

Article

Achieving Healthy City Development in Ghana: Referencing Sustainable Development Goal 11

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Abstract: Despite the growing responsiveness in creating eco-friendly cities with reference to SDG 11, little attention has been focused on the role of Ghanaian local authorities (i.e., District Assemblies (DAs)) in achieving this global feat. Therefore, this study seeks to assess the views of personnel working with Ghana's District Assemblies on the achievement of healthy city development (HCD) through the lens of SDG 11. Data were obtained from 165 key personnel currently working with the District Assemblies in Ghana through structured close-ended questionnaires. The data gathered from the respondents were analyzed via descriptive and inferential statistics. Results from this study revealed that personnel working in the DAs of Ghana possess an average level of awareness of the SDG 11 indicators. Furthermore, the findings revealed a low level of achievement of development toward attaining healthy cities in Ghana. Subsequently, the findings also revealed four (4) critical challenges encountered in achieving HCD with the topmost being the 'lack of financial resources for implementing healthy city policies'. The findings from this study pioneer knowledge on the scarce literature sources on the topic within the Ghanaian context. It also provides insight into the current level of achievement of SDG 11 targets in Ghana.

Keywords: healthy cities; healthy city development; sustainability; SDG 11; district assemblies; Ghana



Citation: Botchway, E.A.; Agyekum, K.; Kotei-Martin, J.N.; Pittri, H.; Dompey, A.M.A.; Afram, S.O.; Asare, N.E. Achieving Healthy City Development in Ghana: Referencing Sustainable Development Goal 11. *Sustainability* **2023**, *15*, 14361. <https://doi.org/10.3390/su151914361>

Academic Editor: Yosef Jabareen

Received: 24 August 2023

Revised: 21 September 2023

Accepted: 27 September 2023

Published: 28 September 2023



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1. Introduction

Over the past few years, a growing number of proposals, policies, projects, practices, and methodologies have been undertaken globally to achieve social, economic, and environmental sustainability in urban areas. This is due to the recent appreciation of human capital development, healthy living standards, and the benefits of safeguarding the ecosystem against eminent threats of pollution [1]. According to Liu et al. [2], over 50% of the global population has relocated to urban settlements thus raising concerns about achieving sustainability through urban development. Particularly in Sub-Saharan Africa, it was estimated that the rate of urbanization increased from 30.8% to 38.8% between 2000 and 2017 [3] and was further projected to reach a total populace of 1 billion before 2020 [4]. Subsequently, the United Nations has also projected that by 2050 Africa should be recording an urbanization rate of 56% [5]. Owing to the fast-growing rate of urbanization among African countries, Capuano [6] revealed that there will be huge ramifications for world energy markets. Meanwhile, a 2018 sustainable development report also revealed that 91% of people living in urban areas were inhaling air that was below the World Health Organization's air quality threshold; hence, about 4.2 million deaths were associated with air pollution [7]. Consequently, an increase in urban rates will trigger the demand curve

for basic social needs such as food, housing, hospitals, schools, energy, transport systems, and sanitation among urban dwellers (city residents) [8].

Urbanization is driven by the presence of areas with good infrastructure and amenities. These areas are collectively known as cities and have been identified as a driving force for the realization of sustainable developments through productive measures and innovation if well-managed [9]. The World Bank [9] reported that about 4.4 billion people currently reside in cities and by 2050, 7 out of 10 people will be living in cities. Due to the economic significance and populace of cities, their impact is gradually becoming ubiquitous in the 21st century. Although these impacts seem positive, the activities of the cities are contributing over 60% to greenhouse gas emissions due to the large consumption of global energy [10,11]. Additionally, other negative impacts revealed to be associated with cities include issues of poor living standards, high birth rates, and environmental degradation due to the depletion of natural resources as well as total environmental quality [12]. An effective and efficient solution for enhancing the sustainability of urban regions is the requirement to establish cities that prioritize well-being. The World Health Organization, WHO [13], defines a healthy city as one that is continually creating and improving those physical and social environments and expanding those community resources which enable people to mutually support each other in performing all the functions of life and developing to their maximum potential. The creation of these healthy cities falls within one of the international policies known as the Sustainable Development Goals (SDGs) formed by the United Nations [14].

There are 17 objectives in the SDGs, with 169 targets, and 231 different tracking indicators that create a unique path toward achieving sustainable development [15]. “Sustainable Cities and Communities” namely SDG 11 of the 17 SDGs aims to foster the growth of cities that are both equitable and environmentally sustainable [16]. For the first time in the history of the United Nations, SDG-11 adds a distinct urban target, highlighting the indispensable role of cities in achieving global sustainable development [17]. Zinkernagel et al. [18] stated that it embodies social inclusion and ecological sustainability under the influence of an integrated approach to achieving urban sustainability. In addition, SDG 11 evaluates the features of an urban ecosystem such as housing, urban design and planning, transport systems, green public spaces, and air quality [19]. Although the SDGs are transnational in scope, it is becoming apparent they also have a vital local dimension, as they highlight socioeconomic issues such as education, healthcare, urbanization, and sanitation, which are all areas under the purview of local government [10].

The Local Government Act 2016 (Act 936) of Ghana places the District Assemblies (DAs) at the forefront of planning, executing, and managing policies concerning the districts (i.e., cities, and towns) [20]. According to the report from the Ghana Statistical Service [21], the urban population of Ghana is about 17 million. This represents an increase of 50.9% in 2010 to 56.7% in 2021 with most increases occurring in Accra and Kumasi [21]. Owing to the current pressure on these urbanized areas, there is a tendency to be exposed to adverse effects arising out of the increase in demand for limited resources available within the cities. It is, therefore, expedient that these local authorities become more proactive in drafting action plans that will serve as a framework for sustainable city development [20]. This places much burden on the DAs to work at ensuring that the SDGs, especially, SDG 11 are achieved. The SDGs have been facing strong headwinds for some time. Despite the significant efforts in some places, national governments on all continents (of which Ghana is part) have fallen short in their integration [22]. These shortfalls result mainly from societal polarizations, populism, and growing geopolitical conflicts among others. As of 2022, the global SDG index was below 67%, an indication that there is a potential for the world not being able to achieve the set targets by 2030 [22]. This calls for governments globally to speed up their rates of achieving the targets.

