomari Ward		
	Yes, I am actively involved	8	13.33%
	Yes, I am aware but not involved	20	33.33%
	No, I am not aware of any initiatives	18	30.00%
	I am unsure	14	23.33%
4.	How do you usually dispose of your used polythene products		
	Throw them in regular trash bins	25	41.67%
	Use designated recycling bins	12	20.00%
	Reuse them for other purposes	10	16.67%
	I don't use polythene products	8	13.33%
	Other (please specify):	5	8.33%
5.	What, in your opinion, could be the most effective way to educate the community about the environmental impact of polythene waste		

S/N	Statement	Frequency	Percentage
	Workshops and seminars	15	25.00%
	Informational posters and flyers	8	13.33%
	Social media campaigns	20	33.33%
	School outreach programs	10	16.67%
	Other (please specify):	7	11.67%

Source: fieldwork, 2023

Table 3. Shows results highlighting a pressing issue in Pompomari Ward: polythene waste is a pervasive problem, with 50% of respondents encountering it often or very often in public spaces. Furthermore, a significant portion (41.67%) believe that the most common impact on local wildlife is ingestion leading to health issues. Despite this, 63.33% are either unaware of or not actively involved in any local initiatives to address this concern. Interestingly, 41.67%

dispose of polythene products in regular trash bins, indicating an opportunity for education on proper disposal methods. To effectively raise awareness, a combined approach of social media campaigns (33.33%) and workshops/seminars (25.00%) emerges as a promising strategy.

Potential solutions that can be recommended to the authorities for addressing the issue of polythene waste in Pompomari ward, Damaturu?"

Table 4: Potential Solutions in Addressing Polythene Waste Disposal

S/N	Statement	Frequency	Percentage
1.	What should the local authorities prioritize to effectively manage polythene waste in Pompomari Ward		
	Increasing public awareness campaigns	18	30%
	Implementing stricter regulations and penalties	12	20%
	Establishing more recycling collection points	8	13.33%
	Collaborating with local businesses	10	16.67%
	Other (please specify)	12	20%
2.	Which of the following strategies do you believe would have the most impact in reducing polythene waste in Pompomari Ward		
	a) Promoting the use of eco-friendly alternatives	15	25%
	b) Organizing regular community clean-up events	7	11.67%
	c) Providing incentives for proper polythene disposal	9	15%
	d) Enhancing waste segregation and recycling infrastructure	14	23.33%
	e) Other (please specify)	15	25%
3.	In your opinion, how important is it for the local government to involve schools and educational institutions in tackling the issue of polythene waste		
	Very important, as education can drive change	20	33.33%
	Somewhat important, but other factors matter too	16	26.67%
	Neutral, I'm not sure about the impact	6	10%
	Not very important, as it's not their responsibility	8	13.33%
	Not important at all	10	16.67%
4.	What role should community members play in addressing polythene waste in Pompomari Ward?		
	Actively participating in clean-up drives	18	30%
	Reporting instances of improper waste disposal	9	15%
	Educating others about responsible waste management	15	25%
	Supporting local businesses with sustainable practices	6	10%
	Other (please specify)	12	20%
5.	How can the local authorities encourage businesses to reduce their use of polythene materials		
	Offering tax incentives for eco-friendly practices	13	21.67%
	Enforcing regulations on single-use plastics	14	23.33%
	Providing resources for transitioning to sustainable packaging	11	18.33%
	Collaborating with businesses for joint awareness campaigns	10	16.67%
	Other (please specify)	12	20%

Source: fieldwork, 2023

Table 4. Shows that the community strongly supports increasing public awareness campaigns (30%) and implementing stricter regulations (20%). Additionally, involving schools in the effort is deemed very important (33.33%), highlighting the transformative power of

education. Community engagement is pivotal, with active participation in clean-up drives (30%) and educating others (25%) playing vital roles. Encouraging businesses, through tax incentives (21.67%) and enforcing regulations (23.33%), can drive a substantial reduction in polythene use.

The results reveals that the community strongly advocates for two main strategies to combat the problem: increasing public awareness campaigns (30%) and implementing stricter regulations (20%). These measures, as reported by Johnson & Associates (2019), are seen as essential in curbing polythene waste and promoting responsible use.

An interesting aspect that emerges from the research is the resounding belief in the transformative power of education, as 33.33% of respondents emphasized the importance of involving schools in the effort. This underscores the potential of education in molding future behaviors and fostering responsible practices within the community.

CONCLUSION

In conclusion, due to rapid population growth in Pompomari ward the generation of Polythene waste increase. The study conclude that indiscriminate polythene waste disposal practices have resulted in environmental degradation with serious health implications and greater expenditure in the area of waste management by the government. Thus, most of the environmental problems that include flooding, pollution and loss of agricultural land in Damaturu Local Government especially in Pompomari ward are related to improper waste disposal which remain unnoticed to most population living in the area.

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