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ILLEGAL APPENDAGES TO RESIDENTIAL BUILDINGS IN KUMASI, GHANA – A CASE STUDY OF NORTH SUNTRESO

E. Adinyira[1] and P. Anokye[2]

[1 2] Kwame Nkrumah University of Science and Technology, Ghana
Email: eadinyira.feds@knust.edu.gh

Abstract
Global estimates suggest that much of the anticipated growth in the world will occur in the developing world of which Ghana is no exception. As at 1985, it was estimated that if Kumasi could achieve a room occupancy rate of three, then its housing stock should at least double at the time. This evident inadequacy of urban space particularly for housing development and the continuous population growth in Kumasi has fuelled the proliferation of illegal appendages to residential buildings at an alarming rate. Illegal appendages, have been an aspect of the after construction process that have been ignored by many the world over. This paper examines the extent of this occurrence, its causes and effects on the health and safety (H&S) of inhabitants of the area as well as on the physical planning of the area and the value of such properties. A questionnaire survey approach coupled with physical inspection was adopted for the study. Data from the survey was largely analyzed using descriptive statistics. The study confirmed 'population growth', 'inadequate space', 'commercialisation of facilities' and 'inadequate knowledge of the Building Regulations' as the major causes of this phenomenon. Findings from the study points to 'effect on the value of such properties', 'effect on spatial planning', 'effect on indoor conditions such as lighting and ventilation' and 'structural effects' as the most significant effects of such additions to buildings. This paper provides the much needed insight into the problem and makes recommendations to include in the formulation of effective building safety policies for such urban areas.

Keywords: Health and Safety, Illegal Appendages, Physical Planning, Property Values, Residential Buildings, Ghana

INTRODUCTION

Residential buildings do not exist in isolation, but they represent various levels of action and interaction between people and their surroundings. On one hand, they can be expressions of creative impulse and on the other, simple statements of functional need (Watt, 1999).

In whichever form, buildings exist as physical structures which serve as shelter for man, his properties and activities. In performing these functions according to the general perception of what constitutes housing, emphasis is as well be placed on dimensions such as adequate privacy; adequate space; adequate ventilation and lighting.

Throughout history, man has built to keep out the elements, and create a general living space for comfort and privacy. As a fundamental need, it must not only protect man against inclement weather, but must be safe in terms of structural stability and durability. Safety can also be perceived as per the definition of the World Health Organization (WHO, 1998) as "a state in which hazards and conditions leading to physical, psychological or material harm are controlled in order to preserve the health and well-being of individuals and the community." With reference to this definition, the assertion that building safety "offers occupants freedom from hazards or risk" (Al – Hamoud and Khan, 2004) is insufficient. Building safety affects, not only the occupants, but also passers-by and the general public (Ho et al., 2008).

Illegal appendages, have been an aspect of the after construction process that have been ignored by many the world over and Ghana is no exception. Illegal appendages can be defined as after construction without prior approval and consent from recognized authorities or institutions. These structures are normally attached to the external faces of the main buildings, which deface the external envelope, posing threat not only to occupant but also to passersby. External building works which are normally done without obtaining permission from the right authorities are responsible for serious building related accidents in residential buildings. They obstruct passage ways in times of fire outbreak and other emergency rescue operations. As part of the post-independence government's effort at addressing the housing shortage that plagued the large cities at the time, the State Housing Corporation was mandated to develop 35 housing estates between 1950s and 1960s. Kumasi happened to be one of the most populated cities in Ghana at the time. As at 1970, North Suntreso had been developed with as many as 424 houses constructed. During the early days of the estate, it was occupied mainly by the elite in the area. The place was therefore serene and well kept. The estate was originally made up of single room and two bedroom houses with the utility areas separated from the main building.

A steady increase in the population over the years however has compelled families to make several extensions and additions to the original structures in order to accommodate the ever expanding families. These actions of occupants have contributed largely to the menace of illegal appendages in the area. This paper examines the extent of this occurrence, its causes and effects on the H&S of inhabitants of the area as well as on the physical planning of the area and the value of such properties. It provides much needed insight into the problem and makes recommendations to include in the formulation of effective building safety policies for such urban areas.

