

Relative Importance Analysis of Factors Influencing Unauthorized Siting of Residential Buildings in the Sekondi-Takoradi Metropolis of Ghana

M. K. Somiah¹, G. Osei-Poku¹, I. Aidoo²

¹Department of Building Technology, Takoradi Polytechnic, Takoradi, Ghana

²Department of Building Technology, Pentecost University College, Sowutuom, Ghana

Email: brokwaw@yahoo.com

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Abstract

The act of unauthorized siting of buildings has persisted in most developing countries. Despite numerous efforts at local levels to address this problem, its existence and effects keep on rising in various metropolises in Ghana. This research explores the causes of unauthorized siting of buildings in Asakae, a suburb of the Sekondi-Takoradi Metropolis, and suggests measures to curb them. In view of this, a sample size of 182 house-owners was chosen for the study. Accordingly, the sample size was determined using Fisher *et al.* formula and questionnaire survey approach was adopted for the study. More so, data generated from the survey were further analyzed, using Relative Importance Index. The findings of the survey indicated that ignorance on planning and building regulations, inadequate housing schemes, unrealistic zonings and the location of land are critical variables which influence unauthorized siting of buildings. It is recommended that the populace should be given regular public education on land-use planning and the building regulations of Ghana. More so, the Assemblies should automate their systems, with respect to monitoring and detection of buildings under construction; so that buildings that were being located at unapproved places could be quickly detected, and appropriate measures could be taken before their completion.

Keywords

Factors, Unauthorized Buildings, Sekondi-Takoradi, Siting

1. Introduction

Unauthorized siting of buildings has become a major problem in towns, cities, municipalities and districts of most developing countries in the world [1] [2]. Such type of buildings can usually be found scattered within agricultural land or in areas close to the coast [3]. Accordingly, Adjei Mensah [4] opined that they were found on marginal lands which were neglected by city authorities. More so, they are found on sites liable to flooding, inside a drain, culvert, or watercourse, under a high tension cable or near a sewer and sites which has been reclaimed [5]. In addition, they are found at cheap, vulnerable and unbuilt urban areas such as found in the deep valleys in Kenya, river banks in Bombay, abandoned waste dumps in Manila, and dangerous slopes in Yaoundé [4]-[6].

Consequently, in Ghana, Acquah-Harrison [2] and Owusu-Mensah [7] observed that the situation was more disturbing in major cities such as Accra, Kumasi, Takoradi, Tamale and other emerging towns, where developers had built haphazardly on any available land. Accordingly, Aklorbortu [8] argued that in the Sekondi-Takoradi Metropolis, buildings were even sited on lands reserved for future development, road expansion projects and other social infrastructure. According to the lands commission, occupants of such lands have disregarded the purpose for which the lands are reserved. Similarly, Kumar [9] indicated that cities marked areas for a particular type of development, “Lal Dora” land; however, buildings were sometimes found to have been built on land reserved for agriculture; factories might be built in a residential area, among others. The effect therefore is that such building owners cannot expect government to provide all necessary amenities like water supply, electricity and sewage disposal.

Furthermore, buildings sited illegally do not have planning permission as well as not conforming to the laid down building regulations of an area [10] [11]. Accordingly, Owusu-Mensah [7] observed that there were several buildings sited on many unauthorized locations or unapproved places such as, buildings sited on access roads, waterways, among others.

Consequently, when illegally sited buildings increase in number, they may create various problems such as: decrease of state and local revenue since they are not fully taxed; they may pose serious social and economic impact on the owners and the real estate market, as they cannot be transferred or mortgaged, and the national economy at large. In the same way, they may have negative environmental effect [3]. It is against this background that this research seeks to explore the causes of unauthorized siting of buildings in Asakae, a suburb of the Sekondi-Takoradi Metropolis, and suggests measures to curb them.

2. Overview of Unauthorized Siting of Buildings in the Sekondi-Takoradi Metropolis (STMA) of Ghana

Ghana is a sovereign multinational sub-Saharan West African state located along the Gulf of Guinea and Atlantic Ocean. The nation covers a land area of about 238,535 km²; and it is bordered by the Gulf of Guinea and Atlantic Ocean in the south, Burkina Faso in the north, Ivory Coast in the west and Togo in the east [12]. Ghana practices decentralize administrative governance system thus, governance is decentralized to the local level and it is administered by Metropolitan, Municipal and District Assemblies. Affirmatively, the Local Government Law, Act 462 of 1993, asserted that the Assembly has the main authority for implementing plans as to development [13]. Thus, it is the mandate of the Assembly, to ensure that developments conform to existing layout or scheme; but this notwithstanding, Freiku [14] opined that, there are developments being sited even on public rights and places that includes sites for schools, market, roads, sanitation, parks, open spaces and nature reserves without restraint.