According to the 2023 Sustainable Development Report, based on the pace of progress since 2015, none of the SDGs is on track to be achieved by the deadline of 2030 [22]. Although, currently, the world has made some progress towards achieving SDG 6 (clean

water and sanitation), SDG 7 (affordable and clean energy), and SDG 9 (industry, innovation, and infrastructure) [22], this progress varies extensively across countries. Overall, European countries (Denmark, Czechia, Estonia, Latvia, and Slovak Republic) top the SDG index. Notwithstanding these statistics, it is revealed that even the highest-performing countries on the SDG index still face major challenges in achieving the SDGs that relate to climate, biodiversity, sustainable cities, etc. In the 2023 SDG global index, Ghana is ranked 122 out of 166 with a score of 61.8% [22]. Based on the current 2023 SDG dashboard for sub-Saharan Africa, Ghana is on track to achieving only one (i.e., SDG 12 responsible consumption and production) out of the 17 SDGs. For the remaining 16 SDGs Ghana is either facing a significant challenge or a major challenge in achieving them. These statistics leave Ghana much to be desired when it comes to achieving the SDGs. However, this study is only focused on SDG 11 because of its significance. Cities and other urban areas are home to around 55% of humanity and account for 70% of global economic output [23]. It is established that by 2050, these figures will increase to 70 and 80%, respectively [23]. Goal 11 focuses on the creation of inclusive, secure, resilient, and environmentally sustainable urban environments. Cities are at the forefront of global living. As of 2022, the world's population reached 8 billion, with over half residing in urban regions. This trend is expected to continue, with a projected 70 percent of the global population living in cities by 2050 [15,16,22]. Currently, approximately 1.1 billion people live in slums or conditions resembling slums within urban areas, and this number is anticipated to grow by 2 billion over the next three decades. Nevertheless, many cities are unprepared for this rapid urbanization, as it outpaces the development of housing, infrastructure, and essential services [9,22]. This situation has resulted in the proliferation of slums and slum-like living conditions. Issues such as urban sprawl, air pollution, and a lack of accessible public spaces persist in urban areas [15,16].

While progress has been made since the adoption of the Sustainable Development Goals (SDGs) in 2015, the number of countries with national and local disaster risk reduction strategies has doubled. However, challenges persist. In 2022, only half of the urban population had convenient access to public transportation [10,13,22]. Achieving sustainable development necessitates a significant transformation in how urban spaces are planned and managed and Ghana is not an exception to this transformation. In the Ghanaian context, achieving healthy city development has faced several challenges.

Current studies surrounding the concept of healthy city development revolve around adoption factors [24], drivers [25], and integration with technology [24,26]. According to the findings of Wang et al. [27] it was discovered that studies related to healthy cities were focused on their conceptual connotation, development practices, impact effects and measurement and evaluation [27]. Despite the growing responsiveness in creating eco-friendly cities with reference to SDG 11, literature is lacking on the role of local authorities such as the district assemblies in attaining sustainability, especially in developing countries such as Ghana. Through a comparative analysis of the notion of healthy cities and smart cities, Alves [28] concluded that the materialization of the concept of healthy cities depends strongly on policies and efforts from authorities, sectors, and institutions. It is, therefore, the aim of this study to bring to light the role of district assemblies in attaining healthy cities with respect to SDG 11 within the Ghanaian context. The study is posited to bridge the knowledge gap by assessing the awareness of DAs concerning healthy city development and SDG 11, their contributions towards the two, and the challenges encountered.

2. Literature Review

2.1. District Assemblies in Ghana

The 1992 constitution of Ghana structures the local government into three assemblies: the Metropolitan, Municipal, and District Assemblies (MMDAs). Resnick [29] indicated that a population density of 250,000 or more persons forms the metropolitan assembly, municipal assemblies constitute between 95,000–250,000 community members while the district assemblies account for 75,000–95,000 of the population. Ghana's decentralized

system of government relies largely on District Assemblies, which offer a forum for citizen participation in decision-making, and a vehicle for local development [29]. Since the inception of the three-tier local government system in 1988, the District Assemblies have been responsible for planning, implementing, and overseeing development projects in their respective jurisdictions [30]. Currently numbering 261 district assemblies, they are ranked as the lowest tier in the local government structure [31]. According to Fuseini [32], 70% of the members of MMDAs are elected by universal adult suffrage while the President of the Republic appoints the remaining 30%. At the district level, the District Chief Executive (DCE) heads the assembly upon the President's appointment and subsequent approval by two-thirds of the assembly members [31]. The assembly members in this structured system comprise elected representatives from the various electoral areas (i.e., towns) within the district [33]. Furthermore, there exists a non-partisan interest within the local government structure due to the pros of creating an autonomous decision-making body with the sole aim of growing the local economy [33].

The District Assemblies in Ghana play a key fundamental role at the local level affecting the day-to-day livelihoods of the people. They are responsible for providing basic human needs such as quality education, adequate water supply, efficient health care delivery, proper sanitation, effective security measures, and infrastructure, among others [31]. In addition, they coordinate and promote the development of the economy, social welfare, and cultural values at the district level [34]. In terms of financing, the Local Government Act 1993 allows the District Assembly (DA) to levy taxes and rates, collect revenues and fee charges in the form of market tolls, issuance of permits or licenses, and property rates, among others which form part of their internally generated funds (IGF) [35]. Moreover, the central government also supports the DA with funding known as the District Assembly Common Fund (DACF) for the execution of developmental projects and initiatives [36]. For instance, Wang [31] recorded about 241 road and transportation projects in 2015 within the Accra Metropolitan Assembly (AMA) with most of the funding traceable to the DACF and donor grants. The Tolon District Assembly [37] also indicated in their 2020 annual progress report that out of 92 projects planned for the 2020 developmental year, about 73% of the projects were completed reaching an overall of 91.4% of their 2020 annual action plan.

Despite the achievements of the district assemblies, their system of operation is tainted with some constraints. Togba [38] argued that low resources, insufficient procedures of accountability and responsibility, and restricted access to vital information are a few of the significant obstacles crippling project initiatives at the local level. Hackman et al. [39] also added that the effects of weak institutional capacity identified as one of the peculiar problems inhibiting the effective implementation of developmental and sustainable projects at the MMDA level. Due to some of these challenges, Abdul-Rahaman and Adusah-Karikari [40] revealed that out of 36 planned projects within the East Gonja district in the Northern region of Ghana, only 8 representing 19.05% of the total projects for the 2010–2013 District Assembly Medium Term Development Plan (DMTDP) were implemented. To address these challenges, stakeholders and researchers in local governance have advocated for reforms that ensure the sustainability of the socioeconomic well-being of the people [41].

2.2. Healthy City Development

The development of healthy cities is becoming a global strategic initiative that seeks to address the myriad issues caused by urbanization [28]. A healthy city is described by Ashton and Thurston [42] as a place where people aid each other in carrying out life's duties and reaching their full potential by continuously enhancing its physical and social settings and its range of available resources [42]. In supplementing this definition, WHO [13] defines healthy cities as a process rather than an outcome that consists of 6Ps that is People, Place, Peace, Participation, Prosperity, and Planet. According to Barton and Tsourou [43], Healthy City Planning also known as Healthy Urban Planning (HUP) prioritizes the well-being of its residents, recognizing that a city encompasses more than

just its physical infrastructure such as buildings, streets, and public areas. Rather, it views a city as a dynamic entity, deeply interconnected with the health of its inhabitants [43]. Historically, it has been recognized that urban conditions, often exacerbated by urban planning decisions, can negatively impact public health [43]. Healthy urban planning shifts the focus toward the constructive influence that urban planning can exert on human health, overall well-being, and quality of life. This approach aligns with the World Health Organization's comprehensive definition of health [43–45].

