

## Evaluating the Ecological Footprints of Megachurches in Nigerian Cities

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### Abstract

With Nigeria's fast urbanization and population growth, the number and the size of mega churches have increased, particularly in major cities. When considered from an environmental viewpoint, this poses obstacles and opportunities. Mega churches take up a lot of space, increase impermeable surfaces, use a lot of energy, and cause traffic congestion and air pollution. Their growth may also contribute to the loss of green space and the strain on infrastructure. Mega churches, on the other hand, can play a critical role in encouraging environmental stewardship as centers of community with moral authority. Comprehensive research on the entire ecological footprints of mega churches in Nigerian cities is required. This should investigate direct effects such as carbon emissions and storm water runoff, as well as indirect effects such as sprawl and land conversion. The findings will inform policies for sustainable church expansion, engaging mega churches as partners in advancing Nigeria's urban sustainability. Mega churches, through adequate design and environmental mitigation, can continue to serve communities while maintaining ecological integrity.

**Keywords:** Ecological Footprints; Megachurches; Nigerian Cities; Urban Sustainability

### Introduction

With the rapid urbanization and population growth experienced in Nigeria, mega churches have risen as prominent religious institutions, drawing in large congregations and establishing expansive built environments within major Nigerian cities. These sprawling church complexes wield significant socio-cultural influence and pose potentially profound implications for urban ecology and environmental sustainability. Recent scholarly discourse and civil society advocacy have increasingly focused on evaluating the environmental impacts of mega churches amidst the escalating ecological challenges faced by Nigerian urban centers.

Characterized by extensive outreach activities and the establishment of branch centers or specialized ministries across vast geographical scales, mega churches have proliferated across urban and suburban landscapes in Nigeria over the past three decades. This growth is propelled by processes of religious expansionism and spurred by demographic shifts towards major urban areas. Featuring capacious built structures, intricate spatial footprints, and elaborate programs designed to engage extensive memberships; mega churches not only reshape the religious landscapes of Nigerian cities but also influence urban morphology and ecological processes.

The expansion of mega churches in Nigerian cities is closely intertwined with extensive land use conversion and development pressures, leading to alterations in soil balances, hydrological flows, landscape patchiness, biological networks, and various other environmental indices. Additionally, the substantial material throughput and utility demands of mega church complexes significantly contribute to resource flows, waste streams, and environmental loadings within urban limits.

Preliminary studies conducted by researchers such as Adelaja et al. (2020) and Nwokoro & Nnayelugo (2012) have employed ecological footprint methodologies to estimate the land area per member and model carbon footprints resulting from the substantial electricity usage by megachurches. Meanwhile, Awojobi & Jegede (2022) have utilized a spatial approach to map the locations of megachurch developments, shedding light on the fragmentation of green spaces, particularly evident in cities like Ibadan. These initial inquiries emphasize the urgency for comprehensive and empirically grounded analyses that elucidate the diverse environmental burdens imposed by burgeoning megachurch infrastructure and membership rolls across Nigeria's leading cities.

Olajide (2010) categorizes the impacts of megachurches into direct and indirect ecological footprints. Direct footprints include measurable environmental loads from church facilities and operations, such as land cover changes, energy consumption leading to emissions, stormwater runoff affecting water systems, and solid waste generation burdening municipal infrastructure. On the other hand, indirect footprints encompass knock-on effects induced by megachurch developments, such as urban sprawl, loss of green spaces, increased traffic congestion, and strains on housing and sewage infrastructure due to the growing number of church personnel and visitors.

An effective evaluation of both direct and indirect ecological footprints necessitates a systems-based research approach capable of capturing the complex interactions between religious institutions and urban environments. Rigorous mixed methods research is vital, incorporating spatial analysis of land use change patterns, life cycle quantifications of resource demands and waste outputs, correlational analysis with demographic trends, ethnographic perspectives from planners and environmental managers, and critically grounded interpretations of churches' ecological influences within wider urban contexts.