Accordingly, Weiner [1] observed that, unauthorized siting of buildings has been a persisting problem to municipalities and governments at large. In the Sekondi-Takoradi metropolis, in consonance with Owusu-Mensah [7], some unauthorized buildings are sited on access roads, waterways, and other unapproved places; more so, some developers in the metropolis tend to develop up to almost 100% of their plots though the National Building Regulations of 1996 set limit as to the extent developers can develop their plots up to, not exceeding 80% [5]; thus contributing to human-induced flood [15]; and marring the spatial view of the metropolis [16]. In relation to this, Adams [17] asserted that, only about 24 percent of developments in the metropolis conform to land-use planning; this suggests that, 76 percent of developments in the metropolis are wrongly sited. The situation has been described as very disturbing as some land developers have consistently ignored laid down drawings and plans and built haphazardly, resulting in congested urban residential areas. Whereas, some attributes it to the in-

ability of city authorities to control physical developments in their areas, others blame the Traditional authorities and landowners who, sometimes, intentionally allocate waterways and reserved areas to private developers for their own selfish interest [7].

More so, in Chapel Hill, one of the suburbs of Takoradi, a chain of stores owned by a former member of parliament (MP) is sited right on a storm drain. The inhabitants in the area suffer the ill effects of floods anytime the rains set in [15]. Elsewhere in the Metropolis, buildings have been built on lands reserved for future development: road expansion projects and other social infrastructure. For example, buildings have been illegally sited, on both sides of the road, on large tracts of land reserved for road expansion from Paa Grant roundabout to Nkrumah roundabout and from the Shippers roundabout to the Nkrumah roundabout. Similarly, the Ghana Air Force has severally warned developers along its air space to stop further construction since their activities compromise the safety of aircraft; but this notwithstanding, a Ghanaian consortium has even acquired a lease for the construction of a shopping mall, estimated at about \$90 million, and is currently struggling to convince the Air Force to allow it to go ahead with the project [8].

3. Factors Influencing Unauthorized Siting of Buildings

A study by Ioannidis *et al.* [3] broadly attributed factors influencing unauthorized siting of buildings, in several countries, to a combination of social, economic, legal, and administrative factors. Similarly, the United Nations (UN) [18] attributed the reasons for unauthorized siting of structures [buildings] to include institutional, physical, political and social-economic factors. In view of these, this paper further discusses the factors influencing unauthorized siting of buildings under four main thematic factors namely: Institutional, Political, Physical and Socio-economic factors.

3.1. Institutional Factors

According to Ali and Sulaiman [19] and Smith [20], unauthorized siting of buildings is as a result of, lack of logistics for the planning authorities to work with as well as discriminatory regulations and public spending. Likewise, Owusu-Mensah [7], Freiku [14] and United Nations [18], linked unrealistic zoning regulations, complex legislations, unnecessary bureaucracy in issuing building permits, and corruption of officials to some of the factors that contribute to unauthorized siting of buildings. Furthermore, Magigi and Majani [21] argued that, poor policy enforcement, outdated laws, and inadequate capacity of local authorities to provide adequate land plans, could be part of the factors that have contributed to the construction of unauthorized buildings.

3.2. Political Factors

According to Cheema [22], lack of political will by government to initiate and sustain formal housing policy for all the populace, has influenced unauthorized siting of buildings. Accordingly, Ali and Sulaiman [19] asserted that, in Zanzibar, lack of political will, exhibited by the ruling Afro Shirazi Party (ASP) during the years of the post-revolution era, to sustain the socialist housing scheme in both towns and rural areas, which led to a well planned residential buildings in areas like Magomeni and Sogea cities, has largely influenced unauthorized siting of buildings.

3.3. Physical Factors

Physical features, such as location and nature of the land, may influence unauthorized siting of buildings [23]. Accordingly, Sietchiping [6] argued that this explains why many unauthorized buildings were sited on cheap, vulnerable and unbuilt urban areas such as found in the deep valleys in Kenya, river banks in Bombay, abandoned waste dumps in Manila, and dangerous slopes in Yaoundé.

