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MANAGING PHYSICAL DEVELOPMENT IN PERI-URBAN AREAS OF KUMASI, GHANA: A CASE OF ABUAKWA

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Abstract: A remarkable trait of the 21st century has been the high rate of urbanization which has characterized the growth and development of cities especially in developing countries. This situation has fuelled rapid physical development and expansion of peri-urban areas as urban dwellers relocate to cities' peripheries. Focusing on Abuakwa a peri-urban area in Kumasi, the second largest city in Ghana, this paper assesses the nature and extent of physical development in peri-urban areas, and identifies the factors contributing to the rapid development of peri-urban areas. The paper further examines the effects of the increasing physical growth on the development of peri-urban Abuakwa. Using a case study approach, both primary and secondary sources of data were collected from decentralized government institutions of Kumasi Metropolitan Assembly (KMA) and Atwima Nwabiagya District Assembly (ANDA), as well as indigenes and relocated urban dwellers in Abuakwa. The paper reveals that the outward drift has manifested itself in an increased scramble for land for residential and commercial purposes in the peri-urban area. The resultant effect has been the fast and spontaneous physical development in the urban periphery which has significantly altered the peri-urban morphology. The paper recommends the establishment of Customary Land Secretariat (CLS) to co-ordinate allocation of land, and the application of settlement growth management approaches to ensure the creation of a functional city and liveable peri-urban areas.

Keywords: Abuakwa; land use; peri-urban areas; physical development

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INTRODUCTION

The 2010 Population and Housing Census of Ghana indicate that the proportion of urban population in Ghana increased from 43.8 percent in 2000 to 50.9 percent in 2010 (Ghana Statistical Service (GSS), 2012). This high rate of urbanization has accelerated the demand for land to meet the increasing needs of urban dwellers particularly in the major cities in Ghana. As a result, there is seemingly rapid expansion of peri-urban areas where basic facilities such as piped water, electricity and sewage services are virtually non-existent.

These peri-urban areas are characterized by fast and unplanned physical growth and development. The unregulated pattern of physical development in these areas has given rise to complex organic urban growth which predominantly expands horizontally. Explaining this phenomenon, Drabkin (1977) asserts that urban population growth is mainly occurring in the outlying regions of the metropolitan areas due to the engulfment of the peri-urban areas by 'parent city'. As a result, peri-urban physical development pattern is always undergoing transformation especially in cities in the developing world (Drabkin, 1977). Concomitantly, these dynamic changes in the land use also occur following improvement in accessibility, natural increase in population, presence of serene living environment, and availability of vast but low cost land.

In the context of Kumasi, this phenomenon is ostensibly evident. With an annual population growth rate of 5.4 percent, Kumasi is considered the fastest growing city in Ghana (Cobbinah & Amoako, 2012). The growing population of the city coupled with the availability of infrastructure and relatively low land values at the peripheries has resulted in the inefficient use and over exploitation of natural resources especially land at the outskirts. The city's peripheries have become the preferred places for housing, industrial and commercial development due to the relatively low land values. As a consequence, the peri-urban areas of Kumasi are experiencing intensive and continuous physical development in an uncontrolled manner. Prime agricultural lands in these areas have been utilized for physical development purposes. However, this uncontrolled pattern of physical development poses urban management challenges to the peri-urban economy, traffic generation and management, growth management, and the provision of ancillary services.

This paper investigates the management of physical development in peri-urban areas of Kumasi by examining the nature and extent of physical development in Abuakwa. It explores the factors contributing to the increasing physical development in and the effects on the development of peri-urban Abuakwa. The paper concludes with recommendations to ensure efficient and effective management of physical development in peri-urban areas of Kumasi.

CHARACTERISTICS OF PERI-URBAN AREAS AND PHYSICAL DEVELOPMENT

The meaning and characteristics of peri-urban areas

According to Organisation for Economic Co-operation and Development (OECD) (2007) the term 'peri-urban' came into public domain and use during the 1980s in Europe. The OECD described peri-urban as a name given to the 'grey area' which is neither entirely urban nor rural in the traditional sense. It is neither fully urbanized nor completely rural, but often seen as a 'middle band' of land with atypical characteristics (Buxton, 2007). It comprises an unbalanced mixture of urban and rural functions.