The concept of healthy urban planning has been developed within the framework of the WHO Healthy Cities project, a long-established initiative that addresses various aspects of health within urban settings [43,44]. Urban planning practices, like the cities they shape, wield significant influence over the well-being of individual residents, with both positive and negative impacts [45]. These connections are intricate and multifaceted, spanning social, environmental, and economic dimensions. Healthy urban planning concentrates on the constructive aspects of these connections. Its primary goal is to realign the priorities of urban planners by emphasizing the repercussions of their decisions on human health and overall quality of life [43,46]. This approach positions people at the core of urban planning discussions, recognizing health as a fundamental component of sustainable development. Healthy urban planning seeks to enhance both the quality of the physical urban environment and the well-being of individuals and communities within cities, contributing to the cultivation of a healthy economy, a sustainable environment, and a thriving society [43,46].

The Sustainable Development Goals (SDGs) offer a genuine chance to instigate transformation and, notably, to address objectives that are common to all global inhabitants [47]. While it is undeniable that the outstanding tasks of the Millennium Development Goals must be wrapped up, it is equally evident that the world faces considerable jeopardy as numerous swiftly industrializing economies take a toll on the environment [47]. If these trends persist unchecked, they could lead to severe consequences. The SDGs and the New Urban Agenda (NUA) are intricately connected and reinforce each other, with health serving as a fundamental pillar in both [48].

The UN Global Sample of Cities, an initiative led by the United Nations, was the first scientific analysis of world urbanization based on satellite images in 2010. This examination was based on satellite imagery and focused on a representative selection of 200 cities out of the 4231 cities worldwide [47,48]. The findings from this analysis highlighted a concerning trend: current urban practices, despite being the primary driver of economic progress, are unsustainable [47,48].

Cities are becoming increasingly less organized and structured, leading to spontaneous urban growth and a subsequent increase in urban poverty. This, in turn, negatively impacts the quality of life for millions of people. Additionally, the population density in cities has experienced a significant decline, with a reduction of 52.5% in developed countries and 37.5% in developing countries [49]. This shift towards urban sprawl and reduced population density can be attributed to changing lifestyles and has significant implications for urban health [50]. It contributes to issues such as the spread of diseases and unhealthy living conditions [47–50].

The development of healthy cities is gaining global recognition because of its alignment with SDG 11. To assess the level of healthy city construction in China, a model was developed by Wang et al. [27] and it was found that although over the years, there has been an increase in the implementation of healthy city construction, the performance level is very low [27]. From the recent voluntary national review submitted by the UN Ghana, it was worthy to note that implementation of the SDG goals was still underway, and the progress made is mixed. In order to attain SDG 11, the government made four key interventions of which two have been completely successful [51].

2.3. The Sustainable Development Goals (SDGs)

The concept of sustainable development dates back to 1987 when the Brundtland Report of the World Commission on Environment and Development [52] described sustainable development as an advancement or growth curve that satisfies current demands without compromising the ability of future generations to fulfill their own needs. Sustainability has since become a global issue of interest that seeks to be achieved by world economies and institutions. Samara et al. [53] averred that without sustainable development, the guarantee of the existence of limited and non-renewable resources for subsequent generations will be jeopardized. Owing to the credible and proficient approach sustainability offers in combating socioeconomic and environmental problems on a global scale such as climate change, inequity, low quality of life, increased carbon emissions, and environmental degradation, among others [54], it has been a major concern to international organizations. Particular among these organizations is the United Nations (UN).

The Millennium Summit held in 2001 by the UN introduced eight initiatives known as the Millennium Development Goals (MDGs) which aimed at tackling and solving issues concerning hunger, poverty, health, education, gender equality, and the environment by 2015 [55]. In 2012, the United Nations Conference on Sustainable Development (UNCSD) also known as Rio +20 represented a paradigm shift in the area of development that sought to nurture the growth of global cooperation in implementing sustainable measures that make the world a better living hub [56]. However, due to the emergence of novel and intricate challenges in diverse aspects of the global framework, the U.N., in 2015, initiated the Sustainable Development Goals (SDGs) as an extension of the MDGs to achieve its targets by 2030 [57].

The SDGs comprise 17 different but interdependent goals with 169 targets which represent parameters that seek to measure the progress of achieving global sustainability [58]. Referenced from the UN's SDG report [59], SDG 1 focuses on eradicating all forms of poverty worldwide; SDG 2 targets a zero-hunger society where people achieve food security and adequate nutrition through sustainable agricultural practices; SDG 3 strives to maintain a healthy living standard across the globe as well as promote the well-being of people at all ages; SDG 4 emphasizes on the provision of equitable quality education for all and SDG 5 advocates for gender equality and women empowerment. In addition, SDG 6 concentrates on improving sustainable water and sanitation management worldwide; SDG 7 aims to ensure that the global populace gains access to sustainable and modern energy; SDG 8 targets the promotion of sustainable economic growth and decent work for all persons; SDG 9 focuses on promoting sustainable industrialization and nurturing innovation and the reduction of income inequality globally is identified with SDG 10.

Goal 11 ensures inclusivity, safety, and sustainability within cities and human settlements across the globe; SDG 12 highlights the pathway to achieve sustainable consumption and production patterns; SDG 13 addresses expediency in combating climate change and its adverse impacts; Issues concerning the conservation of marine species and resources for sustainable development is associated with Goal 14 and SDG 15 seeks the protection, restoration and sustainable use of the natural ecosystem. Subsequently, SDG 16 advocates for international peace, the rule of law, and inclusive institutions at all levels and SDG 17 focuses on fostering global partnerships among the countries to achieve all the established goals.

However, the focus of this study resonates with goal 11 which exclusively addresses sustainability within cities and communities. SDG 11 operates through 10 different targets under which there are 15 indicators with each tackling either the social, economic, and environmental issues within the community [60]. In the same report, Target 11.1 addresses a policy on access to affordable housing and basic services; Target 11.2 focuses on access to a safe, resilient and affordable transportation system inter and intra-city; Target 11.3 also highlights inclusive and sustainable urban planning for all; Target 11.4 subsequently ensures the protection and preservation of societal cultures and natural heritage and Target 11.5 emphasizes on sustainable disaster management as a solution to reduce casualties

and direct economic losses relative to gross domestic product (GDP). Additionally, Target 11.6 aims at reducing the adverse environmental impacts within cities; the provision of green buildings and spaces within communities identifies with Target 11.7; Target 11.a focuses on regional and national development planning to enhance urban, peri-urban and rural communities; Target 11.b aims at achieving an integrated sustainability policy implementation within cities, especially in terms of disaster risk reduction and the last target (i.e., Target 11.c) concentrates on the provision of technical and financial support to developing countries in constructing sustainable buildings using local resources.

Osman et al. [61] asserted that advances in the inclusivity, safety, resilience, and sustainability of cities will pave the way for accomplishing the goals of the other SDGs, such as eradicating poverty, promoting equality, fostering economic growth, and ensuring that residents live healthy lives. In the future, urban, peri-urban and rural communities should be sustainable and efficient, thus addressing the existing disparities between them [62].

