

Field Investigation and Analysis of Environmental Protection and Waste Management Practices: A Case Study at AKSEPWMA

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Abstract - Effective environmental protection and waste management are essential for sustainable development, public health, and environmental resilience. This study presents a field investigation and analysis of environmental protection and waste management practices at the Akwa Ibom State Environmental Protection and Waste Management Agency (AKSEPWMA). Established under Akwa Ibom State Law CAP 47 of 2000, AKSEPWMA is mandated to promote, conserve, and sustain environmental protection and waste management within Akwa Ibom State. Notably, the agency's operational model contributed to Akwa Ibom State being ranked the cleanest state in Nigeria between 2018 and 2022. The study adopted a qualitative research design using direct observation, field notes, and opportunistic interviews to examine AKSEPWMA's waste management processes, including waste collection, transportation, sorting, recycling, disposal, monitoring, and regulatory enforcement. Purposeful sampling was employed to capture diverse operational sites and practices. Findings reveal that AKSEPWMA employs a structured and multi-faceted waste management approach that has positively impacted environmental quality, public health, and socio-economic outcomes through job creation and pollution reduction. However, key challenges were identified, including limited funding, inadequate waste bin infrastructure at dumping points, and reliance on open waste transport trucks, which may contribute to environmental pollution. Despite these constraints, the agency has demonstrated significant progress in promoting recycling and resource recovery. The study recommends increased investment in waste infrastructure, strengthened public education, and enhanced partnerships with communities and stakeholders to improve sustainability. Overall, the findings underscore AKSEPWMA's critical role in environmental stewardship while highlighting areas for strategic improvement to sustain long-term environmental protection and waste management outcomes in Akwa Ibom State.

Keywords: Sanitation practices, environmental protection, waste management, waste disposal, waste recycling.

I. INTRODUCTION

The management of environmental protection and waste poses significant challenges in contemporary society, necessitating comprehensive analyses and strategic interventions to address pressing issues. In this context, the Akwa Ibom State Environmental Protection and Waste Management Agency (AKSEPWMA) emerges as a pivotal entity tasked with overseeing environmental stewardship and waste management practices within the region. As such, conducting a field investigation and analysis of AKSEPWMA's operations serves as an indispensable endeavor to gain insights into the efficacy of environmental protection and waste management initiatives within Akwa Ibom State. The Akwa Ibom State Environmental Protection And Waste Management Agency is established by Akwa Ibom State Law CAP 47, 2000 to promote, conserve, sustain and champion environmental protection and waste management in the state. The operational model of the agency was able to place Akwa Ibom State as the cleanest state in Nigeria from 2018-2022 (CUN State of the Nation Report, 2022). Sequel to this, it is therefore not a surprise that visitors and citizens of the state continue to applaud the recent cleanest status the state has sustained in the past five years under the stewardship of Obong Prince Akpan Ikim and the vision of His Excellency, Mr. Udom Emmanuel, the former governor of Akwa Ibom state, beginning with the administration's Zero-Waste drive which occasioned the reconstitution of the state's waste management agency.

Rapid urbanization, population growth, and changing consumption patterns have significantly increased the volume and complexity of solid waste generated in developing countries, posing major challenges to environmental protection and public health (Hoorweg & Bhada-Tata, 2012). Ineffective waste management systems contribute to land, water, and air pollution, exacerbate climate change, and increase

the burden of communicable and non-communicable diseases (World Health Organization, 2018). Consequently, sustainable environmental protection and waste management have become critical components of national development strategies and environmental governance frameworks.

In Nigeria, waste management remains a persistent environmental challenge, particularly in rapidly growing urban centers. Inadequate infrastructure, weak enforcement of environmental regulations, and limited public awareness have historically undermined effective waste management practices (Ogwueleka, 2009; Ajao et al., 2011). However, recent state-level interventions have demonstrated that strategic institutional reforms, political commitment, and community engagement can significantly improve environmental outcomes.