Peri-urban area serves as the zone where urban-rural interaction is at its peak (Johnson, 1974). At this zone, rural activities and modes of life are in rapid retreat, with extensive urban land use intrusion (that is urban area physically and functionally expands into the rural area).

Peri-urban areas exhibit peculiar characteristics that make them distinct from urban and rural areas, and these include accelerated development of urban residential and urban commercial uses, and decrease in rural primary activities (Hewitt, 1989), rapid but unplanned growth with inadequate service infrastructure (Government of Swaziland, 1997), middle and low income residents (Johnson, 1974), and serve as receptacles for the growing rental market (Buxton, 2007).

Generally, peri-urban areas can be classified into four interrelated categories. These include village peri-urban, diffused peri-urban, in-place peri-urban and absorbed peri-urban (Drescher & Iaquinta, 2000). The categorization is derived from the underlying socio-demographic processes, especially migration. The defining features connected the elements of the typology in the form of a continuum.

The concept of physical development

Keeble (1969) explains physical development as the carrying out of building, engineering, mining or other operations in, on, over or under land or the making of any material or substantial change in the use of any building or land. Physical development entails the carrying out of any operation on or any modification to land by mankind in an attempt to create a liveable and comfortable environment. The ultimate objective of

physical development is to sustain the improvement in the wellbeing of individuals and bestow benefits on all. At the community level, physical development covers land that has been put to some form of use ranging from a building to an outdoor open space as against land which has not been touched and is covered with 'bush' (Mather, 1989). Physical development manifests itself in the form of human activities or land uses in towns and cities.

Linkages between peri-urban areas and physical development

The dynamic and integrative nature of peri-urban areas has been a major constraint in outlining physical development (land use) pattern of these areas (Johnson, 1974). While peri-urban areas are multifunctional and interrelated zones with potential for change, the nature of physical development is complex and does not have defined character. It is defined by unauthorized developments, spatial unit zones, non-contiguous developments and land use changes (Johnson, 1974).

Other writers have argued that peri-urban areas experience continuous and alarming rate of physical expansion as the population grows (Buxton, 2007). Moreover, literature on peri-urban dynamics suggests that as urban areas grow, most of the growth occurs at the fringes because of the availability of land at nominal cost (O'Sullivan, 2000). Thus, peri-urban areas, by virtue of their status as dormitory towns, are dominated by moderate and low density residential development. Housing in these areas is segregated by socio-economic class or ethnicity and is usually clustered close to a railway or a major thoroughfare (Johnson, 1974).

Another relationship is leap frogging development which is characterized by relatively low-density, non-contiguous, automobile dependent, residential and non residential development that consumes farmland (Mather, 1989). The farmland is converted into housing, commercial and industrial premises, and infrastructure such as roads, other land-extensive recreational facilities, waste dumps, and sewage treatment plants (Timms, 2006).

Factors influencing rapid physical development in peri-urban areas

Physical development in peri-urban areas is influenced by the interplay of several factors. These factors operate to regulate the morphology (size and form), arrangement and intensity of land uses; and are explained in the subsequent paragraphs.

Improvement in transport facilities like roads and automobile produce urban decentralization in the outer part of cities as they reduce travel time. This attracts individuals and firms to relocate to the peri-urban areas to take advantage of the availability of large but low land value (du Plessis & Landman, 2002).

As a result, low land value is another factor. The price of land in peri-urban areas is relatively low compared to the parent city (O'Sullivan, 2000). This attracts people of different income groups to the urban fringe. Other factors include government public policies especially on housing provision has broadened the social groups found in the urban fringe locations (Johnson, 1974).

Moreover, movement of retail services to the peripheries of cities as a result of decentralization of consumers, central area decline and development of automobile has influenced the physical development of these areas (Balchin *et al.*, 2000). The presence of serene and conducive environmental conditions is also a contributing factor to the high rate of physical development in the peri-urban areas.

Additionally, Adesina (2007) argues that the practice of landowners withholding land from the market in order to gain increases in value in the future has influence physical development in the peri-urban areas.

The above factors have contributed to peri-urban areas experiencing premature and scattered or non-contiguous physical development which threatens their sustainability. These are useful lessons for investigating the pattern of physical development in peri-urban Abuakwa in Kumasi.