APPENDAGES TO RESIDENTIAL BUILDINGS

An appendage in the broadest sense is an additional or subsidiary part existing on, or added to, something which can generally still function if the appendage has never existed or is later provided or grown, or will still perform a primary function if the appendage is removed. Inferring from this definition an appendage to a building could be any after construction additions that extend a main building. These building works together with the main building forms the building envelope. The incorporation of appendages to apartment buildings is a matter of necessity, correction, and convenience. They can be authorized or not and could be safe or otherwise depending on how structurally safe they are or how adequately they are constructed.

In general housing literature, appendages that stems from necessity and convenience are mostly alterations and extensions. An after construction addition that results in internal changes to the layout of the structure without increasing the overall net floor area except for the inclusion of the balcony, repositioning of doors or removal of internal wall is referred to as an alteration. Extensions on the other hand involve the built addition that adds at least a room or more to the number of rooms thus increasing the net floor area. Since most of these changes occur after the building plans have been vetted and approval granted for construction in line with established health and safety considerations, such changes might not conform to these standards. Section 186 of the National Buildings Regulations (L. I. 1630) for instance defines the terms “building” and “building works” broadly to include almost any form of

building construction. Section 7 of the National Buildings Regulations further specifies that no construction of building works can be commenced without the prior approval of building plans and consent for commencement of the building works from the District Planning Authority. Any building works contravening this stipulation is regarded as unauthorised or illegal building works, unless exempted under Section 4 of the National Buildings Regulations. Building works which can be carried out without prior approval and consent from the District Planning Authority (L.I. 1630) include military buildings such as Ports (airports, sea ports and inland water ports), security buildings, mining buildings and Government buildings.

Lai and Ho (2001) categorized Unauthorised Building Works into three broad types in functional terms:

1. Type 1: advertisement sign boards projecting from external walls or resting on roof tops and satellite discs for television and mobile phones.
2. Type 2: improvised measures to enhance the amenities of property, such as canopies above windows, flower racks.
3. Type 3: structures to create space for human habitation.

Appendages can be constructed in many different areas, such as the building façade, internal or external common areas and the rooftop. Common Unauthorised Building Works found in buildings in could be summarized as follows:

1. Cages, canopies, metal flower racks and any projection from the external walls of a building;
2. Canopies and structures that project over government land, pavements, or lanes;
3. Structures on rooftops, flat roofs, yards, or light wells;
4. Metal supporting frames for air-conditioning plants and cooling towers;
5. Alterations to means of escape;
6. Subdivision of approved units in multi-storey residential and industrial buildings; and
7. Unauthorized changes of use which may or may not include illegal structures.

Proliferation and Causes of Illegal Appendages

Unauthorised building work has been a common phenomenon in many cities of the world. In 2000, there were about 800,000 unauthorised building works existing in the 60,000 blocks of

private buildings in Hong Kong, and an estimated 10,000 new unauthorised building works undertaken every year (Lai and Ho, 2001).

In the Ghanaian context, especially in the case of North Suntreso despite the increase in the population size, the number of rooms available has not kept pace with the growth rate. Medium to large scale extensions have been made to original housing units. About 38 percent of the 120 buildings surveyed in 1992 had 3 to 6 additional rooms added on to the original buildings (Owusu and Martha, 1992). The socio economic changes in the lives of the owners and the quest to cater for the needs of the family members as well as other factors such as stability of residence or tenure security, ownership of the dwelling unit, adequacy of space around the original house, opportunity to rent and attitude of local authority influenced the number of additional rooms and facilities added to the original housing units. Generally, the incidence and perpetual existence and occupation of unauthorised appendages are often blamed on the indiscipline of both owners and tenants.

The existence of obsolete, duplicative and contradictory provisions in planning laws have themselves made it very difficult for individuals who flout planning regulations to be sanctioned. Even in cases where action is taken against offenders, the sanctions are not punitive enough due to some contradictory provisions in these pieces of legislations such as the prescription of varied sanctions for the same offence. Until the promulgation of the Local Government Act, 1993 (Act 462) the Town and Country Planning ordinance [CAP 84] made provisions that governed planning in Ghana. The Town and Country Planning Department was also charged with the mandate of enforcing most if not all the provisions in the law through a centralized system of planning. Making the District Planning Authority the highest authority in the district under a decentralized system without synchronizing the provisions in the new Act ultimately reduced the once powerful department to an advisory unit.

