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Urbanization and Environmental Impacts of Construction Activities in the Central Business District (CBD) of Accra

Francis Sarkodie-Addo^{1*}, Doreen Adu¹

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ABSTRACT

The World Bank report on emissions and pollution in the world reveals that particulate concentration in Accra, as at 2024 was $36.4\mu\text{g}/\text{m}^3/\text{year}$. Incidentally, the previous studies failed to give grasps to sustainable construction techniques, a gap that the study seeks to bridge to obtain sustainability balance. The objectives focused in the study are 1). To assess the pollution level resulted from construction activities in the Business District of Accra, 2). To evaluate the effectiveness of environmental management strategies and practices in the construction Industry in Accra to promote sustainability, 3). To identify and recommend strategies for promoting environmental awareness and sustainability practices among construction stakeholders (contractors, developers, and policymakers) in Accra. The use of qualitative approach to help the collection of data from secondary sourced. The study established that: Pollution level in Accra metropolis is high as a result of lack of environmental practices, strategic direction and policy guidelines to promote environmental quality in the construction industry, and integration of sustainable construction techniques during pre-design, design and construction stages promote environmental friendliness. Based on the lessons from the literature review and the findings of the study, policy makers are to formulate policies with enforcement mechanism to help addressed the environmental degradation problem in the CBD of Accra.

INTRODUCTION

The rapid urbanization of Accra, the capital city of Ghana has led to an unprecedented booming in construction activities, transforming the landscape of the city, and driving economic growth. This position agrees with Maliashova et al. (2021) who state that construction industry is one of the most important economic sectors. However, this growth comes at a significant environmental cost, with construction activities generating substantial amounts of air pollution, water pollution, noise pollution, waste, habitat destruction, carbon emissions etc. within the Central Business District (CBD) of Accra and beyond. In recent years, the construction industry has been identified as one of the largest contributors to environmental degradation, with the United Nations Environment Program (UNEP) estimating that the industry is responsible for approximately 30% of global greenhouse gas emission. Furthermore, the World Health Organization (WHO) Report (2019) posits that air pollution is estimated to have caused 4.2 million premature deaths worldwide in 2019 because of exposure to fine particulate matter, which has potential to cause cardiovascular disorder and respiratory disease, and cancers. Urbanization and construction activities have become more and more rapid in Ghana. The rate of such speed has led to unprecedented booming in construction activities in the City of Accra, leading to key construction related environmental aspects in the CBD of Accra with potentials to negatively impact the environment. Such impacts are relevant as many construction management

team, clients and stakeholder are unable to manage environmental related impacts in the city leading to a profound effect on the ecosystems, human health etc. The environmental impacts of construction activities are particularly experienced in the CBD of Accra and other urban cities and their surroundings in Ghana cannot be underestimated, as limited regulatory frameworks and lack of public awareness in relation to impacts of waste products of combustion- CO_2 , exacerbates the problem. Halliday (2012), indicates that the potential impacts of waste products of combustion- CO_2 have been known for decades. Carbon dioxide is a principal contributor to global warming and oxides of sulfur and nitrogen contribute to acid rain. There is high level of certainty in the assertion that climate change is a result of global warming that have significantly been caused by increased emission of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and other greenhouse gases (Collier, 2010). The evidence, based on direct measurements, is irrefutable that the concentrations of these greenhouse gases have increased substantially over the last 40 years, and continue to increase today (Watson, 2001). Halliday believes that the predictions for global warming made in the early 1970s were not dissimilar to figures now accepted and used as the basis of policy setting. In Ghana, for instance, the Environmental Protection Agency (EPA) and the Local Government Ministry are responsible for the protection of the environment, by ensuring performance of developers. Requirements include Environmental Impact Assessment,

¹ Kofi Annan International Peacekeeping Training Centre (KAIPTC), Accra Institute of Technology (AiT), Ghana