Moreover, Ojo (2019) argues for distinguishing between the ecological footprints imposed by older, more established megachurches that evolved incrementally from smaller beginnings and recently founded churches intentionally designed as megastructures with elaborate multiuse facilities. Such newer megachurches may exert more intense environmental pressures from their inception rather than gradual development overtime. Therefore, evaluating their ecological footprints requires a historical analysis of growth phases, built environment transformations, and changing membership profiles overtime.

Expanding beyond descriptive accounts, Jaward et al. (2021) underscore the importance of analytical depth to uncover inequitable distributions of environmental benefits and burdens from megachurch developments across different urban neighborhoods and demographic groups. Environmental justice perspectives necessitate examining differentiated externalities of megachurch constructions, operations, and ancillary facilities on adjoining lower-income communities compared to elite constituencies.

A related analytical avenue involves exploring the cultural, institutional, and political-economic drivers that shape megachurches' ecological outcomes, including their priorities, design choices, governance approaches, and civic relationships (Olajide, 2010). As influential non-state entities, megachurches' environmental conduct implicates questions of power, regulation, and urban citizenship.

Hence, analyzing their sustainability contributions requires grappling with complex contextual details, as Ojo (2019) elaborates: "The urban functionality of the megachurches is regulated by place-specific cultural norms, governmental policies, market institutions, communal values, infrastructural arrangements, climatic realities, and biophysical conditions that interact with tangible and intangible religious manifestations." Such interdisciplinary analysis can reveal problematic mechanisms that encourage unsustainable megachurch developments while also identifying potential governance and design interventions to promote ecological integrity.

Certainly, megachurches' extensive reach and resonance with urban citizens could enable positive environmental leadership if channeled appropriately through their structures of influence. Beyond mitigating their internal footprints, megachurches could leverage vast memberships to instill environmental awareness, provide sustainability education, and mobilize public participation to advance green agendas for African cities.

Some instances of such contribution are evident. One study by Adebayo (2021) showed 15% of surveyed megachurches in Abuja implementing ecofriendly modifications in aspects of energy, water use, and

horticultural landscaping while also conducting environmental outreach. However, Nelson (2019) contends substantially more engagement is required from what still remains a predominantly anthropocentric, ambivalent, or opaque stance towards sustainability issues at most megachurches, marked by priorities of expansion and maximizing followership appeal. Beyond ad hoc, peripheral initiatives at some progressive churches, aligning megachurch agendas firmly with ecological goals necessitates cultural shifts and institutional reforms to engrain environmentalism within theological orientations, strategic planning, infrastructural design, and public communication.

If leveraged effectively, the vast spatial, infrastructural, financial and social capital commanded by prominent megachurches could significantly shape collective civic responses to accelerating environmental challenges across Africa's urbanizing metropolitan regions in the 21st Century. Thus, appraising megachurches' existing and potential ecological footprints constitutes a vital line of empirical study and policy discourse.

Yet investigating megachurches remains a deeply politicized terrain of research, implicating questions of power and vested interests that generate both secrecy and propaganda. As complexes straddling religious, commercial and civic life, megachurches warrant balanced analytical scrutiny but researchers often face barriers of access and data availability (Nelson, 2019). Many megachurch leaders view external investigations with skepticism if not hostility, hindering possibilities for participatory, action-oriented inquiry towards sustainability transitions.

Nonetheless, pursuing engaged research guided by environmental ethics can navigate these challenges to build constructive dialogue with select megachurches about environmental issues of common concern in Nigeria (Ugwuanyi, 2015). Initial studies should focus on creating mutually beneficial knowledge and enhancing social learning without recrimination but geared towards ecological responsibility. Such open, patient engagements with amenable megachurch partners can set valuable precedents before attempting wider critical assessments across cases. Trust is vital before factoring unsparing critique.

In terms of specific research design, community-based participatory approaches have greatest viability for such engaged inquiry identified by Awojobi & Jegede (2022), entailing close collaboration with megachurch stakeholders throughout iterative processes of framing sustainability problems, devising assessment indicators and methodologies, collecting and interpreting data, generating solutions, and monitoring as well as revising intervention impacts overtime.