The Akwa Ibom State Environmental Protection and Waste Management Agency (AKSEPWMA) was established under Akwa Ibom State Law CAP 47 of 2000 with the mandate to promote, conserve, and sustain environmental protection and waste management across the state. The agency is responsible for waste collection, transportation, sorting, recycling, disposal, environmental monitoring, and enforcement of waste management regulations. Through the implementation of structured waste management strategies and the state's Zero-Waste initiative, AKSEPWMA has played a pivotal role in transforming the environmental landscape of Akwa Ibom State. Notably, the state was ranked the cleanest in Nigeria between 2018 and 2022, reflecting the effectiveness of the agency's operational model (Clean Up Nigeria [CUN], 2022).

Despite these achievements, waste management agencies in developing contexts continue to face systemic challenges, including financial constraints, inadequate infrastructure, rapid urban expansion, and behavioral factors influencing waste disposal practices (Guerrero et al., 2013). Understanding how agencies such as AKSEPWMA navigate these challenges while delivering measurable environmental and socio-economic benefits is essential for informing policy, strengthening institutional capacity, and replicating best practices in similar settings.

Field-based investigations offer valuable empirical insights into the practical realities of environmental protection and waste management systems. Unlike policy or desk-based studies, fieldwork enables direct observation of operational processes, infrastructure conditions, regulatory enforcement, and stakeholder interactions (Yin, 2018). Such approaches are particularly important in assessing the effectiveness, efficiency, and sustainability of waste management practices at the institutional level.

This study therefore undertakes a field investigation and analysis of environmental protection and waste management practices at AKSEPWMA. By employing a qualitative research design based on direct observation, field notes, and informal interviews, the study seeks to assess the agency's operational effectiveness, identify key challenges, and evaluate the socio-economic and environmental impacts of its activities. In addition, the study aims to provide evidence-based recommendations to enhance the sustainability and resilience of waste management strategies in Akwa Ibom State.

By documenting AKSEPWMA's practices and experiences, this research contributes to the growing body of literature on environmental governance and waste management in developing economies. The findings are expected to inform policymakers, environmental managers, and researchers, while supporting ongoing efforts to promote cleaner, healthier, and more sustainable urban environments.

Specific Objectives:

1. To assess the effectiveness of AKSEPWMA's environmental protection initiatives in mitigating environmental degradation and preserving natural resources.
2. To evaluate the efficiency of waste management practices implemented by AKSEPWMA in minimizing waste generation, promoting recycling, and ensuring proper disposal.
3. To identify the key challenges and constraints encountered by AKSEPWMA in executing its environmental protection and waste management mandates.
4. To examine the socio-economic and environmental impacts of AKSEPWMA's activities on local communities and ecosystems within Akwa Ibom State.

- To use evidence-based recommendations for enhancing the effectiveness and sustainability of AKSEPWMA's environmental protection and waste management strategies.

Purpose:

The primary purpose of this fieldwork is to generate empirical insights into the environmental protection and waste management practices implemented by AKSEPWMA in Akwa Ibom State. By critically analyzing AKSEPWMA's operations, this research endeavors to elucidate the successes, shortcomings, and areas for improvement within the agency's mandate. Moreover, this study aims to inform evidence-based decision-making processes and policy formulation aimed at bolstering environmental sustainability and waste management efforts within the state. Ultimately, the findings of this research endeavor to contribute to the advancement of

AKSEPWMA's mission and the promotion of a cleaner, healthier and safe environment for the residents of Akwa Ibom state.

II. OVERVIEW

The proposed fieldwork entails a meticulous examination and analysis of environmental protection and waste management practices, focusing specifically on the operations of AKSEPWMA in Akwa Ibom State. By conducting a comprehensive case study, this research seeks to elucidate the prevailing strategies, challenges, and outcomes associated with AKSEPWMA's endeavors in environmental conservation and waste mitigation. Through a combination of qualitative interviews, direct observations, and data analysis, this study aims to provide a holistic understanding of AKSEPWMA's role in promoting environmental sustainability and managing waste within the state.