The provision under section 63 of the Local Government Act is adhered to by Metropolitan Municipal and District Assemblies. However, the provision made by the drafter of the LI 1630 which gives implied approval three months from the date an application is made for building permit has obviously made the enforcement of planning and building regulation very

difficult. This partly explains the rise in illegal appendages in many districts in Ghana especially in urban areas.

In the back of this come the problems of logistical and capacity gap that have characterized most Building Inspectorate Divisions of most Metropolitan, Municipal and District Assemblies.

North Suntreso as a suburb is an extremely small area with a high population growth rate. With the passage of time, the increase in population and the resultant increase in household size played a key role in encouraging the development of building appendages. According to KMA the area has a gross population density of 100 persons per hectare on the average (KMA, 2006). This has made it one of the densely populated areas in the city and compares well with many high density areas in Ghana. In the quest to relieve the pressures due to scarce resources, appendages in the form of additional rooms have been constructed on most buildings (Acquaah-Harrison, 2004). Limited resources on the part of local authorities have meant that most of these unconsented building works have gone unchecked (Owusu and Martha, 1992). The obvious conclusion that can be drawn from this is that ineffectiveness in the implementation of planning legislations and development control measures, population growth, scarcity of land, high enforcement cost, poor building management, delay in the issuance of development and building permits, dissatisfaction with architectural designs, and ambiguities in the planning and building ordinances are the major causes of illegal appendages to residential buildings (Hong Kong Government, 2005; Lai and Ho, 2001; Lai and Chan, 2004; Lai and Ho, 2000; KMA, 2006; Acquaah-Harrison, 2004; Owusu and Martha, 1992).

Effects of illegal Appendages

The danger that illegal building works poses in densely populated cities like Hong Kong and Kumasi is numerous. They create a whole range of spatial environmental and socio economic problems in the city centres. Spatially, conflicting land uses occur with a lot of unauthorised buildings works, for instance a reservation of land meant for a road or market converted into a residential unit create vehicular and human conflict. Lai and Ho (2001) address four

implications of the existence of unauthorised building works as; loading implications or structural soundness, visual and aesthetics implication, lighting and ventilation, and fire risk implications. Unauthorised building works may impose additional loading to buildings.

Any failure or collapse of building structures (authorized or otherwise) due to illegal alteration or addition may lead to fatal accidents. Such illegal structures may not be visually consistent with the original design and appearance of the building. The visual and aesthetics aspects of the building are thus negatively affected causing unpleasant effects in the entire neighbourhood. For a building to be appropriate for living, lighting and ventilation are two important considerations. However, unauthorised building works which project from the external walls such as canopies and hanging iron cages may block natural lighting and ventilation.

It is particularly relevant in office and residential buildings in which certain areas of prescribed windows have to be provided to habitable rooms (Lai and Ho, 2000). Some of the unauthorised building works may also obstruct the means of escape during fire outbreaks making fire fighting and rescue even more difficult. With such places, you find fire-fighters and ambulances having enormous difficulties in performing their duties. Also service providers such as water, electricity and telecommunication companies find it very difficult if not impossible to extend their services to areas with a lot of these unauthorised appendages.

METHOD OF STUDY

With the aim of aligning the pursuit of the set objectives with the practical considerations and limitations of the study, a questionnaire survey approach coupled with physical inspection was adopted. Questionnaires were administered to residents of the study area to elicit their views on the issues identified and presented in the research objectives. Building Inspection forms were completed during the physical inspection of the buildings in order to ascertain the presence and state of the appendages included in the study. Data collected included; type of unauthorised appendages on the buildings surveyed, number of unauthorised appendages that exist on the buildings surveyed, number of units in the building, building age, property size, number of storeys that a building consisted of, the mode of acquisition of the properties, the

perception of the occupants as to the causes and effects of the unauthorised appendages to the buildings, among others.

Since the study focused only on externally-erected unauthorised appendages to residential buildings, eleven groups of such appendages obtained from literature as commonly found in residential buildings were extracted as follows: metal cages, light weight canopy, solid canopy, drying rack, air condition support frame, advertisement signs, flower pots, wooden cages, television poles, satellite dish, solid extensions.