² Zenith Bank Ghana, Ghana

* Corresponding author's e-mail: francissar582@gmail.com

Environmental Management Plan and Reclamation Processes. These guidelines are available on appropriate ways to deal with local ecology. Heavy fines have been instituted for damage to a range of living things such as trees, insects, birds, mammals and their habitats and other relevant species. However, in practice, much has not been seen on the part of construction practitioners within the Central Business District of Accra. Within the District, all site actions are potential threats because of changes to water quality, destruction of habitats, vegetation damage, interruptions to wildlife movements, habitat fragmentation and hedgerow removal, increased dust present, increased noise level, roadblocks, traffic jams, etc. Construction activities are posing threat to human and the environment as a whole. Within the Central business districts of Accra, construction activities are becoming death traps to city dwellers, business men/women, visitors etc. as a result of unsustainable construction practices on the part of construction stakeholders. The research intends to explore sustainable construction practices and principles as a tool to deal with the unsustainable challenges in the CBD of Accra.

Background of the Study

It seems unlikely that a problem that could have been dealt with by the last generation can realistically be dealt with by the next. Ironically, at a time when many experts agree that climate change is inevitable, international governments have at last committed to address the problem. As part of this commitment, the UK aims to return CO₂ emissions to 20% below 1990 levels by 2010 (Holliday S. 2012). The World Bank report, on emissions and pollution in Sub-Saharan Africa reveals that particulate concentration in Accra as at 2024 was 36.4 $\mu\text{g}/\text{m}^3/\text{year}$. This particulate concentration rises as unsustainable construction practices increases. However, the WHO standards for particulate concentration in a city should be less/ equal to 20 $\mu\text{g}/\text{m}^3/\text{year}$. The 16.4 $\mu\text{g}/\text{m}^3/\text{year}$ difference is a sizable amount that need attention. According to the World Bank, the construction sector is a significant contributor to the economies of developing countries, accounting for up to 10% of GDP in some countries (World Bank, 2019). However, the environmental impacts of construction activities in developing countries, including the Central District of Accra are inadequately addressed, as there has been limited research on effective strategies for promoting environmental awareness and sustainability practices among stakeholder, a practical gap that poses significant risks to human health.

In line with the above challenges, it is imperative that municipal and urban cities in Ghana and other developing countries adopt sustainable construction practices that seeks to minimize environmental impacts while promoting economic growth and development. This study aims at identifying the environmental impacts of construction activities in municipal and urban cities in developing countries and propose strategies to mitigate

these impacts. By addressing these challenges, the study aims at identifying the environmental impact of construction activities, recommends effective strategies for mitigating their impacts, and promote sustainable urban development in developing countries.

Research Questions

The research questions that specifically buttress the main objective are as follow;

1. What are the pollution levels resulting from construction activities in the Central Business District of Accra?
2. To what extent do environmental management strategies and practices in the construction industry in the Central Business District of Accra align with sustainability principles align what are the barriers to their effective implementation.
3. What strategies can be employed to promote environmental awareness and sustainability practices among construction stakeholder (developers, and policymakers) in the Central Business District of Accra.

The Study's Objectives

In efforts to address the problem, the study has a general objective that seeks to ascertain how sustainable construction practices could integrate into general construction practices in Ghana to minimize environmental degradation in the CBD of Accra. Specifically, the study has three (3) unambiguous objectives such as:

1. To assess the pollution level resulting from construction activities in the Central Business District of Accra.
2. To evaluate the effectiveness of environmental management strategies and practices in the construction Industry in the Central Business District of Accra to promote sustainability,
3. To identify and recommend strategies for promoting environmental awareness and sustainability practices among construction stakeholders (contractors, developers, and policymakers) in Accra.

Significance of the Study

Significantly, the Study seeks to contribute to the promotion of sustainable urban and municipal development in the CBD of Accra aimed at providing valuable insights into urbanization, construction, and environmental degradation resulted from construction related activities in Ghana and beyond. Overall, the study is significant because it provides valuable insight into the environmental degradation from construction activities and proposes strategies for mitigating these impacts, promoting sustainable urban and municipal development, an action that could protect the health and safety of residents and visitors of the Business District.