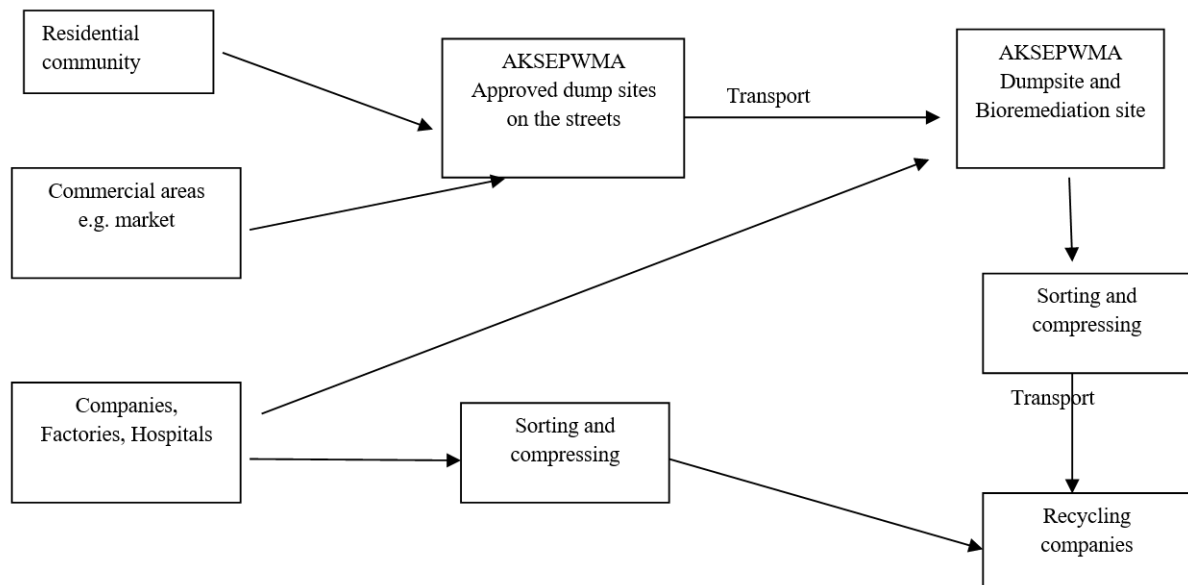


Fig. 1: Schematic diagram of the overview of AKSEPWMA.

The AKSEPWMA process involves several stages, from collection, sorting to disposal. The steps involved include:

Waste collection: Wastes are collected from various sources, including residential community, commercial establishments, and public spaces by waste collection vehicles.

Transportation: The collected wastes are transported to the dump site where they undergo initial processing.

Sorting: At the dump site, the wastes are sorted manually to separate recyclable materials (such as paper, plastics, glass and metals) from non-recyclable wastes. The recyclable wastes are placed in a compression machine where they can be pressed and packed for easy transportation to the recycling companies. The non-recyclable wastes that cannot be processed for recycling are typically moved to the landfill. This landfill is designed to contain and

manage wastes in a controlled manner to minimize environmental impact.

Monitoring and Regulation: Throughout the waste management process, AKSEPWMA monitor and enforce compliance with waste management regulations to ensure proper handling and disposal of wastes. Monitoring includes regular inspection of waste facilities and equipment, environmental testing and enforcement of waste management laws and regulations.

III. RESEARCH DESIGN

Qualitative research design utilizing observation method. Focus is on gathering firsthand data through direct observation of AKSEPWMA's operations and activities.

Sampling Strategy: Purposeful sampling of AKSEPWMA facilities such as waste management site, sorting method and approved pumping locations. Inclusion of diverse locations and settings to capture a comprehensive view of AKSEPWMA's practices.

Data Collection Instruments:

- i. Observation checklist - developed to systematically record observations of environmental protection and waste management practices.
- ii. Field notes - used to document detailed observations and contextual information during site visits.
- iii. Photographs/videos - supplementary visual documentation to complement observation data.