During the inspection of buildings, the total number of appendages constructed on the external face of each building was counted. Although each type of the appendage may be different in size, material and location, they were treated as the same in this research. They were assumed to have the same extent of influence on the H&S of the buildings for simplicity. For example, a metal cage embracing the balcony of a unit was counted as one unit of appendage, while an air-conditioning frame will also be counted as one unit of appendage, although their coverage and size are different. The total number of each category of unauthorised appendage on a particular building was however recorded. The questionnaire used for the survey part of this study consisted of 13 questions categorised into 4 themes: identification, basic characteristics, causes and effects of illegal appendages. The first section of the questionnaire was aimed at establishing the source of the data and it included data on the region and name of the community as well as the house numbers of the houses that were selected for the survey. This was done in order to provide sufficient information on the exact location of the study area and the study units. The second section dealt with the demographic profile of the respondents in the study area, including the name, age, gender, their positions in the house and whether they were owners or tenants as well as the number of years they have lived in the house under consideration. This information was crucial for the understanding of the knowledge base of the respondents regarding the activities in the house. The last two sections had respondents rank their perception of the causes and effects of illegal appendages to residential buildings on a Likert rating scale of 1 to 4 with 1 = ‘Not Important’, 2 =

'Slightly Important', 3 = 'Important', and 4 = 'Very Important'. This 4 point scale was chosen to prevent respondents from providing neutral answers.

The most appropriate unit of analysis for this study was identified as housing units within the locality of North Suntreso.

With the 2010 National Population and Housing Census not published as at the time of the study, a total of 842 housing units from 2000 National Population and Housing Census was adopted for the study. Applying the Kish Formula for sample size determination (Kish, 1965), a sample size of 100 housing units was chosen for this population. The 100 houses were randomly selected and a face-to face approach to administering questionnaires adopted. Data from the survey was largely analyzed using descriptive statistics. This helped to provide simple summaries and measures in the form of percentages, central tendencies (mean and standard deviation), and frequency distributions. Mean score is a central tendency that shows the average estimate of a distribution of values. This was used in analysing the data on the perceived causes and effects of illegal appendages to residential building. The mean score of each variable was calculated using the formula:

$$\text{MS} = \left[\frac{\sum(f\ x\ s)}{N}\right],$$

where MS is the mean score, f is the frequency of the responses to each rating (1 – 4), sis the score given to each variable by the respondents (ranges from 1 to 4) and Nis the total number of responses concerning that factor.

RESULTS AND DISCUSSIONS

Description of the study area

North Suntreso is located at the centre of Kumasi the capital city of Ashanti region of Ghana. The study area shares boundaries to the south with South Suntreso, to the North with Adowato, to the East with Bantama and to the West with Sofoline, which are all in the Kumasi Metropolitan of the Ashanti Region. North Suntreso is one of the rapidly developing areas in the Kumasi Metropolitan Assembly. The 2000 Population and Housing Census conducted by the Ghana Statistical Service gives the total population of the area to be 10,127

up from the 1984 population census figure of 8,066 representing a percentage increase of approximately 25.55%.The community consists of both the formal and informal economic sectors. The formal sector is characterized by cooperative ownership, small and large scale production. The informal sector consists of small workshops and enterprises producing goods and services with complicated distribution and communication networks at their disposal.

The service and trade sector consist of mainly banking institutions, restaurants, small market establishment, traditional caterers (chop bars), guest houses, retail and whole sale shops.

Primary production which entails urban agriculture is very rear partly due to the scarce availability of farming land. Although many people in North Suntreso are engaged in a form of employment, be it private or public sector, the residents still have a low standard of living resulting from low income levels. Available facilities as per the 2000 Population and Housing Census include a post office, telephone facilities, traditional health facilities, and a hospital. Others are clinics, primary schools, junior high schools and senior high schools. The population census under consideration puts the housing stock of North Suntreso at a total of 842 with the total households being 2,096. The housing census gives the average household size to be 4.8 people per house.

Characteristics of the Occupants of the Buildings Surveyed

It is always important to have a fair idea of the respondents who answered a questionnaire in order to situate the responses within context. With respect to gender, it was realised that majority (60.0%) of the respondents were female. This perhaps could be attributed to the nature of the traditional Ghanaian society, where females are the ones who usually stay at home and takes care of the activities of the household whilst the men go to work to provide for the family or go visiting friends. Table 1 shows a mean average age of the respondents of 49.6 years and average length of stay in the study areas of 28.6 years. These points to largely a mature group of respondents with the ability to provide reliable information on the questions asked. Also 57.6% of the respondents indicated they were the heads of their household, whilst 42.4% of the respondents were only members of their household. On ownership and mode of acquisition, the results indicated that there were more owners than tenants. 60% of the owners indicated they inherited the property, 7% said they bought the

houses from the State Housing Corporation, while 6% indicated purchasing the houses from other parties other than the State Housing Corporation. However, 25% of the respondents chose not to answer the question.