STUDY SETTING AND METHODS

Study setting

Geographically, this study focuses on Abuakwa a peri-urban area of Kumasi located in the Atwima Nwabiagya District (AND). Abuakwa is located along the Kumasi-Sunyani and Bibiani trunk roads about 12km from the Central Business District of Kumasi, the administrative and cultural capital of the Ashanti Region of Ghana. Given its geographical coordinates as 6°40′ 0″ N and 1°37′ 0″ W, Abuakwa is bounded to the north by Bokankye, east by Tanoso, west by Atwima Maakro and to the south by Abakomadi. Abuakwa has a population of 23 201, out of which 32 percent are indigenes while 68 percent are migrants who are basically relocated urban dwellers from Kumasi. Abuakwa's population growth is significantly linked to the rapid growth of Kumasi.

With current population of 2 035 064, Kumasi is the fastest growing city in Ghana with an annual growth rate of 5.4 which is far above the regional and national growth rates of 2.7 and 2.5 respectively (Cobbinah & Amoako, 2012; GSS, 2012). Given its increasing population growth, the city accommodates about half of

the entire population of the Ashanti region which has facilitated the spread of development into the neighbouring districts (GSS, 2012).

As a consequence, peri-urban Abuakwa has strong physical and functional links with Kumasi, the second largest city in Ghana. This is based on the fact that about 60 percent of the working population of Abuakwa commutes to and from Kumasi daily to engage in socio-economic activities (ANDA, 2006). Owing to its strong relationship with Kumasi, Abuakwa has developed to become one of the major dormitory towns of Kumasi although other commercial and industrial developments or activities have sprung up.

Highlighting the influence of Kumasi, peri-urban Abuakwa is the largest town in the district with an annual growth rate of 9.6 percent (National Development Planning Commission (NDPC), 2004). Abuakwa is currently experiencing extensive physical development which has spread to engulf surrounding communities like Dadease, Apemhase, Kagyase and Arkosah Township. In relation to its spatial structure, Abuakwa has a sector-like or wedge-like morphology due its growth along the two major roads (see **Fig. 2**).

Despite the high rate of population growth, Abuakwa's physical development over the past two decades has been sporadic and uncontrolled leading to haphazard and unauthorized physical development pattern with little or no room for both vehicular and pedestrian circulation. **Figure 1** shows the location of Abuakwa in relation to the Kumasi metropolis.

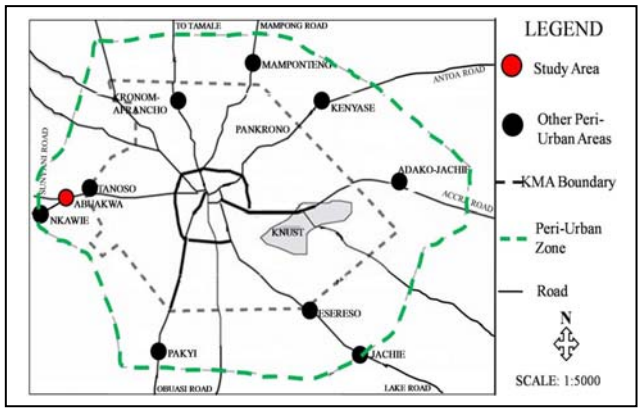

Fig. 1 Abuakwa in Kumasi Metropolitan Context.
Source: Owusu-Ansah and O'Connor (2006).

Study Methods

This paper is based on a study conducted in 2010 on the pattern of physical development in peri-urban areas of Kumasi. Recent data (2012) on the dynamics of physical development in peri-urban areas of Kumasi have been incorporated. Regarding the method used, the study reviewed relevant and related literature on the characteristics of peri-urban areas and physical development from both developed and developing countries. The literature review was carried out at two levels: global and local. Whereas the global literature review focused on books and journal articles on the concepts, types and characteristics of peri-urban areas and physical development, the local review examined documents including district development plans, physical development reports and town planning schemes used in monitoring socio-economic and physical development of the study area.