2.4. The Challenges Encountered in Achieving Healthy City Development

Cities and their developmental components have garnered more attention in recent years, in part due to worries about climate change and in part due to the social and organizational challenges posed by massive rural-urban migration [63]. In a positive light, the healthy and sustainable cities movement has also gained consideration from researchers and urban policy stakeholders since the World Health Organization identified it as an ‘effective marker’ for a safe, resilient, sustainable city [64]. This is because a healthy city is viewed as addressing the consequence of several inputs from various sectors, including the economy, education, the environment, culture, social welfare, infrastructure, and public service institutions [65]. For instance, Sodik et al. [66] posited that elements such as green buildings, energy efficiency, sustainable transportation and circular economy practice not only classify a city to be deemed sustainable or healthy but also deal with daily city challenges. Besides, international policy drivers such as the UN SDGs also support healthy city development through its 17 goals that need to be achieved by 2030, especially Goal 11 which targets the sustainability of cities and communities.

In supporting the cause for sustainable cities, countries such as Brazil have enrolled major initiatives such as the Healthy Municipalities, Cities and Communities (HMC) initiative, the MDGs, Local Agenda 21 (LA21), and Master Plans (MPs) to ensure that all urban stakeholders collaborate to transform their societal and environmental conditions [67]. Meanwhile, they are also developing action plans to integrate these initiatives to facilitate the delivery of SDG 11 at the local level. Similarly, Koch and Krellenberg [68] investigated the contextualization of SDG 11 indicators within the German context by examining three major initiatives rolled out by the German government, an academic institution on urban affairs, and a German non-governmental organization (NGO) to ascertain whether the initiatives explicitly addressed SDG at the local level. Subsequently, in India, the national government also registered clear missions such as the Jawaharlal National Urban Renewal Mission, Atal Mission for Rejuvenation and Urban Transformation, and Smart Cities mission, among others, to promote sustainability within the urban local bodies [69]. Nevertheless, the African continent has also organized efforts to contribute to achieving healthy cities through the implementation of the SDGs. Cartwright et al. [70] stated that about 18 countries within Africa have been instrumental in making headway toward achieving Agenda 2030. Lesotho, Kenya, Senegal and South Africa have witnessed a reduction in slum dwellings while Cape Verde, Mauritius, Comoros and Seychelles seem to be on track to achieving access to sanitation and waste reduction [71].

Despite the ambitious implementation plans launched by several governments and NGOs of developed and developing countries concerning healthy city development, concerns have been raised regarding the realization of these plans [68,72]. This can be somewhat attributed to challenges urban stakeholders encounter during the implementation process. Elias and de Albuquerque [73] argued that the lack of required resources on the part of local authorities in managing large city centers has been one of the most significant

obstacles to the implementation of sustainable city policies, the foremost of these resources relating to financing. Bandauko et al. [74] confirmed this assertion stating that the national urban policies on the sustainability of some countries fail to allocate national and municipal budgets to these initiatives, resulting in poor implementation action. However, according to an International Monetary Fund (IMF) publication, this accounts for a USD 2.6 trillion average funding gap per annum developing countries face in sustainable development investment [75]. Furthermore, another obstacle discussed within current literature relates to the incompetency of agents tasked to implement sustainable developmental policies, exercised through poor monitoring of the implementation process. This is evident in Croese et al. [76], suggesting that action on the implementation process has been slow in part due to the optimistic nature of the SDG regarding urbanization, meanwhile, not enough data are available to translate it into action at the national and local levels. Additionally, due to technical capacity constraints and incompetency, the impacts of sustainable cities are seldom experienced [77]. Few studies have also stated that changes in government hinder the implementation of a resilient long-term plan that addresses and marks the progress of the healthy city curve [78].

It is, however, expedient that there must be clear direction and coordination structures in place for all levels of government, as well as civil society and the corporate sector, to work together to effectively promote the development of healthy cities using the SDGs as measuring indicators [78].

3. Methodology

3.1. Research Approach/Strategy

This study explored the achievement of healthy city development within the Ghanaian framework, through the lenses of SDG 11. Hence, the study assumed a quantitative research approach to reveal its findings. This approach was deemed feasible as it allowed for the use of descriptive statistics (i.e., frequencies, mean scores, standard deviation, etc.), correlation, and regression analysis, among others to analyze various variables within the study [79]. In addition, this approach promotes the possibility of employing structured questionnaire surveys as a means of retrieving relevant data from the sample size [80].

3.2. Survey Design and Administration

For this study, a four-part questionnaire was developed. The first part of the questionnaire required respondents to reveal their demographic background. This included their role within the DA, their highest level of education, and years of experience. In the second part of the survey, respondents' level of awareness of healthy city development was assessed using a list of SDG 11 targets identified through the review of pertinent literature. This was achieved using a Likert scale from 1–5 where 1 = highly unaware and 5 = highly aware. Using a Likert scale from 1–5 where 1 = not achieved and 5 = highly achieved, respondents were asked to rank the level of achievement of healthy cities based on the list of SDG 11 targets in the third part. The SDG 11 targets assessed were 10 in number. The final part of the questionnaire required respondents to rate their level of agreement with the challenges encountered by district assemblies while implementing healthy city development plans. This was achieved using a Likert scale from 1–5 where 1 represented strongly disagree and 5 represented strongly agree.

Prior to the collection of data, a two-step piloting procedure was adopted to ascertain the questionnaire's suitability for the intended feedback. To begin with, an expert on development planning conducted an initial review of the sample questionnaire. Following her approval, five (5) planning officers from the central government with years of experience in planning developmental projects assessed the applicability of the structured questions. After a few elucidations, both piloting stages were approved. The researchers, therefore, had the clearance to administer the questionnaires after the positive response from both piloting phases. The final questionnaire (see Appendix A for sample questionnaire) was administered to the respondents through Google Forms online. This form of data col-

lection was deemed sufficient since, unlike other methods like face-to-face, it guarantees respondents' confidentiality.

The population of this study included District Chief Executives (DCEs), Coordinating Directors, Planning Officers, Architects, and Works Engineers in active service within the various district assemblies in the Ashanti region of Ghana. This geographical location was considered since it has been deemed to be one of the developmental hubs within the country. However, the district assemblies were chosen due to the significant developmental projects continually witnessed within the districts. Given the difficulty in deducing the actual sample size of the respondents, two non-probability sampling techniques were employed. The first was the purposive sampling technique, which was used to identify the various professions. Also, the snowball sampling technique generated referrals from the previously identified respondents.

A total of two hundred (200) questionnaires were distributed to the stakeholders having jurisdiction over physical planning and development within the various DAs in the Ashanti region. Out of this number, one hundred and sixty-five (165) responses were retrieved, representing an 82.5% response rate.

3.3. Analyses of Data

Responses from the questionnaires, after being examined for completeness were entered into IBM SPSS version 26. The questionnaires retrieved, sorted, and coded in the SPSS software version 26 program were complete and contained all the necessary information. Moreover, Cronbach's alpha was used to test the reliability of the data retrieved from the responses. Most especially, responses concerning the awareness of healthy city development, the current achievement level of healthy cities, and the challenges encountered in achieving healthy city development. The alpha values for the aforementioned objectives were 0.978, 0.936, and 0.901, respectively, indicating the reliability and internal consistency of the data retrieved. The data entered were further analyzed using frequencies, mean score ranking, one-sample *t*-test, normalization technique, comparison and agreement analysis, and the Kruskal–Wallis *H* test.