3.4. Socio-Economic Factors

Accordingly, Sietchiping [6] and Adjei Mensah [4] argued that many unauthorized siting of buildings in developing countries was the effect of high rent charges, high cost of land, problems of landlessness and poverty. Likewise, Kings-Amadi [24] and a Graphic Editorial [25] opined that, it is as a result of lack of education or enlightenment of the public on building and planning regulations, land-user ignorance, unwillingness to accept laid

down regulations, and high cost (money) involved in getting the right land papers. Hence, Weiner [1] reported that “...If urban planning is to have any chance of successful implementation, it must be accompanied by efforts to educate the public as to its importance. If people understand the reasons for urban planning, they will be far less likely to violate legal construction standards and will likewise make their objections known when their neighbors build illegally...”

In a related instance, Lai and Ho [26] and Diang’a [27] observed that, unauthorized siting of buildings has persisted and proliferated even in the urban and rural areas.

4. Research Methodology

This paper is based on a single case study of Asakae, one of the sub-towns in the Sekondi-Takoradi Metropolis. It shares boundaries with Mpatado, Adentamu, Kwesiminstim and Anaji. Because of its location, it has been a residence of choice for most of the populace; this could be attributed to the overflow of the population of Takoradi. Asakae was chosen for the study because it is one particular area that has high number of unauthorized siting of buildings, though it has a well-schemed composite plan. Consequently, Freiku [14] argued that, there are buildings which are even sited on public rights and places such as schools, markets and sanitation sites, open spaces, nature reserves, parks and roads without restraint. This practice if not curbed has the tendency of creating both hygiene and safety related problems. Accordingly, such buildings may obstruct fire escape routes and lead to high casualties in case of fire; more so, causing spatial disorders [26] [27].

In this paper, unauthorized siting of buildings denotes buildings that have been wrongly located or located at unapproved places [28]. A case study research design was used for the study because it is commonly associated with a particular set of phenomena in a location such as Asakae. Furthermore, Yin [29] argued that, case studies are preferred when *how* or *why* questions are posed; more so, the researcher has little control over events, and the focus is on contemporary phenomenon within some real-life context. The use of multiple sources of evidence makes case study design one of the most powerful research designs [30]. Both primary and secondary data were used for the study. Questionnaire survey approach was adopted. Primary data were collected with the aid of questionnaire. Questionnaire were administered to house-owners of the study area, to elicit their views on the variables (factors) identified from literature to have contributed to unauthorized siting of buildings. Secondary data relevant to the study were obtained from books, journals, newspapers, articles, reports, the internet, thesis as well as from conference and working papers. In all, 182 house-owners were used for the study. The sample size for the house-owners at Asakae was obtained using the Fisher *et al.* [31] formula. The snowball sampling technique was used to select house-owners since there was no adequate sampling frame for house-owners (developers).

The house-owners were selected because they were the actual actors or agents whose buildings may be wrongly located or located at unapproved places. Accordingly, Twenty-one (21) key variables which were identified in the literature review to have influenced unauthorized siting of buildings were presented to the house-owners to solicit their views. On each of the 21 variables, respondents were asked to indicate the extent to which that variable influences people to site buildings wrongly or at unapproved places at Asakae, based on a five-point scale where: 1-highly insignificant, 2-Insignificant, 3-Neither, 4-Significant and 5-highly significant. In order to empirically ascertain the factors accounting for unauthorized siting of buildings at Asakae and to give an understanding as to the extent to which each factor contribute to unauthorized siting of buildings in Asakae, both by itself and in combination of the other factors, the Relative Importance Index (RII) was employed. Relative Importance Index or weight is a type of relative importance analyses. RII was used for the analysis because it best fits the purpose of this study. According to Johnson and LeBreton [32], RII aids in finding the contribution a particular variable makes to the prediction of a criterion variable both by itself and in combination with other predictor variables.

In the calculation of the Relative Importance Index (RII), the formula below was used (see [33]):

$$RII = \frac{\sum W}{A * N}$$

where, *W*—weighting given to each statement by the respondents and ranges from 1 to 5; *A*—Higher response integer (5); and *N*—total number of respondents.

Though, the findings of the paper may be a true representation of what is prevailing in the six metropolitan assemblies in Ghana and may even be helpful to authorities concern, the researcher does not seek to generalize the findings. It is only limited to Asakae, a suburb of the Sekondi-Takoradi Metropolis and to a greater extent,

the whole Sekondi-Takoradi Metropolis. This is based on the assertion of Ioannidis *et al.* [3] that causes of unauthorized siting of buildings are closely identical across regions.