Additionally, the study reviewed other documents such as quarterly and annual reports as well as consultancy reports from some of the decentralized government institutions of KMA and ANDA such as the Urban Roads Department, Building Inspectorate Division and the Town and Country Planning Department (TCPD). The review of these documents was critical in establishing the trends of peri-urban developments in Kumasi, and further identified the major stakeholders involved in managing the physical development in the peri-urban areas of Kumasi. This process served as a useful ground in determining the selection of the case study area and the type of institutions and category of respondents to be involved in the study. Ideally, the study intended to cover two peri-urban areas in Kumasi. However, due to unique characteristics of Abuakwa: high population growth rate, its location in different district, availability of data, and physical development challenges, coupled with relatively slow growth rate, and land ownership challenges characterizing the other peri-urban areas, the study was limited to Abuakwa.

Using semi-structured interviews, six institutions were purposively selected to provide data regarding the pattern of physical development in peri-urban areas of Kumasi particularly Abuakwa. These institutions included the TCPD in Kumasi and ANDA, Building Inspectorate Division of KMA and ANDA, Urban Roads Department of KMA and the Feeder Roads Department of ANDA. The semi-structured interviews allowed for detailed assessment of the phenomena being investigated into (Sarantakos, 1998), and further offered sufficient flexibility to approach different institutions differently while still covering the same areas of data collection (Mohd Noor, 2008). Moreover, traditional authorities and plot allocation committee in the various suburbs of Abuakwa were interviewed to gain first hand data on the state and direction of physical development in peri-urban Abuakwa.

With a total housing stock of 1630, a total of 143 house owners comprising indigenes and relocated urban dwellers were selected and involved in the study using structured questionnaires. The determination of the sample size was done employing the following mathematical model: $n= N/1+N (\alpha)^2$ (Miller & Brewer,

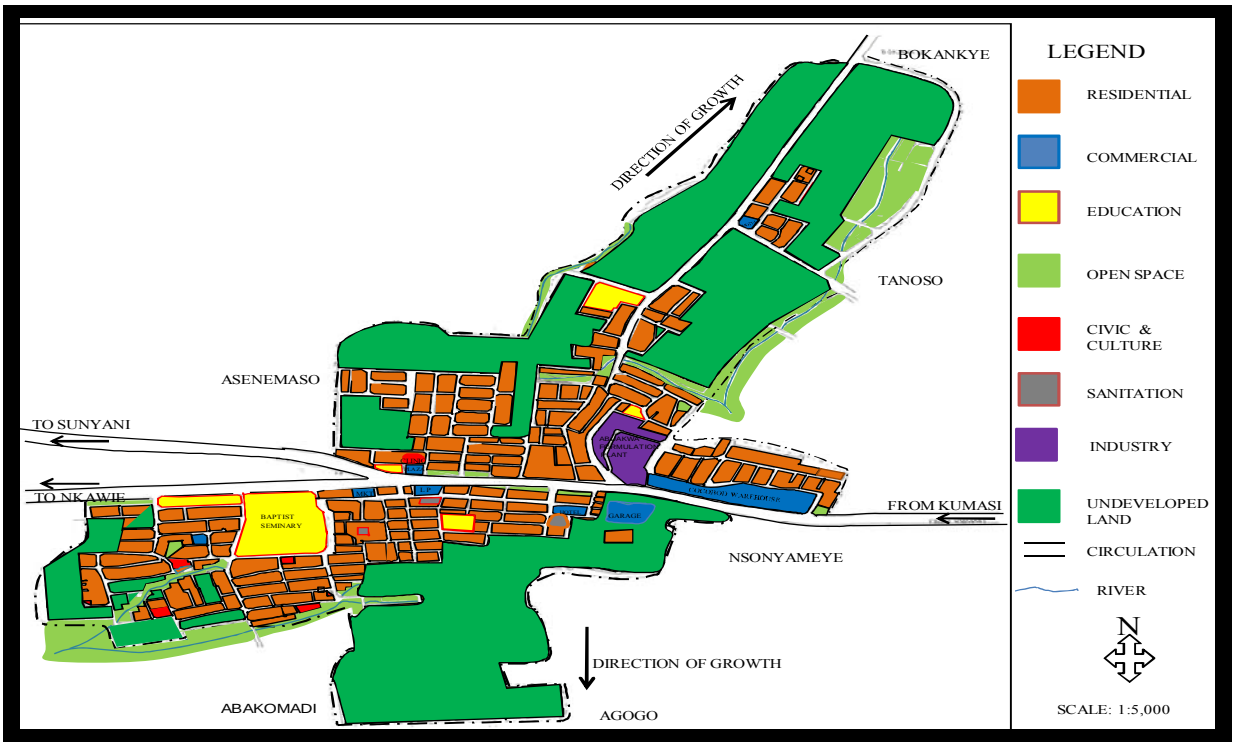

Fig. 2 State of Physical Development in Abuakwa (1993).
Source: Town and Country Planning Department, ANDA