The one-sample *t*-test is a statistical hypothesis test that compares the sample mean to a predefined value to ascertain whether the sample mean is above or below the predefined value (i.e., the test value). The study employed a test value of 3.5, with which the various means were compared to when the one-sample *t*-test was conducted. The test value of 3.5 was chosen based on the Likert scale employed. A 5-point Likert scale was used with 3.5 as the neutral or average point; hence, a mean greater than or equal to 3.5 implies alignment of the variable towards the utmost positive point while a mean less than 3.5 implies alignment of the variable towards the utmost negative point. In other words, if per the Likert scale used, 5 = Strongly agree, 4 = agree, and 3 = Neutral, then for a variable to be consistently considered as agreed, it must have a mean above the neutral point (i.e., 3). Therefore, the hypothesized mean for this value was set between 3 and 4 (in this case, 3.5). The same explanation can be given to the Likert scale used to assess the respondents' level of awareness and level of achievement of healthy cities in Ghana. This procedure for determining the sample test value has been applied in most recent construction-related research [79,81–83]. The statistical test (i.e., one-sample *t*-test) was conducted at a confidence level of 95% with a *p*-value of 0.05. Subsequently, the null hypothesis (H_0) was rejected when $p < 0.05$ at the 95% confidence level. The alternative hypothesis (H_1) was confirmed when $p > 0.05$ at the 95% confidence level [82]. In this study, the null hypothesis was set to indicate that the mean scores of the awareness, achievement levels, and challenges encountered were not statistically significant. On the contrary, the alternative hypothesis was set to mean otherwise.

The normalization technique was also used to determine the variables which were critical to the respondents. This technique converts the mean values of the variables to a normalized value (NV) ranging from 0 (i.e., not critical) to 1 (i.e., highly critical) (see Equation (1)). A variable was deemed critical when $NV \geq 0.60$ [84]. Furthermore, the

comparison and agreement analysis depended on the normalized technique to assess the variables that were deemed critical among the respondents based on their role at the District Assembly.

Subsequently, the Kruskal-Wallis H test was conducted to ascertain whether there were some significant differences in the mean values among the respondents based on their roles at the DA. Where the test produced a p -value higher than 0.05 for the variables, it meant that there were no significant responses from the various roles, and vice versa.

$$NV = \frac{\text{Mean value} - \text{Min mean value}}{\text{Max mean value} - \text{Min mean value}} \quad (1)$$

4. Results and Discussion

4.1. Demographic Background

The demographic information of the respondents was unveiled in this section. Information regarding the respondents' role within the DA, the highest level of education, and years of experience was requested and presented. This was needed to appraise the respondents' background history.

Considering the role of the respondents within the DA from Table 1, 75 (45.5%) were Coordinating Directors, 54 (32.7%) were Planning Officers, 3 (1.8%) were Architects and 33 (20.0%) were Works Engineers. None of the respondents was a District Chief Executive. Among these professionals, 9 (5.5%) had a Doctorate degree, 24 (14.5%) had a Bachelor's degree, and 132 (80.0%) had a Master's degree qualifying them to be in their respective positions within the DA. The working experience section indicated that 21 (12.7%) had less than 5 years of working experience within their current role. Twenty-four (24) respondents representing (14.5%) had 6–10 years and 11–15 years each of working experience. Moreover, respondents who had over 20 years of working experience were 57 (34.5%).

Table 1. Demographic Information.

Demographic	Frequency	Percentage
Role at District Assembly		
Coordinating Director	75	45.5
Planning Officer	54	32.7
Architect	3	1.8
Works Engineer	33	20.0
Total	165	100
Highest Level of Education		
Bachelor's degree	24	14.5
Master's degree	132	80.0
Doctorate degree	9	5.5
Total	165	100
Years of experience in current role		
0–5 years	21	12.7
6–10 years	24	14.5
11–15 years	24	14.5
16–20 years	39	23.6
Over 20 years	57	34.5
Total	165	100

Source(s): Authors, 2023.

4.2. Awareness of Healthy City Development through SDG 11

Table 2 shows the ranking of SDG 11 targets according to the awareness level of all the respondents. It should be well noted that these targets measure the sustainability of cities [55]. Therefore, targets that were ranked higher meant that respondents were very much aware of them as indicators of cities. When all respondents were considered, the mean scores of the targets ranged from 3.40 to 3.69. The top five ranked targets include, ‘reducing environmental impacts of cities’, ‘inclusive and sustainable urban planning’, ‘strengthening national and regional development planning’, ‘reducing adverse effects of natural disasters’, and ‘implementing policies for inclusion, resource efficiency and disaster reduction’. The two least aware targets were ‘protection of societal cultures and natural heritage’ and ‘supporting least developed communities in sustainable and resilient building’. Moreover, the results presented indicate that the respondents were highly aware of ‘reducing the environmental impact of cities’ as an indicator of a healthy city since it was ranked the topmost SDG 11 target. According to Galli et al. [85], the awareness level of local authorities on the reduction of environmental challenges within urban areas is crucial to its sustainable development. This average level of awareness among the respondents on the need to reduce the environmental impact of cities could be attributed to public education through social media, libraries, and formal education [86,87].

Table 2. Summary analyses of the level of awareness of healthy city development through SDG 11 targets.

Cronbach's Alpha = 0.978, Test Value = 3.50										
SDG 11 Targets	Overall Mean	Rank	Coordinating Director Mean	Rank	Planning Officer Mean	Rank	Architect Mean	Rank	Works Engineer Mean	Rank
Target 6	3.6909	1	3.4400	3	3.7778	3	5.0000	1	4.0000	1
Target 3	3.6727	2	3.5200	1	3.9444	1	2.0000	3	3.7273	8
Target 11.a	3.6727	3	3.4400	4	3.8889	2	2.0000	4	4.0000	2
Target 5	3.6182	4	3.4800	2	3.7778	4	2.0000	5	3.8182	6
Target 11.b	3.6000	5	3.4400	5	3.6667	6	2.0000	6	4.0000	3
Target 2	3.5455	6	3.4000	6	3.6111	8	2.0000	7	3.9091	4
Target 1	3.5273	7	3.3600	7	3.5000	10	5.0000	2	3.8182	7
Target 7	3.5091	8	3.3200	8	3.6111	9	2.0000	8	3.9091	5
Target 4	3.4909	9	3.3200	9	3.6667	7	2.0000	9	3.7273	9
Target 11.c	3.4000	10	3.2000	10	3.7778	5	2.0000	10	3.3636	10

Note: The explanations for individual targets can be found in Table 3, as Table 2 is quite extensive in its content. Source(s): Authors, 2023.

Table 3. Summary analyses of the current level of achievement of healthy cities from the SDG 11 perspective.

Cronbach's Alpha = 0.936, Test Value = 3.50						
SDG 11 Targets	SDG 11 Target	T	Mean	Std. Deviation	Rank	p-Value
Target 11.a	Strengthening national and regional development planning	−13.317	2.60	0.868	1	0.000 ^a
Target 11.b	Implementing policies for inclusion, resource efficiency and disaster reduction	−15.202	2.49	0.853	2	0.000 ^a
Target 4	Protection of societal cultures and natural heritage	−15.599	2.42	0.891	3	0.000 ^a
Target 11.c	Supporting least developed communities in sustainable and resilient building	−15.143	2.35	0.979	4	0.000 ^a

Table 3. Cont.