LITERATURE REVIEW

Urban and municipal development refers to the planning, designing, and construction of infrastructure and facilities in urban areas. This encompasses a wide range

of activities aimed at improving the living conditions, economic viability, and sustainability of cities and towns. Key areas include Urban Planning, which covers Land use planning, Transportation planning, urban design, community development, etc. The researcher adopts Sustainable Urbanization Development Framework by Darkin et al (2002), a framework generated by Brundtland Commission, also known as “World Commission on Environment and Development”. Various urban planning and sustainability researchers, including those from the UN Habitat with key milestone in 1980s and 1990s, first introduced the Theory. The theory seeks to emphasize integrated land use planning, sustainable development, and efficient use of resources to mitigate environmental degradation and social inequity. The theory has the following strengths: 1). It encourages sustainable development, 2). Reduces urban sprawl, and 3). Promotes efficient use of resources, with weakness as: 1). Challenging to implement in rapidly urbanizing areas with limited resources, and 2). Requires coordination

among multiple stakeholders.

Central Business District of Accra (Accra CBD)

Accra is the capital and largest city in Ghana, with an estimated urban population of 2,788,000 as per 2025 with a growth rate of 2.46% from 2024. Representing the urban agglomeration of Accra, which include the City population and other suburb in the Region. Accra is also the capital of the Greater-Accra Region of Ghana. The city is furthermore the anchor of a larger metropolitan area, the Greater Accra Metropolitan Area (GAMA), which is home to about 5.46 million people, making it the second largest metropolitan city in Ghana by population after Kumasi. Accra became the capital of the British-ruled Gold Coast between 1877 and 1957. Once merely a 19th-century suburb of Victoriaborg, Accra has since transitioned into a modern metropolis, the city's architecture reflects this history, ranging from 19th-century British colonial buildings to modern skyscrapers and apartment blocks.



Figure 1: Picture of Accra Central Business District.
Source: NORVANREPOORT.com

Notable Construction Projects in Accra

Notable construction projects in the Central Business District (CBD) of Accra include:

Africa Data Centre Project

A construction of Ten-Million USD \$10M. Data Centre Project in the Central Business District of Accra, with an initial capacity of 10 MW, a project that has the potential to bridge the Ghana digital infrastructure economic gap.

Accra Trade Fair Centre Redevelopment

The redevelopment of the Accra Trade Fair Site Project

includes Reconstruction of the Ghana Trade Fair Centre, which feature multiple hotels, retail, convention, exhibition, commercial and leisure facilities are underway.

Ghana National Cathedral Project

Another project that has been halted for further government's decision in the National Cathedral Project, aimed at ensuring interdenominational Christian gathering in Ghana. This comprises multiple chapels, a baptistry, a music school, and a grand central hall with a total of 5000 seat.

The above-mentioned projects are mega projects in size,

demonstrating the city’s rapid growth and development. These projects seek to improve the city’s infrastructure, economy, and quality life style of residents, as Accra is poised to become a major hub for business innovation and tourism in West Africa, the projects also pose potential environmental risks. The increased construction activities could lead to air and water pollution, noise pollution and lose of green spaces within the Central Business District. Agreeing with the position of Goldembert (1998) the high energy demand including burning of fossil fuel could contribute to greenhouse effects.

Environmental Impacts of Construction Activities

Based on the foregoing, an environmental impact can be said to be any type of environmental change, whether chemical, physical, or biological, which occurs as a result of human activities. Such activities are capable of causing direct or indirect effect on the health of the population, economic and/or social activities, values of ecological resources Hanania *et al.* (2020). Agreeing with the position of (ISO 1400) which considers environmental impacts as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services (ISO 1400). Environmental impacts are therefore, the unwanted byproduct of economic activities, inadvertently, humans alter environmental conditions such as the acidity of soils, the nutrient content of surface water, the radiation balance of the atmosphere, and the concentrations of trace materials in food chains. Humans convert forest to pastureland and grassland to cropland or parking lots intentionally, but the resulting habitat change and biodiversity loss is still undesired (United Nations Environment Program, 2010). Environmental impacts are the outcome of environmental aspect that fails to meet regulatory requirements.