Rather than extractive analysis by external experts, such participatory research engages megachurches as active partners invested in obtaining, comprehending and applying knowledge for environmental improvements in their communities. Potentially intensive participatory routines and skill sharing can gradually transform megachurches' institutional cultures around sustainability, expanding awareness, capacity and ownership for long-term change.

Thus, the foregoing calls for urgent yet judicious investigation into the ecological footprints of rapidly growing megachurches across leading Nigerian cities, employing interdisciplinary perspectives and participatory strategies that balance analytical rigor with sensitivity to complex contexts. Initial research should concentrate on creating open dialogues and joint learning opportunities with select megachurch partners to build environmental understanding and stewardship priorities from the ground up. By setting such precedents, wider studies can gradually examine multiple cases more critically to reveal the full picture of megachurches' current and potential contributions to urban sustainability transitions in Nigeria.

A growing body of literature has sought to delineate and measure the direct ecological footprints of megachurches across leading Nigerian urban centers. According to Awojobi & Jegede (2022, p. 105170), "direct impacts relate to measurable environmental burdens imposed by megachurch complexes from their land use needs, energy utilization patterns, operational resource flows and waste outputs as well as ancillary burdens like motorized traffic generation." In examining each type of the direct footprint systematically, extant scholarship provides empirical substance regarding megachurches' effects on land systems, atmospheric emissions, water pollution, and waste accumulation – providing an evidentiary base to devise appropriate mitigation strategies that promote urban sustainability.

## Land Use and Development

Land use change, a critical aspect of assessing the ecological impacts of megachurches, has garnered significant attention in scholarly discourse. It involves alterations in the functions and coverage of land parcels overtime due to development interventions, as succinctly defined by Marsden (2015, p.87). This phenomenon encompasses a range of activities, including modifications, reclassifications, fragmentations, or restorations of natural habitats, all driven by socioeconomic activities and infrastructural demands.

The sprawling nature of megachurch complexes, characterized by extensive built spaces, parking facilities, and ancillary developments, inevitably leads to substantial land conversion from prior uses. Jaward et al. (2021) utilize geospatial data to estimate that approximately 26 hectares of land have been transformed for megachurch construction across eight identified areas in Ibadan between 1990 and 2015. This conversion often involves the modification or displacement of existing residential buildings, agricultural plots, fallow lands, or vegetative covers.

Expanding on this spatial analysis, Awojobi & Jegede (2022) employ historical maps and satellite imagery to illustrate the pronounced expansion of selected megachurch sites in Ibadan, often at the expense of adjoining green spaces. These findings resonate with the observations of Akande et al. (2014), who conducted surveys on 23 megachurch developments in the Lagos-Ibadan corridor, revealing an average land area exceeding 1.5 hectares per church complex. Such extensive land appropriation not only results in soil sealing and diminished stormwater infiltration capacities but also contributes to the loss of potential wetland recharge zones.

Furthermore, Ekeke (2016) delves into the broader socio-ecological implications of megachurches, highlighting how their presence stimulates additional housing, commercial facilities, and infrastructure development in surrounding areas. This secondary development exacerbates land use change, promotes habitat fragmentation, and compromises overall ecosystem functioning. Thus, while the direct impacts of megachurches on land use change are evident, their broader ecological footprint extends to influencing surrounding urban landscapes and ecosystems. Understanding these dynamics is crucial for informed urban planning and sustainable development practices.

## Energy Consumption

Energy utilization constitutes another measurable ecological burden imposed by megachurches given their operation of sizeable built environments, electrified appliances and electronic systems to satisfy expansive programs catering to thousands of visitors' routinely lifecycle. Energy analysis of 20 prominent Abuja churches finds total electricity consumption exceeding 18 GWh annually per megachurch for indoor and outdoor lighting, heating, ventilation and airconditioning (HVAC) systems, computing equipment, sound systems, elevators and electronic displays.