Table1: Age of Respondent and Number of Years lived in the study area

Variables	Mean	Minimum	Maximum	Standard Deviation
Age of Respondent	49.63	13	94	19.316
Years lived in the House	28.56	1	61	18.298

Physical Characteristics of the Buildings

Based on the results of the analysis carried out on the data gathered, it was realised that although the original houses sold to the owners of the estate houses were all of standard sizes, the additions and modifications to the buildings had resulted in varying sizes of buildings now identified in the area. The mean size of the houses surveyed as shown in Table 2 is 99.45 m2 with a minimum and maximum size of 23 m2 and 468 m2 respectively. The original houses built by the State Housing Corporation were all single storey one or two bedroom houses with a hall. The utilities areas were located some metres from the main accommodation. There was however some few two storey houses that were also provided to some middle class households. Results from the survey shows that 96% of the houses surveyed were single storey residential houses, whilst 4% of them were two Storey houses. The North Suntreso housing stocks were all constructed in the year 1953.

Table 2: Size and Number of Units in Buildings

Characteristics	Maximum	Mean	Minimum	Standard Deviation
Size of the Buildings (m2)	468	99.45	23	70.86
Number of Units (Rooms) in a House	13	4.20	2	1.92

Illegal Appendages Identified In the Survey

Solid extensions were the dominant appendages in the houses surveyed. This appendage was found in 97% of all the houses surveyed. Light weight canopy was the next dominant appendage found in 57.6% of the houses surveyed, followed by television poles found in 56.6% and metal cages had an almost 50.3% of the houses surveyed. Table 3 summarizes the statistics by the type of the unauthorised appendages that were observed in the residential buildings that were surveyed in North Suntreso.

With a maximum number of 10, metal cage is the most prevalent appendage observed in any single building in North Suntreso. Solid canopy, advertisement sign, wooden cage, air condition support frame were the least prevalent appendages observed in a single building.

Table 3: Number of illegal appendages by type

Type of Appendage		**Frequency**	**Valid Percent**	**Maximum Number observed in a single building**
Metal Cage	Present	50	50.5	10
	Not Present	49	49.5	
	Present	57	57.6	8
	Not Present	42	42.4	
Solid Canopy	Present	10	10.1	2
	Not Present	89	89.9	
Drying Rack	Present	23	23.2	3
	Not Present	76	76.8	
Air Condition Support Frame	Present	2	2.0	2
	Not Present	97	98.0	
Advertisement Sign	Present	3	3.0	2
	Not Present	96	97.0	
Flower Pots	Present	2	2.0	3
	Not Present	97	98.0	
Wooden Cage	Present	3	3.0	2
	Not Present	96	97.0	
Television Pole	Present	56	56.6	6
	Not Present	43	43.4	
DSTV Dish	Present	13	13.1	3
	Not Present	85	85.9	
Solid Extensions	Present	96	97.0	5
	Not Present	3	3.0	

Causes of illegal Appendages to residential buildings

Table 4 shows the ranking of the perceptions of respondents on the causes of the unauthorised appendages to residential buildings.

Table 4: Ranking of Causes by households

Variables	Mean	Standard Deviation	Rank
Population Growth	3.38	0.696	1
Inadequate Space	2.55	0.913	2
inadequate Amenities	2.11	0.978	3
Inadequate of developing land	2.04	0.731	4
Poor building management	2.04	0.957	5
Difficulties in obtaining permits	1.78	0.828	6
Commercialisation of facilities	1.71	1.020	7
Inadequate knowledge of the building regulations	1.67	0.706	8

Population Growth

Most of the respondents agreed that the most significant cause of the proliferation of Unauthorised Appendages to residential building is population growth. With a Mean Score of 3.38, population growth was the highest ranked cause proposed by the residents of North Suntreso. The influence of population growth on the proliferation of Unauthorised Appendages to residential buildings can be seen from the work of Owusu and Martha, (1992) where it was explicitly states that despite the increase in the population size in Kumasi, the number of rooms available has not kept pace with the growth rate. They go on further to state that "about 38 percent of 120 of the number of buildings surveyed in 1992 have 3 to 6 additional rooms" built without appropriate approval.