Construction activities while meeting societal needs of development, impacts the environment before, during and after the creation of the construction products and these impacts have adverse effects on the environment. Some of the negative effects of construction activities include: land misuse (erosion, desertification), destruction of natural resources and vegetation, change in direction of flow of underground water, loss of wild life and their habitat, air and noise pollution, waste/effluent discharges, on-site wastage, health and safety impairment, generation of solid and gaseous wastes and resource depletion (Gandu, 2005).

Environmental Pollution Level in the Central Business District (CBD) of Accra

Shuai-ping (2018) writes on Environmental Pollution in Construction Site and Corresponding Green Construction Measure. The writer indicates how construction projects have been completed as part of the urbanization process in Chana, indicating that the long construction period and large-scale construction projects as well as their complications have been considered as part of the process and characteristic of construction activities. The study further demonstrated the following pollution types: noise pollution, dust pollution, light pollution, water pollution, solid waste pollution, as major type of environmental pollution associated with construction activities. The researcher establishes the types of pollution caused by architectural construction principles and controls, key for green construction in summary. The study further, suggests the adoption of sustainable construction as a strategy to help safe our environment. Agreeing with the position of (WHO, 2024) Media Centre Fact Sheet No. 313 report on particulate pollution levels in Accra. Referring to Figure 2 below: “Pollution Rankings for Capital Cities in the World-2024”.

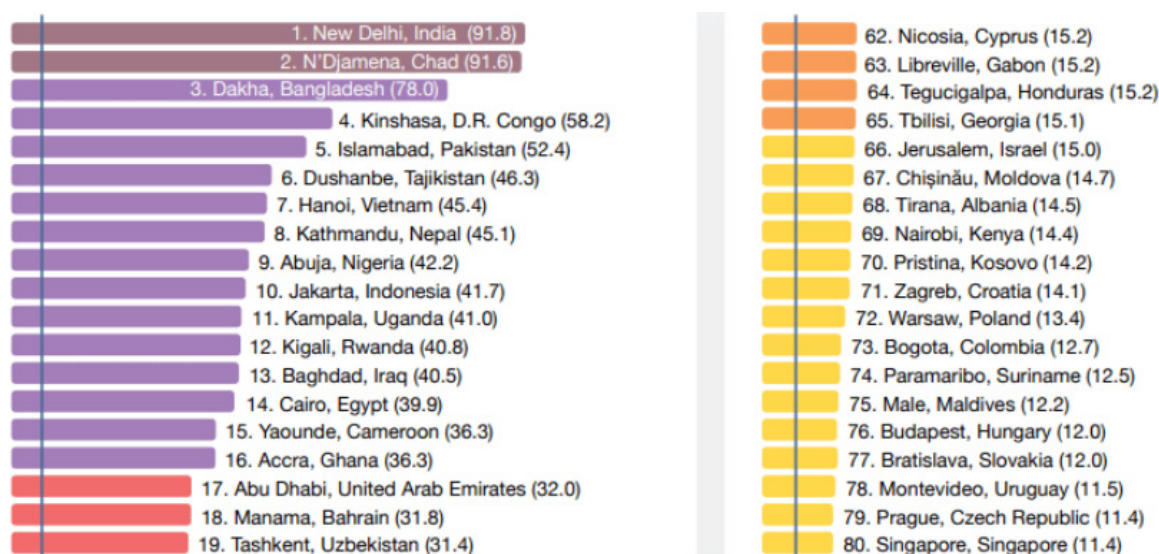


Figure 2: Pollution Rankings for Capital Cities in the World-2024.