Cronbach's Alpha = 0.936, Test Value = 3.50						
SDG 11 Targets	SDG 11 Target	T	Mean	Std. Deviation	Rank	p-Value
Target 3	Inclusive and sustainable urban planning	−16.723	2.31	0.915	5	0.000 ^a
Target 7	Providing access to safe, inclusive and green public spaces	−18.791	2.29	0.827	6	0.000 ^a
Target 6	Reducing the environmental impacts of cities	−18.601	2.25	0.860	7	0.000 ^a
Target 5	Reducing adverse effects of natural disasters	−19.399	2.22	0.849	8	0.000 ^a
Target 2	Safe, resilient and affordable transportation systems	−20.261	2.18	0.836	9	0.000 ^a
Target 1	Safe and affordable housing and basic services	−21.119	2.13	0.835	10	0.000 ^a

Note(s): ^a One-sample *t*-test result is significant at 0.05 significance level, *p*-value < 0.05 (2-tailed), Mean score ranking and one-sample *t*-test, Source(s): Authors, 2023.

At a hypothesized mean of 3.50 set for this study, the respondents were aware of 8 out of the 10 SDG 11 targets which were presented as indicators of achieving healthy city development. This clearly shows that the respondents were aware of most of the targets (i.e., indicators) that suggest healthy city development.

According to Satterthwaite [86], local government officials must spearhead the attainment of the SDGs by assessing the local status quo, identifying the needs and resources available, partnering with relevant stakeholders, and enacting the necessary policies and projects. In doing so, they must first and foremost be aware of the SDGs.

Considering individual roles at the DAs, it was revealed that work engineers and planning officers were more knowledgeable of the SDG targets (i.e., most mean scores were above the hypothesized mean of 3.5). The results indicate that the general level of awareness of the SDG targets is low among coordinating directors and architects in the DAs in Ghana (i.e., only one target had a mean more than the stated mean of 3.5 for each of the roles) even though the overall average indicates that the awareness level is high. The findings further indicate that the overall level of awareness of architects and coordinating directors needs to be increased since they play a key role in achieving an overall healthy city through SDG 11.

4.3. Current Level of Achievement of Healthy Cities through SDG 11

With regards to achieving this objective, respondents were asked to rank the current level of achievement of the SDG 11 targets, which will inform the current level of achievement of healthy cities. Results from the responses have been displayed subsequently in Table 3. The mean values (MV) of the targets were ranked in descending order. From Table 3, it is evident that none of the SDG 11 targets are above the hypothesized mean, indicating that none of the SDG 11 targets have been achieved in Ghana. This implies that, currently, the achievement level of a healthy city is significantly low in Ghana. Though the respondents are averagely aware of the SDG 11 targets (see Table 2), the current level of achievement of those targets is minimal. This finding is not surprising because Ghana is ranked 122 out of 166 with an SDG global index of 61.8% [22]. Based on the current 2023 SDG dashboard for sub-Saharan Africa, Ghana is on track to achieving only one (i.e., SDG 12 responsible consumption and production) out of the 17 SDGs. For the remaining 16 SDGs Ghana is either facing a significant challenge or a major challenge in achieving them. These statistics leave Ghana much to be desired when it comes to achieving the SDGs.

Notwithstanding this finding, the results in Table 3 show that Target 11.a (strengthening national and regional development) was ranked first with a mean of 2.60 and a standard deviation of 0.868, despite the low level of achievement of the targets. The remaining targets (after ranking influenced by their mean and standard deviation values) were in the order of Target 11.b [MV = 2.49, Standard Deviation (SD) = 0.853], Target 4 [MV = 2.42, SD = 0.891], Target 11.c [MV = 2.35, SD = 0.979], Target 3 [MV = 2.31, SD = 0.915], Target 7 [MV = 2.29, SD = 0.827], Target 6 [MV = 2.25, SD = 0.860], Target 5 [MV = 2.22, SD = 0.849], Target 2 [MV = 2.18, SD = 0.836], and Target 1 [MV = 2.13, SD = 0.835]. It is expedient to take notice of the fact that Targets 1 and 2 were the last two SDG 11 targets according to the rankings based on their mean scores, indicating that attention has not been given at all to these targets. Meanwhile, these two targets address the need for safe, resilient, and affordable basic human needs and services such as housing, access to improved water, improved sanitation, transportation, and security [58].

In order to determine the statistical significance of the SDG 11 targets as a benchmark to assess the current level of achievement of healthy cities according to the respondents' views, the one-sample *t*-test was used to perform a parametric test. From Table 3, it can be observed that all the targets had a *p*-value (statistical significance of the test) below the 0.05 threshold, indicating that the respondents regard the SDG 11 targets to be statistically significant though the mean values of these targets were below the hypothesized mean of 3.50. Correspondingly, the *t*-values (strength of the test) of the targets were all negative, signifying that their mean scores were below the hypothesized mean of 3.50.

The current low achievement levels of the SDG 11 targets as presented in this section of the study confirms a report by the Sustainable Development Solutions Network (SDSN) indicating that both developed and developing countries have made relatively little effort towards the achievement of the SDGs by 2030 [56]. According to Elias and de Albuquerque [73], one of the challenges encountered by the local authorities is the lack of required resources to enhance the implementation of sustainable development policies toward the achievement of healthy cities. These resources (i.e., finance and logistics) are the driving force of the implementation phase of such sustainable policies; thus, without them local authorities are handicapped, resulting in the low health status of the cities. Furthermore, a resilient long-term plan that details a clear path toward the achievement of healthy cities should be enrolled and monitored despite the changes in government [76]. This will enhance the longevity and efficiency of sustainable development policies both at the national and local levels, and as a ripple effect boost the achievement level curve of healthy cities.

4.4. Challenges Encountered in Achieving Healthy City Development

In reference to this specific objective, it was expected of the respondents to indicate which of the identified challenges they encountered while in the quest of achieving healthy city development. Table 4 shows that the respondents considered most of the factors (i.e., 6 out of 10) as challenges encountered in achieving healthy city development since their mean scores were above the hypothesized mean of 3.50. At the topmost level of the mean score ranking was C3 (i.e., lack of financial resources for implementing healthy city policies) with a mean value of 4.04. The remaining 4 out of the 10 factors identified were moderately considered by the respondents since their mean values were between the ranges 3.50–3.00. Ranking last among these challenges was C5 (i.e., incompetency of agents tasked to implement healthy city policies) with a mean value of 3.05. In order to determine the crucial challenges encountered by the respondents, the normalization technique was used to further analyze the data according to the role of the respondents in the DAs. At an $NV \geq 0.60$, the crucial factors according to the respondents were 4 out of 10. They follow in the order of C3 [NV = 1.00], C4 [NV = 0.76], C10 [NV = 0.61], and C6 [NV = 0.61] (see Column 5 in Table 4).

