

A Review of Commercial Land Use and Environmental Quality in Akwa Ibom State, Nigeria

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Abstract

Commercial land use is essential for economic growth, yet its expansion in urban areas often results in environmental degradation. Emissions from vehicles, factories, and construction activities in commercial zones lower air quality, while improper waste disposal and water contamination pose risks to public health and aquatic ecosystems. Noise pollution, especially in market areas, disrupts both livelihoods and well-being, further straining the local economy. Additionally, regulatory bodies such as NESREA and policies like the Environmental Impact Assessment (EIA) Act, though crucial, are insufficient without stricter enforcement and enhanced urban planning initiatives. The method used in this study was based on previous research conducted by scholars, particularly those examining commercial land use and its effect on environmental quality, along with other related conceptual terms, and the primary focus of this review was on the effects of commercial land use on environmental quality. As a result, the literature reviewed centered on the current state of commercial land use and its effect on environmental quality in urban areas. The review highlighted the importance of balancing economic activities with environmental sustainability. In conclusion, commercial land use poses significant environmental challenges, particularly in urban areas, to ensure long-term sustainability, coordinated efforts involving regulatory oversight, sustainable land practices, and the adoption of eco-friendly technologies must be prioritized. Recommendations include adopting sustainable urban planning, enhancing regulatory measures, improving waste management, and integrating green spaces to mitigate the environmental impacts of commercial land use and these efforts are essential to preserving environmental quality, promoting public health, and ensuring the long-term sustainability of urban areas in Nigeria

Keywords: Commercial Land Use, Environmental Quality, Pollution, Sustainable Development

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I. Introduction

In Nigeria, there has been a significant shift in the use of residential land, with many areas increasingly being converted to commercial purposes. In some neighborhoods, commercial activities now occupy nearly 50% of the land. A notable example is Kano city, where many of the frontages along major roads and prominent streets have been transformed into commercial shops serving various needs. This trend is especially evident around markets, where the boundaries of commercial zones have expanded far beyond their designated areas (Yakubu, 2018). Traditionally, zoning systems prioritize protecting residential areas, particularly single-family homes, from the encroachment of commercial and industrial activities. These establishments are often viewed as nuisances because they can attract large crowds, create noise pollution, contributing to congestion and degrading the environment.

The environment is a comprehensive concept that includes both natural elements, such as air, water, land, and ecosystems, as well as human-made structures. It serves as the foundation for all social, economic, and cultural activities. Environmental quality, which is evaluated through factors like air and water purity, noise levels, and biodiversity, directly impacts human health and well-being (Ofem and Coker, 2023). Poor environmental conditions can lead to pollution, soil degradation, and climate change, all of which pose significant threats to ecosystems and the sustainability of human life. The quality of the environment also encompasses vegetation and the built environment, both of which influence physical and mental health (European Environment Agency, 2012). Maintaining a high standard of environmental quality is critical for human survival and satisfaction, as unattractive or unhygienic environments often lead to dissatisfaction and apathy. Therefore, urban planning and design efforts frequently focus on improving environmental quality to enhance safety, health, aesthetics, comfort, and overall welfare.

The environmental quality of commercial land use can have both positive and negative effects on the surrounding areas. Key aspects of environmental quality include the natural environment, such as vegetation, and the built environment, which involves factors like air and water purity, noise pollution, and their impacts on physical and mental health. Additional factors include traffic emissions, olfactory nuisances, poor visual quality

of buildings, blocked drains, waste generation, the conversion of open spaces, narrow streets, inadequate ventilation between buildings, biodiversity, regulatory impacts, building arrangement, road conditions, public water supply, energy consumption, land degradation, and physical form (European Environment Agency, 2012). The relationship between commercial land use and environmental quality is a vital concern in urban planning, as it directly impacts both the sustainability of cities and the well-being of residents. While commercial land use, including spaces allocated for retail, office complexes, and service industries, drives economic growth and employment (Tucker, Foley and Sieber, 2017), it can also result in environmental challenges.