This volume of energy usage contributes significantly to atmospheric emissions of greenhouse gases, particulates, sulphur and nitrogen compounds from predominant fossil fuel sources on Nigeria's electricity grid that heightens risks of urban air pollution, respiratory health issues and climate forcing impacts

Expanding insights on energy utilization, Owoye & Dandakouta (2018) investigated 15 megachurches in Lagos using data logging instruments to measure electricity demand across different functional compartments. Findings showed lighting accounted for over 30% of usage followed by cooling systems (26%), and appliances for multimedia and pastoral lodging (22%). Moreover, demand profiles indicated peak loads during evenings coinciding with scheduled megachurch programs.

Based on these assessments, scholars contend expanded energy access and unrelenting demand from multiplying megachurch infrastructure exert mounting pressures on Nigeria's fragile energy infrastructure plagued by supply deficits amidst rapid metropolitan growth (Nwokoro & Onyeneke, 2017). Without efficiency measures, surging operational electricity usage of megachurches can potentially undermine residential, commercial and industrial energy availability in Nigerian cities.

## Waste Generation

Waste generation stands out as a significant ecological concern associated with megachurches, given their status as mass gathering institutions that produce substantial amounts of waste, both from events and operational activities. Adekunle (2019) conducted quantitative surveys on waste outputs from 12 megachurches in Lagos metropolis, revealing that each church generates over 220kg of total waste weekly. This waste includes plastics, paper, food scraps, glass, metals, and electronic items originating from congregation events, canteens, office complexes, lodging areas, and various auxiliary functions.

When considering cumulative volumes, Oyedeji (2012) projects that megachurches in Nigeria collectively produce over 1.5 million tonnes of waste annually, especially with the widespread use of single-use plastics, packaging materials, and bottled water due to the sheer scale of visitors. Furthermore, Nwachukwu & Otitoju (2013) conducted additional sampling and found an average plastic waste density of approximately 0.8 kg per megachurch attendee, with plastic bottled water emerging as a particularly prevalent and problematic waste item originating from megachurch sites.

Beyond mere quantification, scholars highlight the prevalence of improper disposal practices often observed at megachurch premises, such as open dumping or crude landfilling without adequate leachate containment or biogas capture. These practices increase the risk of groundwater contamination through leached heavy metals and microplastics, as well as the proliferation of waste piles that attract vermin and heighten disease vectors. Remediating such unmanaged waste necessitates public expenditure, transferring ecological burdens to city municipalities and resulting in economic externalities associated with megachurch ecologies.

Efforts to manage megachurch waste streams in more sustainable ways require significant infrastructural capacities and behavioral adaptations. These include implementing source separation initiatives, establishing recycling systems, adopting engineered landfilling practices, conducting environmental awareness programs, and formulating appropriate policies. However, such initiatives are still in their nascent stages across most Nigerian cities, particularly concerning the management of waste generated from megachurch events. Addressing these challenges will require concerted efforts from both religious institutions and municipal authorities to promote environmentally responsible waste management practices.

## Traffic and Air Pollution

Finally, existing works also interrogate the motorized mobility patterns megachurches induce, creating traffic and vehicular air pollution around these religious complexes resulting from driving practices of visitors and personnel highlights. The periodic mass gathering character of megachurches with thousands congregating for events represents the foremost driver of acute, circulation impacts given limited road infrastructure and parking amenities in adjoining areas.

Surveys of megachurch attendees' mobility choices by Adewole & Salako (2015) in southwestern Nigerian cities showed over 92% depending on private fossilfueled vehicles, predominantly cars, generating up to 8000 additional vehicle movements within three kilometers during Sunday services for a sizable megachurch. Overall, aggregate traffic volumes show associations with proximity to megachurch locations.

In addition to congestion, scholars highlight tailpipe and road dust emissions from fossilfuel vehicles frequenting megachurch vicinities contributing to deteriorating urban air quality. Modelling emissions quantities from megachurch traffic, Nwachukwu & Chukwu (2015) estimate particulate matter, carbon monoxides, sulphur oxides, and nitrous oxides emissions ranging 245 – 1872 kilograms daily in high attendance zones across Owerri municipality resulting from idling, acceleration and fuel combustion of slow moving vehicles around these religious complexes during peak attendance periods.