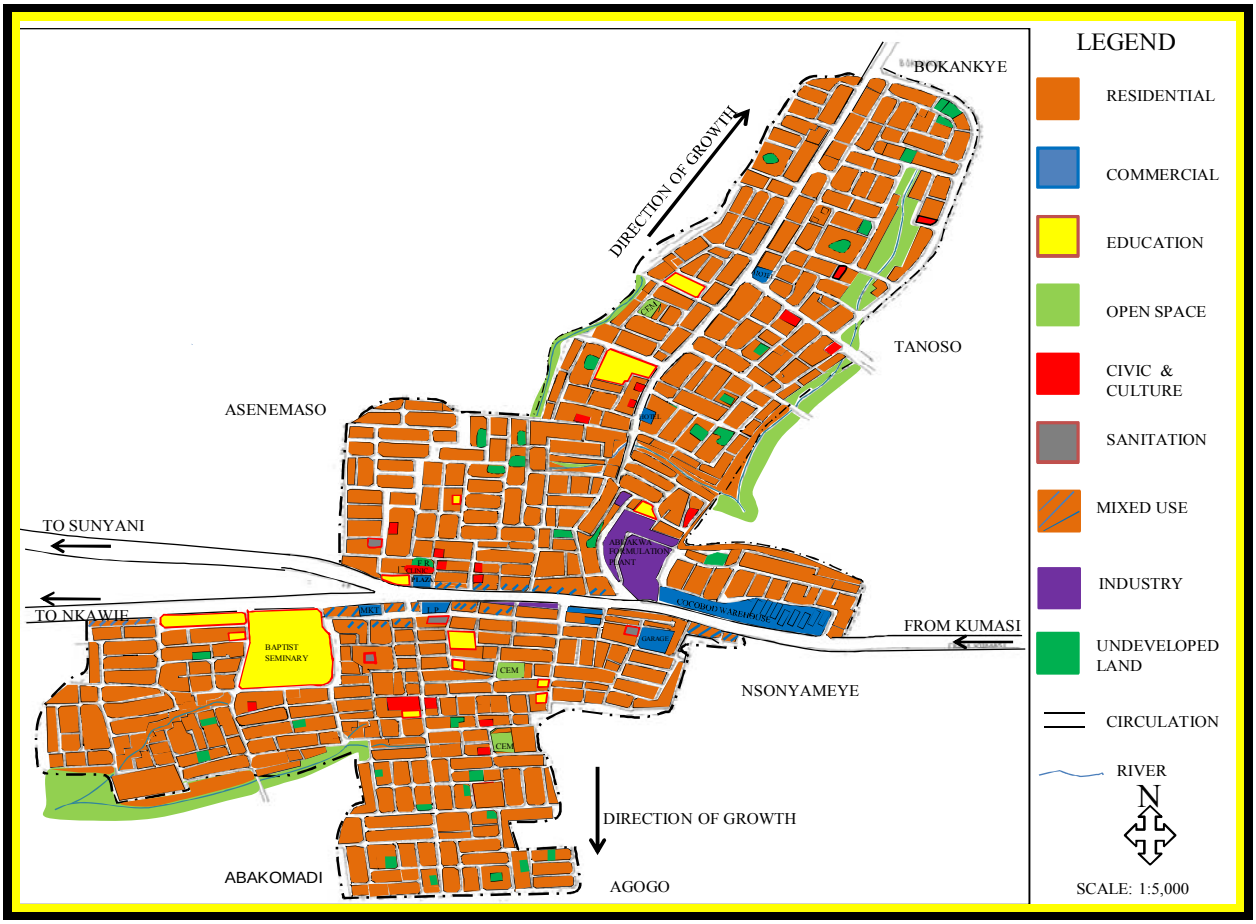

Fig. 3 The Extent and Nature of Physical Development in Abuakwa (2010).