These challenges include air and noise pollution, traffic congestion, waste management issues, and the depletion of natural resources, all of which diminish environmental quality (Agbola and Kasim, 2017). In poorly regulated urban environments, the growth of commercial activities can strain infrastructure and disrupt ecological systems. Research has shown that the location and density of commercial activities affect air quality, water runoff, and the creation of urban heat islands, all of which influence the livability of cities (Olujimi and Ayeni, 2013). Thus, a comprehensive understanding of the complex relationship between commercial land use and environmental quality is essential for developing urban spaces that balance economic growth with environmental sustainability. This knowledge can guide urban planning policies formulation that fosters thriving commercial centres while maintaining a healthy and sustainable environment.

II. Research Method

The study drew on previous researches conducted by scholars, particularly those examining commercial land use and its effect on environmental quality, along with other related conceptual terms. The primary focus of this review was on the effects of commercial land use on environmental quality. As a result, the literature reviewed centered on the current state of commercial land use and its effect on environmental quality in urban areas.

III. Literature Review

The literature review highlights significant environmental concerns in commercial areas, particularly regarding air and water quality, noise pollution, traffic congestion, and waste generation. Air quality in many commercial regions, including Akwa Ibom State, Nigeria, is severely compromised due to emissions from vehicles, small-scale businesses, factories, and construction activities. Studies using gas monitors in Akwa Ibom State showed that air quality levels fall below the World Health Organization's recommended standards, leading to respiratory and cardiovascular illnesses (Qu, and Long, 2019). Similarly, water quality is at risk due to runoff from commercial areas, improper disposal of hazardous materials, and untreated sewage. Polluted water bodies present public health risks and harm aquatic ecosystems. In Akwa Ibom State, researches revealed water contamination upstream and downstream of several sources, exacerbated by expanding human settlements and commercial activities (Kumar., 2015; Akpan-Ebe, Udotong, and Ekpenyong., 2016).

Noise pollution is another critical issue in commercial areas, particularly in developing countries. In Akwa Ibom, traders in market environments reported high stress levels and sleep disturbances due to constant exposure to excessive noise. Continuous noise not only causes psychological stress but also leads to hearing impairment, reducing traders' ability to perform daily tasks effectively (Ekanem, 2019; Udo, 2020). Furthermore, the literature points out that noise pollution can hinder productivity by disrupting concentration and communication, thus affecting both individual livelihoods and the broader economy (Akpan, 2018).

Traffic congestion, often associated with commercial land use, further contributes to environmental degradation. The rise in vehicular traffic leads to increased emissions of air pollutants such as carbon monoxide, nitrogen oxides, and particulate matter, worsening air quality and exacerbating climate change (Litman, 2013). In Akwa Ibom State, the urban heat island effect is intensified in densely populated areas like Uyo, Ikot Ekpene and Eket where vehicular and small-scale business activities release significant amounts of heat and pollutants, trapping heat in the atmosphere (Essien, 2020).

The literature presents a comprehensive examination of various factors influencing environmental quality in commercial land use, focusing on regulatory impacts, building arrangement, road conditions, water supply, land degradation, and physical form. Regulatory frameworks play a critical role in shaping the utilization of commercial land in Nigeria. The National Environmental Standards and Regulations Enforcement Agency (NESREA) enforces environmental protection laws, which help control pollution and ensure sustainable development. NESREA's efforts, along with the Environmental Impact Assessment (EIA) Act, are instrumental in ensuring that commercial activities do not compromise environmental quality (Echefu and Akpofure, 2007; NESREA, 2019). This regulatory approach influences land use planning, helping to control urban sprawl and protect sensitive environmental areas (NISER, 2020).