5. Results and Discussions

5.1. Results

5.1.1. Socio-Demographic Characteristics of Respondents

This section briefly explains the background of respondents. It is imperative because, the background of the respondents will help generate confidence in the reliability of data collected; and eventually the findings of the study. Accordingly, Adinyira and Anokye [34] argued that, it is always important to have a fair idea of the respondents so as to situate the responses within context. As a result, the relevant socio-demographic variables of respondents that this research covered included sex, age, level of education and employment (occupational status) (see [4]-[35]).

5.1.2. Sex of Respondents

According to Melesse [35] and Adjei Mensah [4], males have been identified as the main actors who normally build. Accordingly, the results from **Figure 1** confirmed this observation as, 53 percent of the respondents were males and the remaining 47 percent were females. Similarly, this could be attributed to the nature of the cultural systems in Ghana, where males are expected to work to provide for the family, including shelter, whilst females, usually, are stewards of the household. However, the respondents were not gender bias; the sampling technique ensured inclusion of all members of the population being sampled for the study.

5.1.3. Age of Respondents

Age is important variable to consider with respect to unauthorized siting of buildings because, researches point to the fact that most of residents and owners of unauthorized buildings are young adults who are in their active working age [4]. Accordingly, respondents were asked to indicate their age. The age of the respondents were categorized in five year intervals in order to know the particular age range that contains the majority of respondents. The categorization was in line with the 2008 Ghana Demographic and Health Survey's (GDHS) categorization of the age-groups of Ghanaians (see [4]). The mode age of the respondents spanned from 38 - 42 representing 46.7% with none of the respondents ageing below 28 years (see **Table 1**). This supports the observation of Adjei Mensah [4] that, majority of residents and owners of unauthorized buildings is young adults who are in their active working age. More so, the distribution of **Table 1** suggested that, matured persons provided the needed information for this research (see [24]-[34]).

5.1.4. Level of Education

According to Nawagamuwa and Viking [36] and Melesse [35], education is a key factor that could influence unauthorized siting of buildings. Owners of unauthorized buildings are basically illiterate and/or have low levels of education. Contrary to the assertion of Nawagamuwa and Viking [36] and Melesse [35], this research revealed that, even most of the buildings sited in an unauthorized manner were owned by people who have had at least basic education, thus are not illiterate. As shown in **Figure 2**: 30% of the house-owners had secondary school educa-

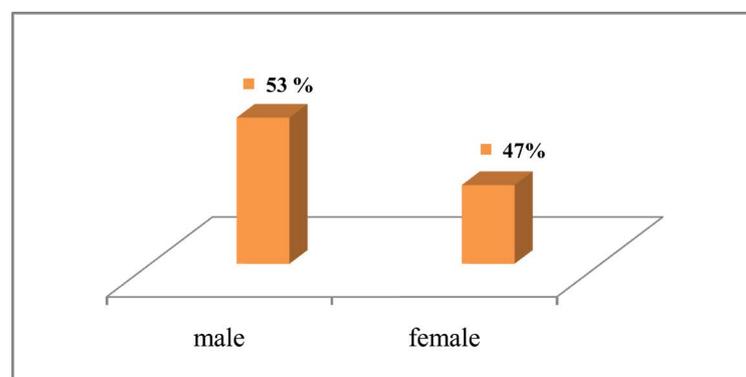


Figure 1. Sex of respondents.

Table 1. Age of respondents.

Age (years)	Frequency	Percentages (%)
up to 22	0	0
23 - 27	0	0
28 - 32	6	3.3
33 - 37	8	4.4
38 - 42	85	46.7
43 - 47	26	14.3
48 - 52	19	10.4
53 - 57	12	6.59
58 and above	26	14.3
Total	182	100

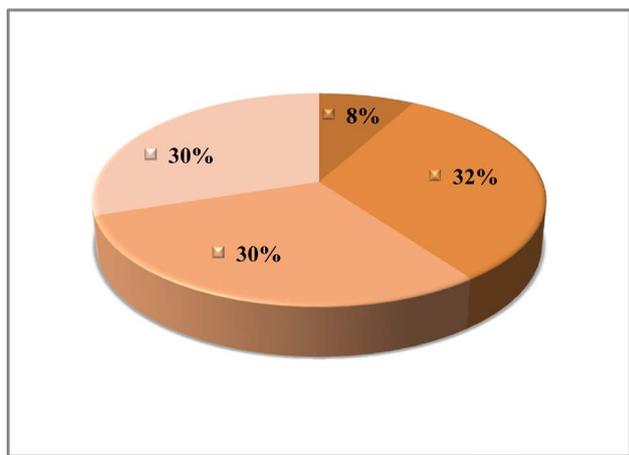


Figure 2. Level of education.

tion; 30% tertiary; 32% basic and only 8% had no formal education. This perhaps could be attributed to the progressive positive effects of the Free Compulsory Basic Education Programme being practiced in Ghana, which primarily aimed at free and compulsory basic education for every Ghanaian by the 2005 [37].