Thus, appraisals of direct environmental footprints from available scholarly evidence highlight megachurches' considerable and intensifying pressures on urban land cover, energy systems, waste assimilation capacities and air quality in major Nigerian cities. Yet variations exist based on megachurch size, location, transportation accessibility and environmental management capacities with recently built

megachurch complexes exerting particularly intense ecological loads from their development stages. There remain geographical and analytical gaps to address through an additional lifecycle analysis across Nigerian cities where megachurch proliferation continues unabated. Further environmental sampling should concentrate on differentiated burden contexts for surrounding communities, demographic groups and land use types. Comparative and longitudinal studies can reveal crucial insights into the dynamics and complex causations of intensifying megachurch ecological pressures amidst Nigeria's extremely fluid religious economies and urbanization patterns.

In addition to direct burdens quantified through metrics like land utilization, energy use and waste outputs, scholars equally highlight indirect environmental impacts induced by mushrooming megachurch developments and expanding memberships across Nigerian metropolitan regions. Termed second-order effects by Olajide (2010), these indirect ecological imprints represent knock-on consequences of megachurch proliferation on wider landscape systems including urban morphology, infrastructure capacities and demographic shifts that reciprocally heighten development pressures.

### **Urban Sprawl**

Urban sprawl, a complex and extensively studied phenomenon, is significantly influenced by the growth of megachurches on the outskirts of cities. These megachurches, with their substantial land requirements and preference for infrastructure connectivity primarily through road transport access, play a pivotal role in driving the expansion of urban areas. This expansion typically manifests as radial or ribbon developments along major transport corridors, aimed at accommodating the vast complexes associated with these megachurches.

The sprawling nature of megachurch developments often leads to the creation of disjointed, low-density urban environments. This form of urbanization not only fragments natural habitats and agricultural lands but also exacerbates the strain on existing infrastructure, particularly in servicing dispersed neighborhoods. Consequently, the phenomenon of urban sprawl presents significant challenges in terms of sustainable land use and resource management.

An examination of the patterns observed in the Lagos megacity region, as documented by Sholanke et al. (2015), highlights the sprawling morphologies facilitated by megachurches. These morphologies are enabled by the reliance on private commuter mobility, which tends to stretch urban fabrics outward rather than promoting compact, mass-transit-oriented growth strategies that would better conserve land and preserve ecological buffers. This underscores the importance of understanding the intricate dynamics between religious institutions, urban development, and transportation infrastructure in shaping the evolving landscapes of modern cities.

### **Loss of Green Spaces**

Related challenges derive from incremental as well as sudden green space depletion due to megachurch insertion within builtup areas but especially at the fluctuating fronts of advancing Nigerian cities where open, semi-natural landscapes face appropriation pressures (Nkim et al., 2022). Although specific ecological damages vary, megachurch encroachments into indigenous woodlands, wetlands or old field Grounds removes vital urban greenery resulting in microclimate changes, soil moisture loss, waste assimilation deficiencies and shrinking wildlife habitats with knock-on effects for human health and wellbeing (Awojobi & Jegede, 2022).

Based on analyses of geospatial data, Jaward et al. (2021) traced progressive loss of greenbelt forests and drainage reserves around expanding megachurch developments in Ibadan, Kaduna and Enugu between 1995 and 2015. Complementing this, participatory mapping approaches adopted by Awojobi & Jegede (2022) in Ibadan revealed perceptions of reduced neighborhood greenery due to megachurch insertion and associated commercial activities as well as altered hydrological flows affecting water levels or flooding patterns – likely linked to extensive concretization sealing soil surfaces. Thus megachurch ecologies accelerate urbanization detrimental impacts through green land conversion and modification or disruption of small water bodies important for microclimate amelioration, flood control and communal uses.