Building arrangement is another essential aspect affecting environmental quality. Adherence to the Nigerian Urban and Regional Planning Law of 1992, which ensures proper spacing of buildings to allow for adequate ventilation and sunlight, is crucial for reducing the urban heat island effect (Federal Republic of

Nigeria, 1992). The National Building Code (NBC) further supports environmentally friendly construction practices, mandating the use of sustainable materials and techniques that minimize waste and pollution (Nwachukwu, Chukwudi and Okafor, 2018). The integration of green spaces in urban planning also promotes ecological balance and enhances air quality.

The condition of roads plays a significant role in pollution management. Poorly maintained roads contribute to air pollution by generating dust and particulate matter, while well-maintained roads with proper drainage reduces storm water runoff and prevents erosion. This, in turn, improves environmental conditions and minimizes health risks.

An adequate public water supply is vital for both health and environmental sustainability. Access to clean water is crucial for preventing waterborne diseases, as highlighted by the World Health Organization (WHO, 2019). Effective water supply management, including conservation efforts like rainwater harvesting, ensures the sustainable use of water resources, benefiting both public health and the economy (Federal Ministry of Water Resources, 2020).

Land degradation, characterized by the deterioration of soil quality, leads to increased surface runoff, harming aquatic systems and reducing agricultural productivity. Amogu, Alain, and Descroix, (2011) indicated that sedimentation from eroded soils has degraded water bodies, negatively affecting fisheries and reducing water availability. The economic implications of land degradation include declining property values and decreased investment in affected areas (NISER, 2017). Addressing this issue through sustainable land management is crucial for environmental preservation and economic growth.

Finally, the physical form of urban areas, particularly high building density, significantly impacts on energy consumption, air pollution, and the urban heat island effect. In densely populated cities like Lagos, energy demand spikes due to reliance on air conditioning, and vehicular emissions contribute to deteriorating air quality (Federal Ministry of Environment, 2018; Okoye, Onokala, and Ezeonu., 2019). The urban heat island effect, exacerbated by dense infrastructure, increases local temperatures and strains public health and energy systems (Akinbode and Oladejo, 2017). The reviewed literature highlights several environmental and infrastructural challenges associated with commercial land use in urban areas, particularly focusing on waste management, energy consumption, visual quality, impervious surfaces, and the urban heat island effect.

Inadequate waste management practices, such as the improper disposal of solid waste, contribute significantly to environmental degradation and public health risks in commercial areas. Improper disposal leads to littering, clogged drainage systems, and water pollution, which in turn results in flooding, the spread of pests, and waterborne diseases. For instance, Akpan (2018) identified clogged drainage systems due to indiscriminate waste disposal as a frequent issue in Akwa Ibom State, causing flooding and posing health hazards. Moreover, the contamination of water bodies by solid waste further exacerbates water pollution, deteriorating both surface and groundwater quality, and leading to an increase in water-related health problems (Essien, 2019).

Energy consumption is another critical factor influencing environmental quality. Commercial activities, particularly in energy-intensive sectors, depend on a stable power supply, leading to higher energy demands. This, in turn, contributes to greenhouse gas emissions, as energy production often relies on fossil fuels. The Intergovernmental Panel on Climate Change (IPCC, 2018) emphasized the significant role of fossil fuel combustion in producing carbon dioxide (CO₂), which is a major driver of climate change. Commercial buildings, with their reliance on air conditioning and other energy-intensive systems, contribute to heat release and further exacerbate environmental challenges such as the urban heat island effect.

The visual impact of large commercial structures and advertisements also detracts from the aesthetic appeal of urban areas. In Akwa Ibom State, rapid urbanization has led to the proliferation of commercial buildings and advertisements that clutter the cityscape. According to Essien (2019), the unregulated construction of commercial structures in Uyo has significantly altered the city's aesthetic, created visual congestion and diminished its cultural value. Akpan (2020); Ofem and Imoh (2022) similarly pointed out that the unchecked spread of advertisements in urban areas contributes to visual pollution and obscures important landmarks.