5.1.5. Occupation of Respondents

The occupation of respondents amongst other things, determines a respondent’s level of income. The level of income influences a person’s ability to build, consequently, becoming a house owner. Accordingly, Melesse [35] opined that, most of unauthorized buildings are largely being put up by economically well to do persons in the society.

In view of this, respondents were asked to indicate their occupational status. The categories were “businessman” referring to those who were self-employed; “professional” referred to those with formal training from recognized tertiary institutions (for instance, Teachers, Nurses, Doctors and the likes), “vocational” referred to those who had been trained by master-apprenticeship means and lastly, “pensioner”. Accordingly, **Figure 3** summarized the occupation status of the respondents: (47%) were “businessman”; (25%) were “professional”; (25%) were “vocational” and (2%) were “pensioner”.

Those who were self-employed, “businessman”, built more than the other categories; this might be attributed to the result of entrepreneurship. It was, however, not surprising that 47% of the house owners were “businessman”. This affirmed Melesse [35] opinion that, most of unauthorized buildings are largely being put up by economically well to do persons in the society.

5.2. Factors Influencing Unauthorized Siting of Buildings in Asakae

For a five-point response item, Relative Importance Index (RII) produces a value ranging from 0.2 - 1.0 (see [33]). Accordingly, the group index is the average of the relative importance index for the variables in the various groups (see [38]). The values 0.740, 0.644, 0.636 and 0.586 indicate respectively, the RII values of Socio-economic, Political, Institutional and Physical factors, as shown in Table 2. Likewise, the RII values indi-

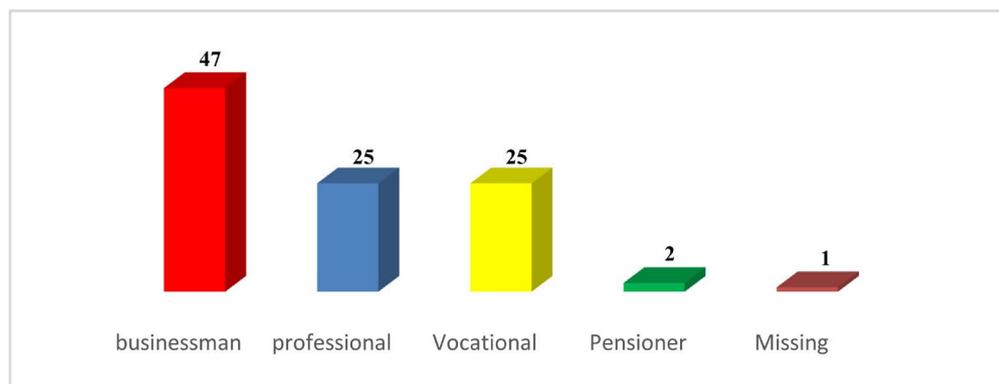


Figure 3. Occupational statuses of respondents.

Table 2. Factors influencing unauthorized siting of buildings.

FACTORS	1	2	3	4	5	W	RII	rank
PHYSICAL							0.586	4
nature of land	25	58	42	46	11	506	0.556	
location of land	14	53	29	76	10	561	0.616	
POLITICAL							0.644	2
lack of political will to enforce building regulations	6	33	80	53	10	572	0.629	
inadequate policy on housing	9	36	57	52	28	600	0.659	
SOCIO-ECONOMIC							0.740	1
high rent	2	10	22	111	37	717	0.788	
ignorance on planning and building regulations	0	4	9	109	60	771	0.847	
high cost in getting land document and building permits	0	12	36	87	47	715	0.786	
unwillingness to accept laid down regulation	2	38	57	49	36	625	0.687	
population growth	5	34	56	59	28	617	0.678	
high cost of land	6	36	54	55	31	615	0.676	
family ties	6	21	49	75	31	650	0.714	
INSTITUTIONAL							0.636	3
logistic and capacity gap	22	69	38	52	1	487	0.535	
multiple sale of land	19	50	70	35	8	509	0.559	
litigant land market	35	19	13	95	20	592	0.651	
Corruption	24	16	31	94	17	610	0.670	
high enforcement cost	24	25	55	53	25	576	0.633	
lack of public private partnership in controlling unauthorized buildings	7	43	50	58	24	595	0.654	
non punitive sanctions against offenders	4	30	43	96	9	622	0.684	
overlapping institutional roles and responsibilities	19	44	65	52	2	520	0.571	
Bureaucracy	15	24	51	72	20	604	0.664	
unrealistic zoning	6	17	45	74	40	671	0.737	