2003), where n is the sample size, N is the total housing stock (sample frame) and α is the margin of error (0.08). The interactions at both institutional and community levels revealed the major factors and manifestations of physical development as well as the effects of rapid physical development on the development of Abuakwa.

The data collected were analyzed using quantitative and qualitative methods. Statistical Package for Social Sciences (SPSS) was used to facilitate the quantitative analysis while the qualitative analysis focused on description and explanation of the pattern of peri-urban development. The SPSS facilitated the analysis process by generating descriptive statistics such as percentages and frequency counts as well as establishing relationships between study variables (peri-urban areas and physical development).

To ensure the validity and reliability of the study findings, data collected from both the institutional and community levels were harmonized and findings presented to stakeholders at the institutional and local levels. This process proved useful in addressing any gaps and inconsistencies that had occurred.

RESULTS AND DISCUSSIONS

Physical growth and expansion of Abuakwa

Until 1993, physical development in Abuakwa just like many other peri-urban areas in Ghana was not guided by planning scheme. This is because such areas had not been zoned as planning areas under the Town and Country Planning Ordinance of 1945, (CAP 84) which was the legal framework for regulating planning activities in the country then. The study revealed that physical development prior to 1993 was mainly concentrated in the core area and it occurred haphazardly. Following the enactment of the Local Government Act, 1993 (Act 462) which declared all settlements in Ghana, both urban and rural, as planning areas, a planning layout was prepared to control and guide the growth of Abuakwa.

In relation to its spatial changes, the study results show that the town which covered a total land area of 1.7 km^2 (432 acres) in 1993 has expanded to a physical size of 4.6 km^2 (1,145 acres) in 2010 (see **Figs 2** and **3**). The town experienced a change of 713 acres in land area, representing 165.0 percent change in size. This indicates that the size of the settlement tripled in less than two decades.

The rapid rate of physical development that has characterized Abuakwa over the last two decades is reflected in the ages of the buildings. Survey results indicated that more than 90 percent of houses in Abuakwa are less than 20 years old, indicating that the town has witnessed rapid physical development in recent times. Despite the introduction of planning scheme for the town since the 1993, physical development continues to occur in haphazard and uncoordinated manner. As a result, the rapid physical development has outstripped the ability of development control institutions to monitor and regulate it. The current state (2010) of Abuakwa is presented in **Fig. 3**.

The survey showed that the physical expansion of Abuakwa has not spared the areas which are earmarked as unbuildable areas. Physical development has spread and encroached on ecologically sensitive areas such as rivers, streams, waterlogged areas and open spaces (see **Fig. 4**). Developers (house owners) disregard the likely negative socio-environmental consequences such as flooding, spread of water related diseases and extinction of the natural habitats. **Figure 4** shows a building in a water way in Abuakwa.

The study further unearthed that virtually none of the areas earmarked for ancillary land uses like education, public open space, sanitary areas among others have been utilized for such purposes. Most of such areas have been converted into residential use as a result of non-adherence to planning regulations, uncoordinated land allocation by the traditional leaders (chiefs) and weak enforcement mechanisms. The cumulative effect of this is the current pattern of physical development which can be described as "monotonous development" dominated by residential buildings (shelter zone).

Land use inventory of Abuakwa (1993–2010)

The major land use types identified in Abuakwa clearly show its transitional nature from rural to urban. During the land use/physical survey, the following land uses were identified; residential, commercial, industrial, open space, educational, civic and cultural, sanitation, circulation (road network), mixed uses and undeveloped land as presented in **Table 1**. The total planning land area of Abuakwa is 1,120 acres. These land uses are discussed in the subsequent sub sections.

Residential land use

The residential land use covers the largest land area and it comprises of all types of housing and cuts across all areas of the town. The residential area which covered a total area of 230 acres representing 20.6 percent in 1993 increased to 702 acres representing to 62.7 percent of the total land area in 2010.

The dominance of residential zone is a manifestation of Abuakwa's status as a commuters' residential zone within a system of settlements and a dormitory town for workers of Kumasi.