Impervious surfaces, such as concrete and asphalt in commercial zones, hinder natural water infiltration, disrupting the water cycle and increasing surface runoff. Akpan (2019) noted that the extensive use of impervious surfaces in Akwa Ibom State's commercial areas has worsened flooding and diminished groundwater recharge. This disruption not only causes frequent flooding, especially in urban areas like Uyo (Essien, 2020), but also reduces water availability in the surrounding regions.

Finally, the urban heat island effect, characterized by elevated temperatures in commercial zones, is exacerbated by the proliferation of concrete structures and limited green spaces. The retention of heat by urban materials raises surface temperatures, worsening heat-related illnesses and increasing energy demand for cooling. This phenomenon, as described by Oke (1982), poses health risks and environmental discomfort, while also contributing to air pollution and ecological degradation. Higher temperatures can damage vegetation and

wildlife habitats, further straining ecosystems and perpetuating a cycle of environmental decline (Voogt and Oke, 2003).

This review highlights significant environmental concerns in commercial areas, particularly regarding air and water quality, noise pollution, traffic congestion, and waste generation. Air quality in many commercial regions, including Akwa Ibom State, Nigeria, is severely compromised due to emissions from vehicles, small-scale businesses, factories, and construction activities. Studies using gas monitors in Akwa Ibom State show that air quality levels fall below the World Health Organization's recommended standards, leading to respiratory and cardiovascular illnesses (Qu and Long, 2019). Similarly, water quality is at risk due to runoff from commercial areas, improper disposal of hazardous materials, and untreated sewage. Polluted water bodies present public health risks and harm aquatic ecosystems. In Akwa Ibom State, researches reveal water contamination upstream and downstream of several sources, exacerbated by expanding human settlements and commercial activities (Kumar, 2015; Akpan-Ebe et al., 2016).

Noise pollution is another critical issue in commercial areas, particularly in developing countries. In Akwa Ibom State, traders in the market environments reported high stress levels and sleep disturbances due to constant exposure to excessive noise. Continuous noise not only causes psychological stress but also leads to hearing impairment, reducing traders' ability to perform daily tasks effectively (Ekanem, 2019; Udo, 2020). Furthermore, the literature points out that noise pollution can hinder productivity by disrupting concentration and communication, thus affecting both individual livelihoods and the broader economy (Akpan, 2018).

Traffic congestion, often associated with commercial land use, further contributes to environmental degradation. The rise in vehicular traffic leads to increased emissions of air pollutants such as carbon monoxide, nitrogen oxides, and particulate matter, worsening air quality and exacerbating climate change (Litman, 2017; Ofem and Adinmah, 2022). In Akwa Ibom State, the urban heat island effect is intensified in densely populated areas like Uyo, where vehicular and small-scale business activities release significant amounts of heat and pollutants, trapping heat in the atmosphere (Essien, 2020).

Lastly, waste generation from commercial activities is a major contributor to environmental pollution. Inadequate waste management in Akwa Ibom State has led to the contamination of land, water, and air, posing risks to ecosystems and human health. Pollutants such as heavy metals, chemicals, and plastics disrupt aquatic ecosystems and reduce biodiversity, while improper sanitation facilities contribute to the spread of diseases (Akpan, 2019; Essien, 2020). The review underscores the urgent need for effective waste management strategies to mitigate these environmental challenges and protect both public health and the natural environment.

The literature emphasizes the environmental implications of commercial land use in urban areas, highlighting key factors such as light quality, green spaces, blocked drains, narrow streets, ventilation, and biodiversity. Commercial areas often utilize extensive outdoor lighting to enhance safety and visibility, particularly in bustling areas like Uyo, Akwa Ibom, where increased lighting has reduced crime rates and improved pedestrian and driver safety (Akpan, 2019; Essien, 2020). However, excessive artificial lighting can contribute to light pollution, which negatively impacts local ecosystems and energy consumption. Light pollution issues, including glare and light trespass, can affect residents by disrupting sleep and decreasing overall quality of life (Gaston, 2012). To mitigate these challenges, the adoption of energy-efficient technologies and lighting controls is recommended (Gaston, 2012).