A comparison and agreement analysis was conducted using the normalized technique to identify the critical challenges encountered in achieving healthy city development based

on the roles of the respondents as displayed in Table 5. From the perspective of the Coordinating Directors, C3 (lack of financial resources for implementing healthy city policies) and C4 (poor implementation of healthy city policies) were the critical challenges they usually face in achieving healthy city development with NVs of 1.00 and 0.76, respectively. Correspondingly, the Planning Officers also agreed on C3, C4, and C10 (lack of public education) as critical challenges encountered in achieving healthy city development with NVs of 1.00, 0.86, and 0.78. In the view of the Works Engineers, C3, C4, C10, C6 (poor monitoring of the implementation process for healthy city development), C7 (lack of data in translating SDG 11 targets to suit local communities), and C9 (Lack of stakeholder participation in healthy city development) were the critical challenges encountered with NVs of 1.00, 0.64, 0.64, 0.73, 0.81 and 1.00, respectively.

Table 4. Summary results of the critical challenges encountered in achieving HCD (Mean score ranking and normalization technique).

Code	Challenges	Mean	Standard Deviation	Normalized Value	Rank
C3	Lack of financial resources for implementing healthy city policies	4.04	1.098	1.00 *	1
C4	Poor implementation of healthy city policies	3.80	1.105	0.76 *	2
C10	Lack of public education on healthy city development	3.65	1.119	0.61 *	3
C6	Poor monitoring of the implementation process for healthy city development	3.65	1.051	0.61 *	4
C7	Lack of data in translating SDG 11 targets to suit local communities	3.60	1.172	0.56	5
C9	Lack of stakeholder participation in healthy city development	3.56	1.191	0.52	6
C8	Changes in government	3.45	1.323	0.40	7
C1	Lack of awareness of SDG 11 targets	3.33	1.298	0.28	8
C2	Lack of technical capacity	3.16	1.336	0.11	9
C5	Incompetency of agents tasked to implement healthy city policies	3.05	1.246	0.00	10

Note(s): * = critical challenges encountered in achieving healthy city development (HCD), Source(s): Authors, 2023.

Table 5. Results of the summary of comparison and agreement analysis.

Roles of Respondents													
Code	Coordinating Director			Planning Officer			Architect			Works Engineer			K-W Test p-Value
	Mean	Rank	NV	Mean	Rank	NV	Mean	Rank	NV	Mean	Rank	NV	
C3	4.16	1	1.00 *	3.78	1	1.00 *	5.00	1	0.00	4.09	1	1.00 *	0.065 ^c
C4	3.88	2	0.76 *	3.67	2	0.86 *	5.00	2	0.00	3.73	5	0.64 *	0.108 ^c
C10	3.60	4	0.52	3.61	3	0.78 *	5.00	3	0.00	3.73	6	0.64 *	0.092 ^c
C6	3.68	3	0.59	0.56	5	0.56	5.00	4	0.00	3.82	4	0.73 *	0.025
C7	3.52	5	0.45	3.44	6	0.56	5.00	5	0.00	3.90	3	0.81 *	0.008
C9	3.40	7	0.34	3.39	7	0.50	5.00	6	0.00	4.09	2	1.00 *	0.000
C8	3.52	6	0.45	3.28	8	0.36	5.00	7	0.00	3.45	7	3.45	0.131 ^c
C1	3.12	8	0.10	3.5	4	0.64	5.00	8	0.00	3.36	8	0.27	0.010
C2	3.12	9	0.10	3.17	9	0.22	5.00	9	0.00	3.24	9	0.15	0.062 ^c
C5	3.00	10	0.00	3.00	10	0.00	5.00	10	0.00	3.09	10	0.00	0.074 ^c

Note(s): * = critical challenges encountered in achieving healthy city development (HCD) in the various professions' view, ^c Kruskal-Wallis H test is significant at 0.05 significance level, p -value ≥ 0.05 , Source(s): Authors, 2023.

The Kruskal-Wallis H test (K-W) was further conducted to analyze the differences in the responses between the respondents. In this study, 4 different groups were considered (i.e., Coordinating Directors, Planning Officers, Architects, and Works Engineers). Hence, the K-W test was held at a significance value (p -value) of 0.05, indicating that there exists no significant difference in the responses between the groups at a p -value higher than 0.05. From Table 5 (see last Column), it can be observed that the test produced a p -value higher than 0.05 for 6 out of 10 of the challenges identified (i.e., C3, C4, C10, C8, C2, and C5), indicating that there were no statistically significant differences in the views of the professions.

The results further indicate that the respondents share the same opinions on the challenges encountered in achieving HCD. Also, almost all the respondents agreed on C3 and C4 as the critical challenges encountered in achieving HCD.

These findings are consistent with previous studies that have discussed the challenges encountered in achieving healthy city development. Indeed, the lack of financial resources has been a significant obstacle impeding the progress of local authorities toward the achievement of healthy city development according to Elias and de Albuquerque [73]. According to Bandaiko et al. [74], some governments forsake the need to dedicate a portion of the national budget to expenses regarding the implementation of sustainable development policies at the national and local levels. Similarly, the issue of poor implementation of healthy city policies has been discussed in recent studies. Croese et al. [76] averred that the SDGs focused on urbanization and city development are in a global context hence there is scant data available on translating these goals to suit the local jurisdiction, resulting in a poor implementation process. Therefore, to combat these challenges, local actors at the forefront of implementing sustainable development policies toward the achievement of healthy cities should be equipped with the requisite resources to achieve such a target [66,67]. In addition, public education targeted at achieving environmental sustainability should be enrolled within the communities to increase the awareness of indigenes concerning its potential benefits and ramifications [88,89].

5. Conclusions

The 2023 Sustainable Development Report ranks Ghana 122 out of 166 with a score of 61.8% in terms of countries making efforts to achieve the SDGs. Based on the current 2023 SDG dashboard for sub-Saharan Africa, Ghana is on track to achieving only one (i.e., SDG 12 responsible consumption and production) out of the 17 SDGs. For the remaining 16 SDGs Ghana is either facing a significant challenge or a major challenge in achieving them. With the role played by SDG 11 in achieving the SDGs, this study was conducted to assess the achievement of healthy city development (HCD) in Ghana. After reviewing several pieces of literature on the study, 10 targets were identified under Sustainable Development Goal 11. These targets include Target 11.1—Safe and affordable housing, Target 11.2—Affordable and sustainable transport systems, Target 11.3—Inclusive and sustainable urbanization, Target 11.4—Protecting the world's cultural and natural heritage, Target 11.5—Reducing the adverse effects of natural disasters, Target 11.6—Reducing the environmental impacts of cities, Target 11.7—Providing access to safe and inclusive green and public spaces, Target 11.a—Strong national and regional development planning, Target 11.b—Implement policies for inclusion, resource efficiency and disaster risk reduction, and Target 11.c—Support least developed countries in sustainable and resilient building.