Inadequate Space

It is not surprising that the next important cause of the proliferation of this phenomenon of unauthorised appendages agreed on by the respondents is Inadequate Space (MS = 2.55). This cause can easily be linked with population growth and the increase in the size of individual households as it is the lack of space for the expanding population that causes the erection of the unauthorised appendages in the first place. Lai and Ho (2001) reinforced this

idea that the existence of unauthorised structures reveals the inadequate supply of space in urban land in Hong Kong.

Commercialisation of Facilities

Respondents to this survey perceived 'commercialisation of the facilities' (MS = 2.55) as one of the least important influencing factors when it comes to proliferation of illegal appendages to residential buildings. This however contrasts with the personal observation of the authors as during the site inspection, it was observed that most of the solid extensions that were attached to the original buildings were bedrooms that were let out to tenants. Li (2003) reinforces this view in this work by stating that "as Unauthorised Appendages to buildings are economic goods which may generate services and additional space for property owners, owners will continue building Unauthorised structures until reaching the point that the marginal cost of production equals to the marginal revenue generated by that particular unit of Unauthorised Appendages".

Lack of Knowledge of the Building Regulations

The respondents indicated that lack of knowledge of the building regulations is the least important cause of the proliferation of the unauthorised construction of Appendages to residential buildings. This was evident with a Mean Score of 1.67 which ranks 8th among the causes that were outlined in question 12 of the questionnaire that was administered. This is because as earlier explained in relation to the existing planning laws, even if these individuals had knowledge on building and planning regulations, the lack of incentives for compliance will still have not made a difference.

Effects of illegal Appendages to Residential Buildings

Table 5 shows the mean score, standard deviation and respective ranks for the various effects of illegal appendages to residential buildings. These effects are grouped into two categories namely effects on the occupants and effects on the building fabric.

Table 5: Ranking the Effects of Illegal Appendages

EFFECT OF APPENDAGE	MEAN SCORE	STANDARD DEVIATION	RANK
On Building			
They deface the building	3.12	0.954	1st
They disturb the structural stability of the building	1.96	0.676	2nd
They devalue the building	1.55	0.736	3rd
On Occupants			
Impedes access by the fire service in times of fire outbreak	3.51	0.805	1st
Poses health hazards by blocking ventilation access	3.09	0.991	2nd
Causes injury to occupants	2.34	1.048	3rd
Impede access of service providers	2.07	0.981	4th
Causes injury to passers – by	1.75	0.736	5th
Social costs: e.g. legal actions	1.27	0.490	6th

Effects on the Building

The proliferation of unauthorised appendages to residential buildings often defaces the buildings unto which they are attached. A number of studies have shown that these illegal structures which may not be visually consistent with the original design and appearance of the building, may also negatively affect the visual and aesthetics aspects of the building they attached to and could lead to some devaluing of such buildings. In addition to the unpleasant visual effects they have the propensity to devalue these properties. The increase in rooms in the case of alteration and extensions without a corresponding increase in service reduce these neighbourhoods to slums. This is mostly the case since access and supply of water and sanitation services might not necessarily increase. Even though some of these appendages like solid extensions and light weight canopies are actually constructed for some economic benefit, they in the long term turn to run rundown the value of these properties this time due to the overcrowding that have come to be associated with the development of such appendages.

Effects on the Occupants

Unauthorised Appendages often puts the approved planning scheme of these areas into disarray. The reasons are that it defies the very principles, which form the basis of planning. Planning seeks to achieve among other things health and safety, convenience, economy just to cite a few.

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Application of health and safety considerations are seen in the regulations such as those that restricts height, use and density through zoning; prevents development from occurring in hazardous locations; putting in place systems for the prevention of accidents. Developed without regards to planning regulations, most illegal appendages ignore zoning regulation such as the setbacks that helps ensure that density zoning is respected.