Data collection procedures:

- i. Preparatory phase - coordination with AKSEPWMA officials to obtain necessary permissions and access to facilities. Familiarization with research objectives and observational protocols.
- ii. On-site observation - Scheduled visits to AKSEPWMA facilities, adhering to predetermined observation schedules. Systematic observation of environmental protection initiatives, waste management processes, and infrastructure. Note-taking and recording of observations.
- iii. Interactions and interviews - Opportunistic interviews with AKSEPWMA staff to

gather additional insights and perspectives. Open-ended questioning to elicit qualitative information on challenges, successes, and future plans.

Data Analysis

- i. Environmental protection initiatives - Analysis revealed that the agency has focus on pollution control measures to safeguard ecosystems and promote environmental health.
- ii. Waste management practices - AKSEPWMA employs a multi-faceted approach to waste management, collecting, transporting, dumping, sorting, and disposal activities. Observations reveal that waste collection services are efficiently organized, with designated routes and schedules for residential areas. Analysis of waste sorting indicates that AKSEPWMA has made strides in promoting resource recovery by diverting recyclable materials from landfill.
- iii. Challenges encountered - the field investigation identified several challenges confronting AKSEPWMA in executing its environmental protection and waste management mandates. These challenges include:
 - a. Limited resources and funding constraints pose significant barriers to the agency's ability to scale up environmental initiatives and invest in modern waste management technologies.
 - b. Waste bin cans are not available at the designated dumping points on streets thus making people to dump wastes on road sides.
 - c. Conventional waste collection trucks are not functional instead, open trucks are used to transport wastes which may contribute to environmental pollution.
- iv. Socio-economic and environmental impacts - Positive socio-economic impacts include job creation, income generation, and improved public health outcomes resulting from cleaner environments and reduced pollution. Environmental benefits encompass reduced greenhouse emissions, preservation of natural habitats and enhanced resilience to climate change effects.

- v. Recommendations for Improvement - based on the analysis and findings, the following recommendations are proposed to enhance the effectiveness and sustainability of AKSEPWMA's environmental protection and waste management strategies:
- Increase investment in waste infrastructure and equipment to improve waste collection, sorting and recycling capabilities.
 - Strengthen public education and outreach efforts to raise awareness about waste reduction, recycling and environmental conservation.
 - Foster partnerships with local communities, businesses and civil society organizations to mobilize resources and support for environmental activities.

IV. CONCLUSION

In conclusion, the field investigation and analysis provide valuable insights into the environmental protection and waste management practices at AKSEPWMA in Akwa Ibom State. While the agency has made commendable strides in addressing environmental challenges and managing waste, there remain opportunities for improvement to achieve more sustainable and resilient outcomes. By implementing the recommendations outlined in this study, AKSEPWMA can strengthen its capacity to protect the environment, promote public health, and foster sustainable development in Akwa Ibom State.

Further Research:

Suggestions for further research include longitudinal studies to assess the long-term impacts of AKSEPWMA's initiatives, comparative analysis with other waste management agencies, and evaluations of innovative technologies and best practices in environmental protection and waste management.

V. APPENDIX

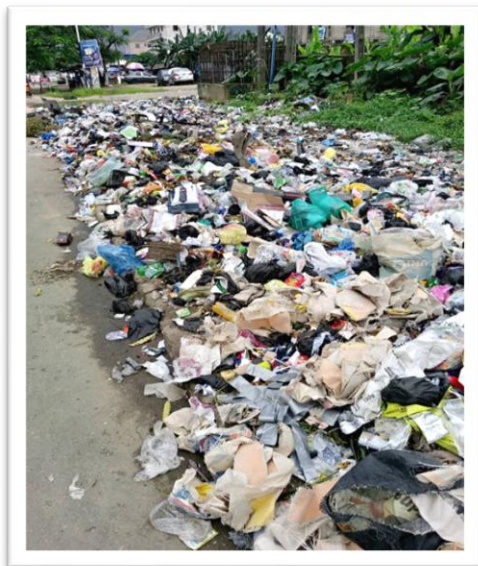
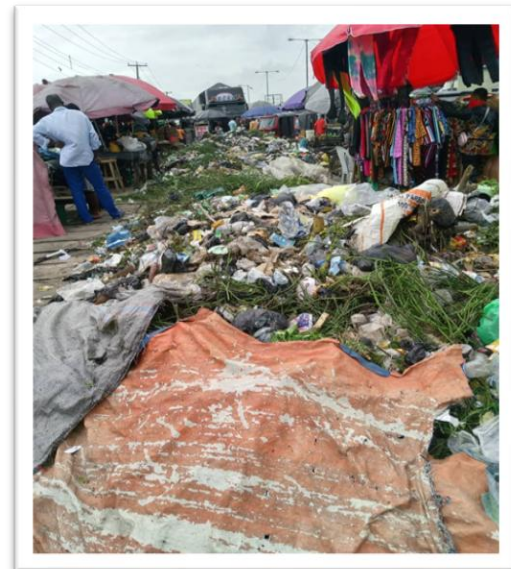