Table 1 Land Use Inventory of Abuakwa

Land Use	Proposed Land Take, 1993		Actual Land Take in 1993		Actual Land Take in 2010		Change in Land Take (1993 to 2010)		Diff. in Land Take (2010 - Proposed 1993)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Residential	410	36.6	230	20.6	702	62.7	472	42.0	292	26.1
Commercial	27	2.4	24	2.1	27	2.4	3	0.3	0	0
Industrial	17	1.5	18	1.6	22	2.0	4	0.4	5	0.5
Open Space	33	2.9	12	1.1	8	0.7	–4	–0.4	–25	–2.2
Education	59	5.3	43	3.8	48	4.3	5	0.5	–11	–1.0
Civic and Culture	22	2.0	8	0.7	17	1.5	9	0.8	–5	–0.5
Sanitation	8	0.7	5	0.5	5	0.4	0	0.0	–3	–0.3
Circulation	208	18.6	92	8.2	275	24.5	183	16.3	67	6.0
Mixed Use					14	1.3			14	1.3
Undeveloped land	336	30.0	688	61.4	2	0.2	–686	–61.3	–334	–29.8
Total	1,120	100	1,120	100	1,120	100				

Source: Field Survey, 2010

(Note: '–' means reduction)

Fig. 4 Building on Waterway.
Source: Field Survey, 2010

The drastic increase in residential land take is attributed to the outward movement of people from the already congested city of Kumasi to the outskirts in search of cheaper accommodation. As an important nodal town (point of convergence for Kumasi-Sunyani and Kumasi-Bibiani Roads), Abuakwa has become a receptacle for migrants into Kumasi.

Commercial land use

This consists of areas allocated for different businesses including markets, lorry parks, warehouses, hotels and guest houses, and shops. Commercial land use as at 1993 was 24 acres representing 2.1 percent of the land area of Abuakwa. This has increased to 27 acres in 2010 representing 2.4 percent of the town's land area. The increase in commercial land use is due to the rapid development of hotels and restaurants in Abuakwa. Nonetheless, most commercial activities are largely concentrated in the central part of the town generating traffic management challenges as the town center has become relatively congested.

Industrial land use

In 1993, the only industrial activity that existed in the town was Abuakwa Formulation Plant (a company that produces pesticides) which covered a total land area of 18 acres representing 1.6 percent of the built up area. However in 2010, other industrial activities have emerged in the town and include metal and wood works and bakeries. These activities have increased the industrial land use to 22 acres. However, survey results indicate that these activities are located on road reservations and open spaces within residential areas generating noise to the discomfort of the residents.

Open space

The open spaces both active and passive covered 12 acres representing 1.1 percent of the total land area in 1993. However it currently occupies 8 acres representing 0.7 percent of the total land area. This reduction is attributed to encroachment and conversion of such areas for residential development. Functions of open spaces as 'softening' physical development and toning down harsh weather conditions are gradually being lost in Abuakwa. Designated play grounds as well as public recreational grounds are non-existent in the

town. As a result, there is frequent blockade of roads for social events such as funerals.

Educational land use

Educational land use covered 43 acres and 48 acres in 1993 and 2010 respectively of the land area of Abuakwa. Major educational institutions are Baptist Seminary School, Catabb Vocational Institute, two public basic schools and a number of private schools. Currently all the private schools are located on residential plots as a result of the uncoordinated development in the town. The absence of undeveloped land for educational use is likely to affect future construction of schools in the town and has the tendency to create congestion in the existing schools.

Civic and cultural land use

This land use covers public buildings such as churches, mosques, palaces, hospitals, administrative buildings, offices of some public institutions like police station and hospitals. Civic and cultural land use occupied a land area of 8 acres in 1993 and 17 acres in 2010 representing 0.7 percent and 1.5 percent of the land area of the town respectively. The increase is mainly due to the development of new churches in the town. The civic and cultural land uses add to the aesthetic qualities of the townscape beyond their respective defined roles. However, the poor location of noise making churches on residential plots makes them a source of nuisance to residents.