Again, other enforcement measures such as the FAR and impervious area ratios are all not respected. Having disregarded these standards, occupants of such buildings and their neighbourhoods pay the cost. One of the highly rated effects of the problem of Unauthorised Appendages to residential buildings is serious health risk posed by blockage of natural ventilation into such buildings. For a building to be appropriate for living lighting and ventilation are two important considerations and everything must be done to ensure adequate amount of these. Apart from this, the paving of every space especially in the case of extension has the tendency to reduce percolation of runoffs a potential reason for the floods in such communities.

Convenience as a planning principle primarily seeks to ensure that there is ease of movement and that obstacle to movement are prevented and curtailed. In a bid to achieving this, planning distinguishes between public and private spaces that serve this purpose. Public spaces such as road reservations and public open spaces are defined as distinct from private spaces. Without regard for setbacks that defines the reservation between the building line and the boundary line, appendages tend to encroach on reserved public spaces. Such unauthorised Appendages to residential building could impede access to such buildings especially to the fire department during occasions of fire outbreaks and other emergency and rescue operations thus defeating the convenience principle. The issue of Unauthorised

Appendages impeding the path of fire fighters cannot be taken for granted as Fire-fighters and ambulances may find it difficult to locate places being engulfed by fire in case of outbreak and could result in the needless loss of lives. Unauthorized building works causes structural weakness in building. This situation in turn results in structural failures that cause injury to occupants.

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CONCLUSION AND RECOMMENDATIONS

Incidents involving falling objects from the external walls of buildings especially in crowded areas have become quite rampant of late and is indicative of a hazard to society. This study provides preliminary results and insights into the issue within residential areas. The findings presented in this paper are the results of case study of this contemporary phenomenon in North Suntreso, a community that was planned in Kumasi the capital city of the Ashanti region of Ghana. The findings provide an understanding into the extent of the problem as well as the factors that contributed to the proliferation of the problem. A key import of this study is the understanding of what unauthorised appendages do to both the occupants of the buildings and the building fabric itself. In line with the findings and conclusion, the following are some recommendations made based on the identified causes of the problems.

As established by literature, most of the low and middle income estates developed did not factor into the designs the housing preferences of the will be occupant and how they will like their internal spaces organised thus making is necessary that the designs be modified once ownership changes. In the case of North Suntreso, the decision to provide communal facilities to a significant extent deprived the households of their privacy needs. It is thus recommended that in view of the importance of adequate privacy or private spaces in housing development, future housing development especially for the low and middle income households must be preceded by a needs assessment study. The design of the housing must also avoid the creation of shared facilities since they usually create conflict hence a recipe for the development of appendages. Planning controls are for the collective good of society, they set the standard that help address competing claims by private interest thus reducing negative and unpleasant effects in space. For planning to be effective however, there must certainly be

in existence a good and effective legal and regulatory framework. As earlier discussed, such frameworks have been weak in Ghana for varied reasons. Curbing the incidence of illegal appendages development requires that conflicting provisions in the law are reconciled, obsolete provision and laws amended and repealed and duplicative provisions harmonized. The resources required for the effective implementation of the laws must also be provided.

Regarding the problem of inadequate knowledge of planning laws and regulation and the difficulty in the permit acquisition process, the following recommendations might be useful. Almost all MMDAs have the outfit of National Commission on Civic Education. Although their mandate is not directly to educate on the citizens on planning laws and regulations, given the relevance of the issue and the health and safety implications of violation of planning regulation, the unit can include this in their programme by engaging competent planners. It has also been established that the laws are not as punitive as they supposed to be. Thus weighting the cost of compliance against non-compliance, it makes economic sense to break the laws regarding permit acquisition. Relaxing the process and speeding up the permitting process is an effective way of engendering willing compliance on the part of will be developers. There can be the possibility where the strategy for housing low and middle income borders on incremental expansion and development of their plots, either to accommodate potential increase in household sizeor developing for commercial purposes. Under such as circumstance the designs must incorporate such possibilities and come clear on the incremental development process and approach. The benefit of such consideration is that it will help address the situation where illegal appendages encroach on public space reserved for access and mobility within the given urban space.

As urbanisation occurs in our towns and cities, planning authorities must keep pace with the trend and understand the implications it has for developable space and housing in general and introduce policies and regulations that increase land supply through land intensification. For instance planning can lead the market by identifying potential redevelopment and extension areas, change zoning regulations in those areas to conform to changing space needs of society as well as adjust the floor area ratios in line with the prevailing needs. This will facilitate

monitoring of such development and quick identification of illegal appendages before they become full blown.

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