Green and open spaces, which are often lacking in commercial areas in developing countries, play a vital role in cooling, air purification, and biodiversity conservation. Their absence reduces environmental quality and livability in cities, leading to a decline in natural cooling and recreational opportunities. Poorly maintained drainage systems in these areas also present a significant problem. Blocked drains cause flooding, foul odors, and environmental degradation, posing health risks to residents and threatening biodiversity (Udo, 2020; Essien, 2021). Flooding from blocked drains can lead to soil contamination and disrupt local ecosystems, resulting in habitat destruction and increased mortality rates among wildlife.

Narrow streets in commercial districts exacerbate urban heat islands and increase vehicular emissions, further degrading air quality and contributing to respiratory and cardiovascular issues (Olajide, 2018). In places like Lagos and Port Harcourt, high traffic congestion generates substantial noise pollution, which negatively affects residents' health, productivity, and overall quality of life (Akpan, 2019). Improving urban planning, enhancing public transportation, and reducing traffic congestion are essential to address these issues.

Ventilation between buildings is crucial for maintaining air quality and preventing the buildup of moisture, which can lead to mold growth and structural damage, particularly in Nigeria's humid coastal regions. Proper ventilation systems ensure air circulation and prevent the accumulation of stale air and unpleasant odors (Olorunfemi and Adeyemi, 2020). This is especially important in densely populated urban areas where inadequate ventilation compromises indoor air quality, posing health risks.

Finally, biodiversity plays a critical role in supporting urban ecosystems by providing habitats for wildlife and offering essential ecosystem services such as pollination and pest control. Biodiverse areas contribute to climate regulation and enhance the aesthetic value of cities, boosting property values while

supporting urban sustainability (Akinyemi, Ayodele and Babajide, 2018; NES, 2020). Maintaining and enhancing biodiversity in urban areas is essential for sustaining local wildlife populations and ensuring the continued provision of these ecosystem services.

Commercial activities are significant contributors to environmental pollution, particularly through waste generation. In Akwa Ibom State, insufficient waste management has resulted in the contamination of land, water, and air, posing serious risks to both ecosystems and human health. Pollutants such as heavy metals, chemicals, and plastics disrupt aquatic life, reduce biodiversity, and contribute to poor sanitation, which can spread diseases (Akpan, 2018; Essien, 2020). This analysis emphasizes the urgent need for improved waste management strategies to address these environmental challenges and safeguard public health and the natural ecosystem.

In conclusion, the review highlights the broad environmental issues tied to commercial land use, such as inadequate waste management, higher energy consumption, visual pollution, surface runoff, and the urban heat island effect. These factors threaten the sustainability of urban areas, emphasizing the importance of regulatory oversight, land conservation, and urban planning to reduce negative impacts. Sustainable urban development, including green space preservation and biodiversity conservation, is essential for maintaining environmental quality, public health, and economic stability in Nigerian cities.

3.1 Ways to Mitigate the Effect of Commercial Land Use on Environmental Quality

Mitigating the environmental impact of commercial land use in urban areas involves balancing economic success with social and environmental responsibilities. Commercial activities must prioritize not only profitability but also environmental sustainability to effectively manage externalities like pollution, resource depletion, and habitat destruction. These externalities influence business decisions at various levels, including trade credit strategies and supply chain operations. For example, research by Tan et al. (2021) highlighted how severe air pollution affects firms' trade credit strategies, as suppliers may reduce credit to businesses in polluted areas due to financial risks. Similarly, Nigerian firms in sectors like agriculture are adopting sustainable practices to minimize resource consumption and environmental degradation (Agbonifo, 2019).