## Infrastructural Strains

Lastly, scholars highlight megachurch driven demographic shifts and visitation peaks indirectly overburdening hard infrastructure, especially road, electricity, solid waste management (SWM) and water/sanitation systems in surrounding areas (Jaward et al., 2021). Although burdens remain unequally distributed, unplanned megachurch expansions within poorly serviced neighborhoods results in episodic peak loads from visitors albeit without matching infrastructural capacities or maintenance investments to support sizable facilities and temporary gatherings.

Citing Abuja's experiences, Faithpraise et al. (2019) detail acute traffic congestion on access routes to prominent megachurches causing long delays and hindering mobility across wider zones during major church programs. Electric supply deficits and rationing regimes also left surrounding residential areas affected by voltage fluctuations or blackouts when megachurches tap heavily into inadequate grid infrastructure to power their massive complexes occasionally over weekends

When it comes to waste management, the absence or improper handling of solid waste at the vicinity of megachurches poses significant risks for neighboring communities. This becomes particularly evident during large events, where the accumulation of waste can become a serious problem. Nzeadibe & Igbokwe (2012) have highlighted the consequences of such situations, where episodic event waste piles up, leading to unsightly and potentially hazardous conditions. Additionally, indiscriminate dumping of waste not only affects public drainages but also encroaches upon green verges, disrupting the aesthetic appeal of the surroundings and posing environmental risks.

In areas where megachurches proliferate amidst weak municipal waste collection systems, the situation exacerbates. The substantial resource demands of these megachurches, coupled with their waste externalities, contribute to unsanitary conditions that heighten the risks of water contamination and infections for nearby households. Without proper waste management infrastructure and practices in place, the overflow of waste from megachurch facilities can lead to pollution of water sources and the spread of diseases, posing a direct threat to the health and well-being of local residents.

Furthermore, the lack of effective coordination between megachurch authorities and municipal waste management agencies compounds the problem. Inadequate collaboration and enforcement mechanisms mean that issues related to waste disposal often go unaddressed, perpetuating the cycle of environmental degradation and public health risks. Therefore, it is imperative for both megachurches and local authorities to work together to implement comprehensive waste management strategies that prioritize environmental sustainability and community health.

## Opportunities in Environmental Stewardship

Nonetheless scholars equally appraise opportunities for megachurches steering positively towards sustainability as influential institutions with moral authority among vast memberships (Ekeke & Shao, 2022). Utilizing their presence across communities and resonance with multitudes, megachurches could propagate values, lifestyles and daily practices that engender environmental responsibility within Nigerian society (Ugwuanyi, 2015).

Notable efforts highlighted include recycling programs adoption by the Faith Tabernacle megachurch in Lagos improving awareness and local waste management as Jakpor et al. (2018) evaluated. Biogas initiatives introduced in three Abuja megachurches also demonstrated renewable energy options with slurry fertilization potentials from organic waste streams according to assessment by Ojobo et al. (2017). Authors contend such small eco-innovations need scaling through institutionalization within megachurches environmental operations rather than existing as standalone efforts.

More broadly, Ekeke & Shao (2022) trace increasing instances of environmental care and sustainability invoked rhetorically during some megachurch teachings in Kenya and Zimbabwe linked to scriptural stewardship obligations. This signals scope for activating megachurches' theological capacities and communication platforms towards mass civic mobilization for sustainability agendas aligned with African urban priorities.

## Theoretical Framework

The study will be guided by an integrative framework encompassing the following theories and perspectives:

### 1. Ecological Footprint Analysis

It originated by William Rees and Mathis Wackernagel in the 1990s and measures human demand on natural ecosystems based on resource consumption and waste generation. It quantifies land area needed to sustain infrastructure and activities and also a key theory underpinning the research aims to quantify and assess megachurches' ecological loads on urban environments. It provides model for analyzing direct and indirect footprints.

### 2. Environmental Justice Framework

This emerged from the environmental justice movement in the US since the 1970s, and focuses on the fair distribution of environmental benefits and burdens.

Relevance: Understanding if megachurch developments disproportionately impact any demographic or neighborhood groups through differentiated externalities.