cate that, primarily, Socio-economic, Political, Institutional and Physical factors influence unauthorized siting of buildings. Similarly, it suggests that, Socio-economic factors ranked the first significantly influential factor that accounts for unauthorized siting of buildings in Asakae. This was followed by Political factors. Then Institutional and Physical factors ranked third and fourth respectively.

5.2.1. Socio-Economic

The *Socio-economic* factor grouping variable was ranked the first significantly influential factor that accounts for unauthorized siting of buildings by the respondents, thus, supporting the findings of Adjei Mensah [4] and Ioannidis *et al.* [3] that, socio-economic factors mostly influence unauthorized siting of buildings. Individually, *Ignorance on planning and building regulations* was ranked the highest variable under Socio-economic factor. This indicates that, *Ignorance on planning and building regulations* is more critical to unauthorized siting of buildings than the other variables in the group of Socio-economic factor. This supports the findings of a Graphic Editorial [25] and Kings-Amadi [24] that, lack of education on planning and building regulations contributes densely to unauthorized siting of buildings. The implication is that, the level of awareness on the national building regulations (L.I1630) is low, thus, there is the need to intensify campaigns and educations on the L.I1630.

5.2.2. Political

The respondents ranked *political group of variables* as the second significantly influential factor that account for unauthorized siting of buildings. Individually, the highest variable under political factor is *inadequate policy on housing*. This supports the findings of Ali and Sulaiman [19] that, inadequate policy on housing by government gives rise to people building at unapproved places. Accordingly, it causes the government quite huge sums for decongestion exercise (see [39]).

5.2.3. Institutional

Institutional factor, ranked the third influential factor that accounts for unauthorized siting of buildings. Individually, *unrealistic zoning* was the critical variable that influences unauthorized siting of buildings. This supports the findings of Owusu-Mensah [7] that, unrealistic zoning of land has resulted to unauthorized siting of buildings because, the current planning approach has alienated the inputs of the very people, who owned the land and, therefore, denied them the proper management and control of the land.

5.2.4. Physical

Physical factor, ranked the fourth most influential factor that accounts for unauthorized siting of buildings. Individually, the variable *location of land* was the critical variable contributing to unauthorized siting of buildings. This supports the observation of Magalhaes and Eduardo [33] that, physical features, such as advantageous location of the land may influence unauthorized siting of buildings.

6. Conclusions and Recommendations

The paper has established that unauthorized siting of buildings is primarily the result of socio-economic, political, institutional and physical factors. Nonetheless, ignorance on planning and building regulations, inadequate housing scheme, unrealistic zoning and the location of land are critical variables that influence unauthorized siting of buildings under their respective factor groups. The findings presented in this paper are the results of a case study of this contemporary phenomenon in Asakae, though Asakae has a well-planned composite plan. The findings provide an understanding into the factors that contribute to unauthorized siting of buildings. This has policy implications for land planning and building construction practices for all stakeholders. Based on the key findings and conclusions therefore, the research makes the following recommendations.

Firstly, all municipal, metropolitan and district assemblies should strictly enforce the land planning and building regulations. House-owners who go contrary to the land planning and building regulations should be given a specific time to make the necessary corrections within the limits of the regulations. More so, highly punitive sanctions should be meted out against house-owners who fail to comply; otherwise, such buildings should be demolished.

Secondly, districts, municipal and metropolitan assemblies should automate their operations or system for periodic automatic monitoring and detection of new buildings. Thus, the immediate detection of unauthorized sit-

ing of buildings becomes possible even before their completion, and measures against their construction can be taken more quickly. Again, the automated system will eschew corrupt and bureaucratic practices that have characterized their system.

Similarly, the government of Ghana should expand its affordable housing scheme to make it accessible to all class of the populace. The import of this is that the scheme will offer the populace the opportunity to own houses which conform to land-use planning and the national building regulations. Hence, unauthorized siting of buildings to the background is eradicated.

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