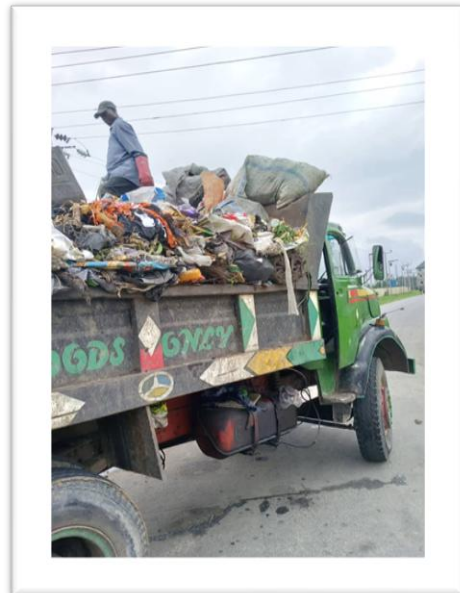
Fig 2: (a) Residential waste dump



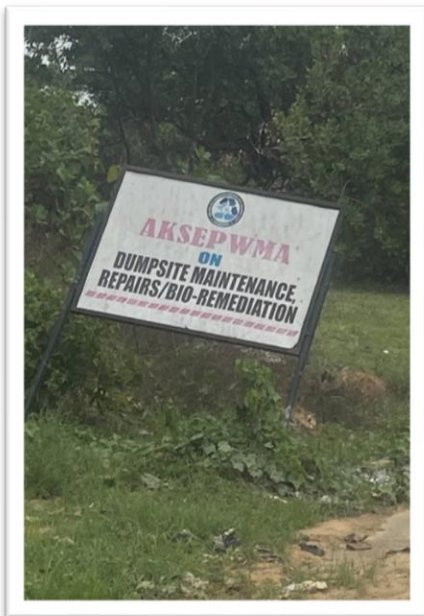
(b) commercial waste dump (market)



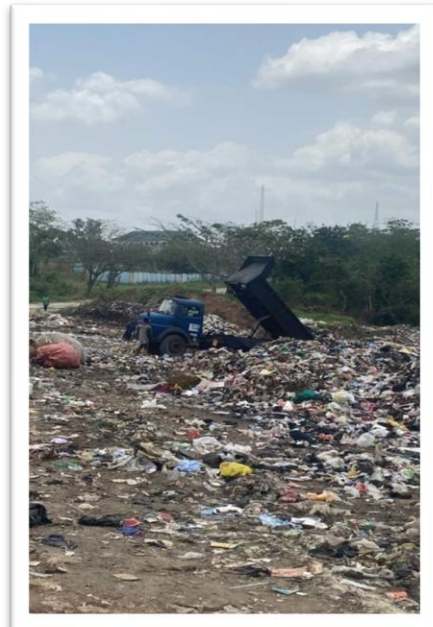
(a)



(b)



(c)



(d)

Fig. 3: Collection, transportation and dumping of wastes at the AKSEPWMA dump site.



Fig. 4 (a) Manual sorting of wastes. (b) packaged sorted plastic wastes. (c) Compression machine (d) compressed and packaged wastes ready to be transported to recycling companies.

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