Source: Institute for Health Metrics and Evaluation

The document indicates that particulate matter (PM) was with the aim to achieve the lowest concentrations level possible in the world and had been identified and it is believed that if it is achieved, there will be no damage to the earth.

Below is the data:

PM2.5

10 $\mu\text{g}/\text{m}^3$ annual mean

25 $\mu\text{g}/\text{m}^3$ 24-hours mean

PM10

20 $\mu\text{g}/\text{m}^3$ annual mean

50 $\mu\text{g}/\text{m}^3$ 24-hours mean

The effects of PM on health occur at the level of exposure currently being experience by most Urban and rural populations in both developed and developing countries. Chronic exposures to particles contribute to the risk of developing cardiovascular and respiratory diseases, as well as cancer (WHO Report, 2002). Reference to the 2024 world pollution ranking for capital cities which places Accra at 36.4 $\mu\text{g}/\text{m}^3/24\text{-hr}$ mean. A sizeable level of exposure that positions Accra city at high risk. The Accra air quality challenge is likely exacerbated by key factors such as: vehicular emission of CO_2 , industrial processes, burning of fossil fuels, harmattan Season etc.

Economic and Social Impacts of Construction Activities in Developing Countries

Since 2008, over half of the global population have been living in the urban cities. Agreeing with a report generated by the Population Division of the United Nations (UN DESA 2018) which asserts that the current global population, living in urban areas translate to over four billion (4,000,000,000), representing 55%, of world population. A figure that is expected to grow to 68% by 2050, according the study. Moreover, the population in urban areas is growing 2.6 times faster than overall population growth. As a result, urban areas in developing countries will absorb most of the world's population growth. Due to sustained periods of political and economic stability within developing countries, and because of global processes, known as globalization and technological revolution, other developing countries will sustain rates of economic growth that are double or triple the growth rate achieved in developing countries. Reference cities in developing countries will absorb most of the nearly 1.5 billion people who lives in cities at that time. These transformations offer great new market opportunities but also significant threats the environmental senility within the globe.

With such densely population trend, many developing countries may experience an unpleasant and unexpected surprises, representing the continuation of the long trend of urban growth, experienced in recent decades. In economy, it is difficult and may be even misleading to measure such a continuum by just observing discrete recovery rates for just a few variables. It tempting to believe that, while cities may have many problems, they are at least able to provide employment, education,

and other services for the residents who live within their precincts. After all, that is the reason why most people have migrated from the countryside to the cities. Practically, the following are the key social and economic impacts of construction in developing countries:

Economic Impacts of construction Activities

The building and construction is industry that significantly contributes to the economic growth and development of every country. The section under the economic impacts of building and construction activities examines the economic impacts of building and construction activities in nature, highlighting both the positive and challenges that need critical attention.

Positive Economic Impacts

Infrastructure Development

According to (UN Habitat, 2016) adequate infrastructure is essential for economic development, as it seeks to facilitate trade, commerce, and industry. Construction activities and it milestones can lead to the development of critical infrastructure, including roads, bridges, dams, airports, harbors, University campuses, transportation systems etc. the development of infrastructure can also improve access to basic service, such as healthcare, education and enhanced well-being for local communities.

Economic Multiplier Effect

Oxford Economics (2015) writes on the Economic Impacts of Construction, a study that highlights the importance of the construction activities in developing countries and identifies areas for research and policy attention in the industry. The study emphasizes that investment in construction have a multiplier effect on the economy as it generates additional economic activities and growth. It further emphasized that every dollar spent on construction generates an additional \$1.30 to \$1.80 in economic activities. The economic multiplier effects of construction activities can generate various economic activities, which include manufacturing, transportation, services, retail, hospitality and real estates. This buttresses the position of Batini *et al.* (2021) who write on the International Monitoring Fund (IMF) with focus on green spending multipliers, with the estimation that every dollar spent on key carbon-neutral activities can generate more than a dollar's worth of the economic activity.