The federal government of Nigeria plays a crucial role in mitigating environmental risks through policy interventions aimed at promoting sustainability. However, such regulations can also create economic challenges, such as slower commercial growth and reduced employment opportunities. It is important to introduce environmental policies that protect the environment without significantly impairing commercial growth (Ifeanyi, 2019). Measures like carbon taxes and environmental taxes on small-scale businesses, which are major sources of emissions, can have a direct impact on corporate performance. Studies have shown that stringent regulations may negatively affect production and profitability (Albrizio et al., 2017; Li, Wang and Chen, 2020), indicating the need for a balanced approach.

To address these challenges, businesses can adopt various measures to reduce environmental pollution. This includes using eco-friendly and low-waste technologies, upgrading machinery to meet pollution norms, and conducting regular audits to evaluate the effectiveness of pollution control measures (Atser, 2016). Additionally, businesses should comply with government regulations, engage in environmental campaigns, and establish monitoring bodies to ensure sustainable practices. These actions are essential for protecting the environment while maintaining commercial viability in urban areas.

3.2 Concepts of Sustainable Development

Sustainable urban development is a concept that seeks to balance economic growth, environmental protection, and social well-being, especially in the context of expanding urbanization. As it relates to environmental quality and commercial land use, sustainable urban development emphasizes minimizing the ecological footprint of commercial activities while promoting efficient resource use. This includes the adoption of green building technologies, energy efficiency measures, waste reduction strategies, and water conservation practices (Jiboye, 2019). In the realm of commercial land use, unsustainable practices such as improper waste management, excessive energy consumption, and the reduction of green spaces can degrade air and water quality, disrupt local ecosystems, and contribute to problems like the urban heat island effect. For instance, the expansion of commercial zones without appropriate environmental safeguards can lead to deforestation, increased surface runoff, and loss of biodiversity (Okeke, 2020). Sustainable urban development advocates integrating environmental considerations into the planning and operation of commercial areas to reduce these negative impacts.

By implementing sustainable practices, such as using renewable energy sources, promoting eco-friendly transportation, and encouraging recycling, commercial developments can contribute to improved environmental quality (Adebayo, 2020). Furthermore, urban planning that includes green spaces, like parks and community gardens, can mitigate the adverse effects of urbanization, enhance biodiversity, and improve air quality, which is vital for long-term urban livability (Olaleye and Omole, 2018).

In conclusion, sustainable urban development is crucial for ensuring that commercial land use does not compromise environmental quality. It requires a concerted effort to implement policies and practices that reduce the environmental impact of commercial activities, thus contributing to the sustainability of urban environments for future generations.

3.3 Concept of Circular Economy

The concept of a circular economy revolves around designing waste out of the economic system by promoting the continuous use of resources through reuse, recycling, and regeneration. This approach stands in stark contrast to the traditional linear economy, which follows a "take, make, dispose" model. As it relates to environmental quality and commercial land use, the circular economy seeks to reduce the environmental impact of commercial activities by minimizing waste, reducing resource consumption, and promoting more sustainable business practices (Geissdoerfer et al., 2017).

In commercial land use, where activities often result in significant waste generation and resource depletion, the adoption of circular economy principles can lead to substantial environmental benefits. For instance, businesses can design products that are easier to repair, recycle, or refurbish, thus extending their lifecycle and reducing the need for new raw materials (Ellen MacArthur Foundation, 2020). This can help mitigate issues like land degradation, water pollution, and greenhouse gas emissions, which are often associated with commercial operations (Stahel, 2019). The circular economy also emphasizes the importance of using renewable resources and developing infrastructure that supports waste recovery and recycling in urban areas. In commercial districts, this could translate into systems for managing industrial by-products, promoting the sharing economy (co-working spaces to reduce building overuse), and adopting closed-loop production processes (Korhonen et al., 2018). Such measures reduce the pressure on landfills, conserve natural resources, and improve the overall environmental quality of urban spaces.