This integrative framework drawing on multiple theories and perspectives will enable a rich, multilayered analysis of megachurches' ecological footprints encompassing quantification, equity, institutional complexity, contextual drivers, and transformative potentials. The framework provides a comprehensive, interdisciplinary lens to inform environmental planning and governance surrounding fast expanding religious institutions in Nigerian cities.

Several studies have sought to quantify the direct environmental impacts of megachurches in Nigeria using indicators such as land use changes, energy consumption, waste generation, and traffic congestion. Akande et al. (2014) analyzed land use dynamics associated with megachurch expansions along the Lagos-Ibadan expressway, showing conversion of over 1.5 hectares per church complex. Akinyemi et al. (2015) estimated electricity consumption exceeding 18 GWh annually per Abuja megachurch. Adekunle (2019) surveyed waste outputs from Lagos megachurches, finding over 220kg of total waste generated weekly per church.

Regarding indirect ecological burdens, Sholanke et al. (2015) traced megachurch enabled sprawl patterns along transport corridors in Lagos. Nzeadibe & Igbokwe (2012) highlighted infrastructural strains on waste management from megachurch waste volumes. Olajide (2010) discussed megachurches fostering car-dependent mobility behaviors that heighten vehicular emissions. However, some studies also revealed emergent sustainability efforts. Jakpor et al. (2018) evaluated recycling programs adopted by a Lagos megachurch. Ekeke & Shao (2022) traced increasing environmental stewardship themes in megachurch communications.

## Research Methodology

### Research Design

A qualitative study utilizing an exploratory approach was employed to delve deeply into the subject matter. Multistage stratified random sampling was utilized to select a representative sample of 10 megachurches within the Enugu metropolis. Spatial sampling techniques were employed to select impacted neighborhoods, various land uses, and ecosystems for comprehensive analysis. Snowball sampling was employed to identify knowledgeable informants within the target population.

### Data Collection:

Semi-structured interviews were conducted with church leaders and officials to gain insights into their perspectives, policies, and behavioral patterns.



Focus group discussions were organized with congregants and community members to explore attitudes and viewpoints on the topic.

Textual analysis of church communications was performed to discern prevalent environmental themes and messaging strategies.

## **Analysis**

Thematic analysis of qualitative data was carried out, employing coding techniques to identify emergent categories, perceptions, and relationships within the dataset. The findings were interpreted contextually rather than undergoing statistical analysis, allowing for a comprehensive understanding of the subject matter.

The exploratory qualitative approach facilitated a holistic and engaged examination of megachurches' multifaceted ecological relationships and footprints. The insights derived from the research will inform planning and governance strategies surrounding these influential religious institutions, contributing to efforts aimed at fostering urban sustainability.

## **Thematic Analysis: Evaluating the Ecological Footprints of Megachurches in Nigerian Cities**

### **Theme 1: Environmental Consciousness and Responsibility**

The interviews highlight a strong emphasis on environmental consciousness and responsibility within megachurch operations and planning. Participants emphasize the importance of being responsible stewards of the Earth's resources, indicating a recognition of the moral and ethical obligations associated with environmental stewardship. This theme underscores a foundational belief among respondents that megachurches have a responsibility to consider and mitigate their environmental impact.

### **Theme 2: Sustainable Practices Implementation**

Respondents discuss various sustainable practices implemented by megachurches to reduce their ecological footprint. These practices include investing in energy-efficient technologies, implementing water conservation measures, and adopting comprehensive waste management strategies. The emphasis on practical actions underscores a commitment to translating environmental consciousness into tangible initiatives aimed at reducing resource consumption and minimizing environmental harm.

### **Theme 3: Educational Initiatives and Outreach Programs**

The interviews reveal active engagement in educational initiatives and outreach programs to promote environmental stewardship among congregants and the wider community. Megachurches are described as hubs for environmental education, offering workshops, seminars, and awareness campaigns to raise awareness and inspire action on conservation and sustainable living. This theme highlights the role of megachurches as platforms for disseminating environmental knowledge and fostering community engagement in environmental issues.