Infrastructure Development

Construction projects in developing countries often rely on foreign investment, which can create economic vulnerability and dependencies. Construction activities lead to the development of essential infrastructure, such as road, bridges, and public buildings. UN Habitat (2016) suggest that adequate infrastructure is essential for economic development, as it facilitate trade, commerce and industry. According to the study, the development of infrastructure can also improve access to basic service, healthcare, education, etc. enhancing the quality of life

for local communication.

Social Impacts of Construction Activities

Construct projects can lead to community displacement, particularly, in areas where residents are forcibly relocated to make way for new development, such as construction of dams, railways, harbors, roads, military camps, etc. Miine, Licarion (2021) writes on Infrastructure for Project Affected People in Ghana. The writer indicates that Ghana government has undertaken many resettlement schemes as a result of infrastructure projects. Which includes: Weija dam, Asuofuah, Tema City Development, Manhean, Akosombo Dam, Kpong Dam, etc. between 1962 to date. The Akosombo resettlement was in 1962 and it displayed over 80,000 people who lived along the river passing at the time the project was to take off. The Kpong and the Bui dams also led to similar experiences. The study strives to establish to role infrastructure projects seeks to play in the those the development processes ends up affecting. The study used survey of household as research design in the Bui resettlement communities. Secondary data were collected on the historical events related to the dam resettlement in Ghana with primary data from Bui township and the surrounding villages. The study found out that the implementation of resettlement plans in Ghana has always not been completed due to institutional and administrative challenges. The study further established that the provision of infrastructure alone was not enough to keep people whose livelihood have been lost in the resettlement community.

Another issue associated with Construction projects is destruction of cultural heritage sites and historical landmarks, such as religious sites, villages, cemeteries, shrines, etc. leading to loss of cultural identity and community pride. For instance, the 80,000 people who were resettled from the Volta River at Akosombo, led to the destruction of their cultural heritages as these number of people were relocated to give room to the Dam project.

Another incidence recorded is the Construction of the road between Winneba Junction and Akyem Oda in Ghana also passed through one of the oldest village within the Akyem Kotoku Traditional Area known as Nibiem. The village was destroyed with their key heritage sites, leading to the people of the entire village relocating themselves to Akyem Asene. In this incident, their cemeteries, palace, church buildings, shrines were destroyed, leading to loss of cultural and historic identities of the people of Nibiyem.

Cultural Heritage Destruction

Another issue associated with Construction projects is destruction of cultural heritage sites and historical landmarks, such as religious sites, villages, cemeteries, shrines, etc. leading to loss of cultural identity and community pride. For instance, the 80,000 settlers who were resettled from the Volta River at Akosombo, led to the destruction of their cultural heritages as these

number of people were relocated to give room to the Dam project.

In another development, the construction of the road between Winneba Junction and Akyem Oda in the Eastern Region of Ghana had a profound impact on the historic village of Nnibiem, situated within the Akyem Kotoku Traditional Area. Dating back nearly 600 years, Nnibiem is believed to have originated from Nsamannwoma, the ancestral settlement of the people of Akyem Ayirebi. The road construction resulted in the destruction of the village, including revered heritage sites such as ancestral cemeteries, royal palaces, historic church buildings, and sacred shrines. This devastating event led to the displacement of the Nnibiem people, who were forced to relocate to Akyem Asene, abandoning their ancestral lands and priceless cultural heritages.

Health and safety Risks

Construction activities can pose serious health and safety risks to workers and local communities, particularly in areas with inadequate safety regulations and enforcement.