The study employed a quantitative research approach to enable the researchers to conclude their findings among a larger population. Thus, a survey was conducted among the key personnel within the District Assembly to ascertain their level of awareness of healthy city development and the current achievement levels from their perspective through the SDG 11 targets and the challenges they encounter in achieving HCD. Personnel with the DAs were involved in this study because per the structure of the government of Ghana, the DAs are responsible for the development of cities. The District Assemblies in Ghana are pivotal in the localization and implementation of the SDGs at the local level. Their

responsibilities encompass a wide range of development areas, and their actions are crucial for ensuring that progress is made toward achieving these global goals within their districts. This made it appropriate to involve them in this study. Descriptive and inferential analysis was used to analyze the responses from the respondents. The results of the analysis revealed that the local authorities were averagely aware of the SDG 11 targets causing a ripple effect in the awareness of HCD. Correspondingly, the outcome of the analysis also showed that there was a low level of achievement of the healthy city status according to the views of the local authorities. Following this, a normalized technique was used to ascertain the critical challenges encountered by the local authorities to achieve HCD. Out of the 10 factors identified from several studies, only four were critical challenges to the outcome of the study. These challenges were a lack of financial resources for implementing healthy city policies, poor implementation of healthy city policies, lack of public education on HCD, and poor monitoring of the implementation process on HCD. Therefore, the need for local actors to focus attention on sustainable development goals within the local community is crucial for the achievement of healthy cities.

Furthermore, the scientific novelty of these findings was implied in two ways. Primarily, from a theoretical point of view, this study has established the awareness and current achievement level of healthy city development referenced from SDG 11 among the local authorities in Ghana. The study has also recognized the challenges encountered by the local authorities to achieve healthy city development, which needs to be defined in the present literature. In practice, the establishment of this study informs development planning stakeholders, design stakeholders, educational institutions, government agencies, and researchers in Ghana to facilitate processes and procedures that ensure sustainability within the local communities and cities. For planning stakeholders such as the National Development Planning Commission (NDPC) and the Ghana Institute of Planners (GIP), these findings will divert their focus on the need to support and enhance the institutional capacity of the local actors toward the implementation of sustainable policies to facilitate HCD. These findings will also inform design stakeholders such as the Ghana Institute of Engineers (GhIE) and the Ghana Institute of Architects (GIA) to develop standards that will ensure the sustainability of designs earmarked for urban areas. Educational institutions will be able to identify the target areas needed for driving the awareness of the populace toward the development of healthy cities from the findings of this research. For government agencies such as the Ministry of Local Government, Decentralization and Rural Development (MLGRD) and the Metropolitan, Municipal, and District Assemblies (MMDAs), these findings will inform them of the critical challenges encountered in achieving HCD in Ghana. Hence, sparking strategic actions they are to take toward resolving these challenges. Similarly, the findings of this study will enable researchers to identify knowledge gaps for further empirical studies.

Although this study achieved its intended aim, there were limitations along its path. These limitations were encountered due to the quantitative approach of the study. Thus, respondents were unable to express their diverse opinions verbatim on the subject matter. Again, the inability of authors to conduct spatial analysis and employ the use of data visualization and Geographic Information System (GIS) techniques is noted as a major limitation of the study. In addition, the choice of research participants was limited to the local authorities who had jurisdiction over developmental projects within the local communities and cities. Therefore, further studies should consider the qualitative approach of research that creates an opportunity for respondents to address their concerns regarding the achievement of healthy city development.

Author Contributions: Conceptualization, E.A.B. and K.A.; methodology, K.A. and J.N.K.-M.; software, H.P.; validation, E.A.B., S.O.A. and H.P.; formal analysis, A.M.A.D. and N.E.A.; investigation, E.A.B.; resources, E.A.B.; data curation, N.E.A. and S.O.A.; writing—original draft preparation, H.P. and J.N.K.-M.; writing—review and editing, E.A.B., A.M.A.D. and H.P.; visualization, E.A.B.; supervision, K.A.; project administration, E.A.B.; funding acquisition, E.A.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Appendix A.1. General Background Information on Respondent

1. What is your role at the District Assembly.
 - (a) District Chief Executive
 - (b) Coordinating Director
 - (c) Planning Officer
 - (d) Architect
 - (e) Works Engineer
2. Please indicate your highest level of education?
 - a. Diploma/HND
 - b. Bachelor's degree
 - c. Master's degree
 - d. Doctorate degree
3. Indicate the number of years you have been working within the District Assembly?
 - a. 0–5 years
 - b. 6–10 years
 - c. 11–15 years
 - d. 16–20 years
 - e. Over 20 years

Appendix A.2. Awareness of Healthy City Development through SDG 11 Targets

Below are the SDG 11 targets for assessing the sustainability (i.e., health status) of cities. Rank on a Likert scale of 1 to 5 your level of awareness of these targets. Please answer by ticking (✓) the corresponding box.

1 = Highly Unaware 2 = Unaware 3 = Neutral 4 = Aware 5 = Highly Aware

Code	SDG 11 Targets	1	2	3	4	5
TAR01.	Safe and affordable housing and basic services					
TAR02.	Safe, resilient and affordable transportation systems					
TAR03.	Inclusive and sustainable urban planning					
TAR04.	Protection of societal cultures and natural heritage					
TAR05.	Reducing adverse effects of natural disasters					
TAR06.	Reducing the environmental impacts of cities					
TAR07.	Providing access to safe, inclusive and green public spaces					
TAR11a.	Strengthening national and regional development planning					
TAR11b.	Implementing policies for inclusion, resource efficiency and disaster reduction					
TAR11c.	Supporting least developed communities in sustainable and resilient building					

Appendix A.3. Current Achievement Level of Healthy Cities through SDG 11 Targets

Below are the SDG 11 targets for assessing the sustainability (i.e., health status) of cities. Rank on a Likert scale of 1 to 5 the current level of achievement of these targets in your District Assembly. Please answer by ticking (✓) the corresponding box.

1 = Not Achieved 2 = Least Achieved 3 = Moderately achieved 4 = Achieved 5 = Highly Achieved

Code	SDG 11 Targets	1	2	3	4	5
TAR01.	Safe and affordable housing and basic services					
TAR02.	Safe, resilient and affordable transportation systems					
TAR03.	Inclusive and sustainable urban planning					
TAR04.	Protection of societal cultures and natural heritage					
TAR05.	Reducing adverse effects of natural disasters					
TAR06.	Reducing the environmental impacts of cities					
TAR07.	Providing access to safe, inclusive and green public spaces					
TAR11a.	Strengthening national and regional development planning					
TAR11b.	Implementing policies for inclusion, resource efficiency and disaster reduction					
TAR11c.	Supporting least developed communities in sustainable and resilient building					

Appendix A.4. Challenges Encountered in Achieving Healthy City Development

From your own expertise, kindly indicate on a scale of 1–5 the reasons against achieving healthy city development. Please answer by ticking (✓) the corresponding box.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Code	Challenges	1	2	3	4	5
CHA01.	Lack of awareness of SDG 11 targets					
CHA02.	Lack of technical capacity					
CHA03.	Lack of financial resources for implementing healthy city policies					
CHA04.	Poor implementation of healthy city policies					
CHA05.	Incompetency of agents tasked to implement healthy city policies					
CHA06.	Poor monitoring of the implementation process for healthy city development					
CHA07.	Lack of data in translating SDG 11 targets to suit local communities					
CHA08.	Changes in government					
CHA09.	Lack of stakeholder participation in healthy city development					
CHA10.	Lack of public education on healthy city development					

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