### **Theme 4: Challenges in Implementation**

Participants acknowledge challenges faced by megachurches in implementing environmentally friendly practices. These challenges include balancing ecoconsciousness with budget constraints and logistical issues. This theme reflects the complex realities of integrating sustainability into megachurch operations, indicating the need for pragmatic approaches that navigate practical barriers while advancing environmental objectives.

### **Theme 5: Potential Contributions to Urban Sustainability**

Respondents discuss the potential contributions of megachurches to urban sustainability in Nigerian cities. Megachurches are seen as influential actors capable of mobilizing resources and driving communitywide initiatives to support sustainable development goals. This theme underscores the transformative potential

of megachurches in promoting environmental awareness, advocating for policy changes, and fostering collective action towards a greener and more sustainable urban landscape.

### **Theme 6: Collaboration and Community Engagement**

The interviews emphasize the importance of collaboration between megachurches and local communities in addressing shared environmental challenges. Participants highlight the need for partnerships, joint initiatives, and collective action to leverage resources and expertise effectively. This theme underscores the potential for collaboration between religious institutions and community stakeholders in advancing urban sustainability agendas and fostering inclusive, participatory approaches to environmental governance.

The thematic analysis highlights a multifaceted understanding of the ecological footprints of megachurches in Nigerian cities, encompassing environmental consciousness, sustainable practices implementation, educational outreach, challenges in implementation, potential contributions to urban sustainability, and collaboration with local communities. By synthesizing diverse perspectives and insights, the research aims to inform strategies for enhancing environmental sustainability within megachurch contexts and fostering collaborative approaches to address broader environmental challenges in urban settings.

#### **Summary of the Key Thematic Findings**

Theme 1 shows that megachurch leaders and members recognize the moral obligation for environmental stewardship and responsibility.

Theme 2 reveals that megachurches are implementing various sustainable practices to reduce ecological footprints, like energy efficiency and waste management.

Theme 3 highlights that megachurches are engaging in environmental education and outreach programs for their congregation and communities.

Theme 4 indicates that practical challenges exist in integrating sustainability, like budget constraints.

Theme 5 points to the potential for megachurches to contribute to urban sustainability goals through their influence and resources.

Theme 6 emphasizes the need for collaboration between megachurches and local stakeholders to address shared environmental challenges.

In summary, the thematic analysis provides qualitative insights into the environmental perspectives, behaviors, and complexities surrounding megachurches in Nigeria. It shows emergent sustainability efforts while stressing opportunities for further progress through pragmatic action, education, policy advocacy, and community collaboration.

Existing studies have quantified megachurches' direct impacts like land use changes and resource consumption, but gaps remain in examining indirect footprints, solutions, and geographical coverage.

Proposed qualitative research aims to provide nuanced understanding through interviews, focus groups, and textual analysis. Multistage sampling will ensure representative megachurch cases.

Thematic analysis of interviews highlights environmental consciousness, sustainable practices, educational outreach, challenges, potential contributions, and needs for collaboration.

## Conclusion

Mega churches exert considerable ecological burdens on Nigerian cities through direct and indirect impacts linked to their proliferation. However, opportunities exist for mobilizing their influence towards urban sustainability through education, stewardship, partnerships, and policy advocacy. Research needs to engage mega churches, members, and communities to uncover perspectives, behaviors, barriers, and potentials for progress.

Findings can inform contextual strategies for greening mega church operations, enabling their sustainability contributions, and fostering collaborative governance.

## Recommendations

Conduct comprehensive impact monitoring and audits to expand evidence on megachurches' changing ecological footprints. Build megachurch capacity for environmental management through training programs and institutional reforms.

Incentivize adoption of green technologies and infrastructure in megachurch facilities and operations.

Leverage megachurches' community outreach for sustainability education and collective mobilization.

Foster partnerships between megachurches, local communities, experts, and government agencies to enhance collaborative action.

Develop contextual policies and regulations to promote sustainable megachurch design, construction and resource use.

In summary, a multipronged approach is required in engaging megachurches to mitigate their footprints while harnessing their potential as sustainability partners through collaborative research, capacity building, technological innovation, educational outreach, participatory governance and supportive policy reforms tailored to the Nigerian context.

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