Social Inequality and Exclusion

Construction projects can exacerbate social inequality and exclusion, particularly if they prioritize the interests of wealthy elites over those of low-income communities

Sustainability Balance

The World Green Building Council Report (2020) indicates that sustainability balance, in sustainable construction refers to the equilibrium between economic, social and environmental considerations, in building design, construction, and operation. To achieve this, individuals and organization should ensure minimization of harm to the environment, promote occupants' health and well-being, and provide cost-effective solutions. By engaging sustainable construction, techniques and sustainable construction principles developers would seek to reverse the trend of increasing particulate concentration in Accra; Techniques include the use of renewable energy to eliminate toxics; waste minimization and recycling to reduce overburden on natural resources and greening of the construction site to protect nature. Incidentally, the previous studies failed to give grasps to sustainable construction techniques, a gap that the study seeks to bridge to obtain sustainability balance. Sustainability balance is the balance between economics, environment and social issues. The potential outcome is the sustainability balance in construction.

Effectiveness of Environmental Management Strategies in Construction Industry

The world's rapid population growth and rampant urbanization have brought an increasing need for a high-quality and sustainable built environment. One of the key strategic tools needed for this goal, is ISO 14001; environmental related best practice to ensure building and civil engineering works are safe and fit for purpose

(ISO 2017). The World Green Building Council Report (2020) indicates that sustainability balance, in sustainable construction refers to the equilibrium between economic, social and environmental considerations, in building design, construction, and operation. To achieve this level of effectiveness, the report suggests that individuals and organization should ensure minimization of harm to the environment, promote occupants' health and well-being, and provide cost-effective solutions.

By engaging sustainable construction, techniques and sustainable construction principles developers in developing cities, including Accra should seek to reverse the trend of increasing particulate concentration with techniques such as renewable energy to eliminate toxics; waste minimization and recycling to reduce overburden on natural resources and greening of the construction site to protect nature. Incidentally, the previous studies failed to give grasps to sustainable construction techniques, a gap that the study seeks to bridge to obtain sustainability balance. Sustainability balance is the balance between economics, environment and social issues. The potential outcome of the study is the sustainability balance in building and civil engineering construction.

Lam *et al.* (2010) write on Environmental Management System VS Green Specification: How do they Complement each other in the Construction Industry? The study indicates that environmental management system has been one of the important tools for sustainable construction practices. The writers in furtherance suggest that for sustainable construction practice to be effective, there is the need to adapt the application of green specification which can significantly complement environmental management system (EMS), with the view that green specification should be able to compensate for some of the intrinsic weaknesses of EMS.

In summary, the study establishes that 1). Pollution level in Accra metropolis is high as a result of lack of environmental practices, 2). Strategic direction and policy guidelines to promote environmental quality in construction industry: and 3). Integration of sustainable construction techniques during pre-design, design and construction stages promote environmental friendliness.

MATERIALS AND METHODS

Accra's CBA is facing pressing environmental challenges due to urbanization and unsustainable construction practices, necessitating a comprehensive approach to manage and mitigate the phenomenon. The study focuses on the key Municipalities within Accra's CBA, which includes: Ablekuma, Ashiedu Ketekey, Kpehie, Okaikoi, Ayawaso, and Osu Klottey being the focus. Using qualitative survey instrument, a total of 20 respondents were targeted. The 2021 Population and Housing Census for the Accra Metropolitan Assembly (AMA) recorded a total population of 284,124, comprising 134,045 males and 150,079 females respectively, representing 5.2% of the Accra population of 5,455,692. The study adopted a qualitative research approach, which facilitated an in-

depth examination of the research phenomenon through a nuanced and contextual understanding of the data. By leveraging secondary sources, specifically published documents pertinent to the topic, and aimed at generating rich, holistic, and theoretically informed insights. The qualitative methodology enabled the identification of emergent themes and patterns, which were carefully analyzed to yield findings that are grounded in the data.

Statement of Ethics

By ensuring accuracy and correctness, the writers demonstrate strong commitment to excellence, integrity, and respect for their readers, and the writer therefore, recognize that it is crucial for several reasons, which includes: Credibility, reliability, integrity, respect for readers, and authority of the research paper.

Discussion of Findings

As discussed earlier, construction activities in the Central business districts of Accra are becoming death traps to city dwellers, business men/women, traders, visitors etc. because of unsustainable construction practices. The research intended to ascertain how sustainable construction practices integrate into general construction practices in order to minimize environmental degradation.