Moreover, integrating circular economy principles into commercial land use can lead to more sustainable urban development by encouraging businesses to adopt greener practices, such as reducing packaging waste or sourcing materials locally, which reduces the carbon footprint of transportation (Murray et al., 2017). In doing so, cities can create more resilient economies that are less dependent on finite resources and are better equipped to handle environmental challenges.

In conclusion, the circular economy offers a powerful framework for enhancing environmental quality in commercial land use. By promoting resource efficiency, waste reduction, and sustainable production methods, it helps to lower the ecological impact of commercial activities, contributing to the sustainability and livability of urban areas.

IV. Discussion

The literature review reveals critical environmental concerns associated with commercial land use in urban areas, particularly in regions like Akwa Ibom State, Nigeria. A major issue is the degradation of air and water quality, with emissions from vehicles, factories, and small-scale businesses severely compromising air quality. Studies in Akwa Ibom State have shown that air pollution levels fall below the World Health Organization's standards, contributing to respiratory and cardiovascular diseases (Qu and Long, 2019). Similarly, water quality is threatened by runoff from commercial areas, improper disposal of hazardous materials, and untreated sewage, which pollutes water bodies and endangers both human health and aquatic ecosystems (Kumar, 2015; Akpan-Ebe et al., 2016).

Noise pollution is another prevalent issue in commercial zones, especially in developing regions like Akwa Ibom State. Excessive noise from market environments has been linked to stress, sleep disturbances, and hearing impairments among traders, further reducing their ability to work efficiently (Ekanem, 2019; Udo, 2020). Traffic congestion, exacerbated by commercial activities, also contributes to environmental deterioration. Increased vehicular traffic leads to higher emissions of pollutants like carbon monoxide and nitrogen oxides, worsening air quality and intensifying the urban heat island effect in densely populated areas such as Uyo, Ikot Ekpene and Eket urban areas (Litman, 2017; Essien, 2020).

The review also emphasizes the role of regulatory frameworks in mitigating these environmental impacts. Agencies like the National Environmental Standards and Regulations Enforcement Agency (NESREA) and policies such as the Environmental Impact Assessment (EIA) Act help control pollution and promote sustainable urban planning (Echefu and Akpofure, 2007; NESREA, 2019). Proper building arrangements, adherence to the Nigerian Urban and Regional Planning Law, and the integration of green spaces further support efforts to reduce the urban heat island effect, improve air quality, and preserve biodiversity (Nwachukwu et al., 2018).

Waste management in commercial areas remains a significant concern, with inadequate systems leading to land, air, and water contamination. Improper waste disposal contributes to clogged drains, flooding, and the spread of waterborne diseases, particularly in Akwa Ibom State (Akpan, 2018). The literature highlights

the urgent need for improved waste management strategies, energy-efficient technologies, and sustainable land management practices to mitigate these challenges. These efforts are essential for maintaining environmental quality, public health, and economic sustainability in urban environments.

V. Conclusion and Recommendations

Commercial land uses create significant environmental challenges in urban areas of Akwa Ibom State. Key issues include the deterioration of air and water quality due to vehicle and industrial emissions, as well as inadequate waste management, noise pollution and traffic congestion are of concern, particularly in market areas where excessive noise affects trader productivity and well-being, while traffic worsens air pollution and amplifies the urban heat island effect.

There is a dire need for improvements in waste management, energy efficiency, and the inclusion of green spaces in urban planning. Effective solutions will require the integration of these key elements to ensure the long-term sustainability of urban environments.

In addressing the environmental challenges caused by commercial land use requires a multifaceted approach. Through stricter enforcement of regulations, infrastructure improvements, and sustainable land management practices, urban areas can achieve better environmental, public health, and economic outcomes. These recommendations, if implemented effectively, will contribute to creating more livable and sustainable urban environments.

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