1. Pollution level in Accra metropolis is high as a result of lack of environmental practices; a finding that is hinged on WHO Report, which places Accra at $36.4\mu\text{g}/\text{m}^3/24\text{-hr}$ mean, underscoring the need for sustainable construction practices. The rapid urbanization and construction activities in the Central Business District of Accra have led to significant environmental concerns, particularly, air pollution based on particulate concentration level. As the finding resulting from the study indicates, serious alarming as it exceeds the world Health Organization's recommended standard. Posing health risks to residents, workers and visitor.

The literature review emphasizes the severe health implications of prolonged exposure to such high level of particulate matter. The hazards associated with cumulative inhalation of these particles, include cardiovascular disorders, respiratory diseases, and lung cancer. These health risks underscore the importance of adopting sustainable construction practices that prioritize environmental friendliness and reduce the industry's ecological footprint.

2. Strategic direction and policy guidelines to promote environmental quality in construction industry: The finding indicates how significantly environmental challenges that threaten the well-being of residents, workers, visitors and the entire ecosystem requires attention. It is highly critical because of the alarming nature, as urbanization and infrastructure development have led to a surge in increased environmental degradation and pollution. This study evaluated the effectiveness of current environmental management approaches in the construction industry, with the key focus on Sustainable construction and ISO 14001 respectively. Revealing such

a critical finding: The need for strategic policy guidelines to promote environmental quality is becoming more critical, suggesting that the existing policies and practices require enhancement in terms of its implementation and political will at all levels. This could be executed through capacity building, stakeholder engagement, and resource allocation to ensure sustainable construction practices and mitigate environmental impacts. Effective environmental management in the construction industry is therefore crucial for Accra's sustainable development and this particular study's finding underscores the need for urgent action to address the identified challenge.

3. Integrating construction techniques during pre-design, design and construction stages:

Integrating construction techniques during pre-design, design and construction stages is crucial as the study seeks to promote environmental friendliness in construction industry. The study expects that during the pre-design stage, there should be a thorough site assessment and analysis to inform sustainable decision-making, while sustainable design brief introduced at the early stage can outline the project's environmental objectives and goals respectively. The sustainable design brief should factor construction material selection, energy efficiency, and construction method to ensure minimization of environmental impacts. By integrating sustainable construction techniques, developers and general clients, can create buildings that could minimize environmental impacts, while providing benefits for urban dwellers.

Future Research

- Due to the limitation of the above study, the following recommendations are proposed for future studies on environmental impacts of construction activities.
- Assessing the long term cost benefits of investment in sustainable buildings and constructions
- Assessing the challenges of implementing sustainable construction practices in Accra.

CONCLUSION

The study underscores the critical needs for sustainable construction practices in the Central Business District (CBD) of Accra, given the significant environmental implications of the rapid urbanization and construction activities being witnessed so far. The study investigates the urbanization and environmental impacts of construction activities in the CBD of Accra, highlighting the key result findings that suggest that: Pollution level in Accra metropolis is high as a result of unsustainable environmental practices, strategic direction and policy guidelines to promote environmental quality in construction industry as part of the key focuses, and integration of sustainable construction techniques to promote environmental friendliness in construction in the Central Business District of Accra to ensure mitigation of environmental challenges.

The study recommendations for adoption of sustainable construction techniques and principles to reverse the

trend of increasing particulate concentration in the CBD of Accra, awareness, research and development on sustainable construction be promoted at all stakeholder levels and all levels of educational structures vigorously, create incentive policies for individuals and developers to encourage sustainable construction methods and development, review of measurable performance standards to ensure conformance in sustainable standard and ensure capacity and stakeholder engagement. The study contributes to the ongoing discourse on unsustainable urban development in Accra, emphasizing the need for a balanced approach that will seek to prioritize both economic growth and environmental sustainability of Accra and beyond.

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