Sanitation land use

This land use which includes refuse disposal sites and public toilet facilities presently occupies 5 acres of land which constituted 0.4 percent of the land area. However, the survey results show that there is limited supply of refuse disposal sites which has resulted in indiscriminate dumping of refuse in the town especially in the newly developing areas. The indiscriminate disposal is mostly done on acquired but undeveloped plots within the built up area. This is likely to promote the spread of sanitary related diseases such as malaria and diarrhoea in the town if this practice is unchecked.

Circulation

The hierarchies of roads identified in Abuakwa are primary, secondary and access roads. Occupying a total land area of 275 acres, there is a total road length of 34km in the town. The primary roads are the Kumasi-Sunyani and Kumasi-Bibiani Trunk Roads stretch within the town and have a length of 1.6km. The length of the two secondary roads which connect the northern and southern parts of the town is 3.1km. The access roads have a total length of 29.3 km. Apart from the primary road, all the secondary and access roads are in poor conditions and this hinders easy and smooth vehicular accessibility within the town. The roads are dusty and usually become immotorable in rainy seasons. Again developers have encroached on the road reservations while the development of access roads has not kept pace with physical development making parts of the town inaccessible (see **Fig. 6**).

Mixed use

Given the increasing population growth, there is apparently emerging land use (mixed use) in Abuakwa especially residential and commercial uses. As a new land use, mixed uses cover 14 acres representing 1.3 percent of the land area and are located along the major roads and in the central part of Abuakwa. The major problems associated with the mixed uses are congestion as it promotes indiscriminate on-street parking and poor sanitary conditions as no provision is made for such activities prior to conversion.

Undeveloped land

All lands in the town that have not been put to any urban use or are used for agriculture were classified as undeveloped land. As presented in **Fig. 2**, undeveloped land in 1993 covered a considerable land size (61.4 percent) of the total land area of Abuakwa. As a result of increasing population growth, **Fig. 3** shows that there is a significant reduction in the size of the undeveloped land. **Table 1** shows that current (2010) undeveloped land in Abuakwa is only 0.2 percent of the total land area of Abuakwa. Given the current increasing population coupled with the rate of reduction in the undeveloped land, it could be argued that there will not be any available undeveloped land in Abuakwa in the near foreseeable future should the trend continue.

Actors involved in physical development in Abuakwa

The study identified a number of institutions/individuals that are involved in the physical development management process in Abuakwa. These actors are expected by law (Act 462) to collaborate and ensure effective physical development of communities in the district. This section presents the role of these actors with respect to physical development of Abuakwa.

Private landlords/ladies

The activities of these individuals influence the distribution and concentration of land uses such as residential, commercial and education. The study revealed that about 25 percent of the private

landlords/ladies have acquired and encroached on land demarcated as unbuildable and environmentally sensitive areas such as marshy and water ways.

Traditional leaders

In the context of Ghana, traditional leaders are considered as custodians of land, and are responsible for leasing land to both prívate and public developers. However, they are limited by law to determine the use of land, which is the responsibility of the TCPD. The study results indicate that there are seven (7) traditional leaders in Abuakwa, with each controlling the leasing and allocation of the land under his jurisdiction to prospective developers. It was however noted that the activities of these traditional leaders are not coordinated. As a consequence, there have been several cases of double allocation and land litigation in Abuakwa. In constrast to their fundamental role as custodians of the land, they have also assumed the role of determining the use in which a paticular land is put to. This situation has resulted in the leasing of lands which are demarcated by the TCPD for public uses, such as open spaces, for residential development.

Town and Country Planning Department (TCPD)

The TCPD was established in 1945 by the Town and Country Planning Ordinance of 1945 (CAP 84). The TCPD is a service delivery department under the Ministry of Environment, Science and Technology at the national level and the Ministry of Local Government and Rural Development at the local level. It has the responsibility of planning and managing the growth and development of all settlements in the country. From the study it was realized that the TCPD in the AND regulates physical development in Abuakwa through the preparation of planning schemes, issuance of building/development permits and monitoring and site inspection. Unfortunately, the Department is under resourced in terms of personnel and logistics which have hindered planning effort as well as routine monitoring of physical development in Abuakwa. The Department also faces the challenge of poor coordination and cooperation from other institutions especially traditional leaders.

Atwima Nwabiagya District Assembly (ANDA)

The Local Government Act (Act 462) mandates all metropolitan, municipal and district assemblies in Ghana with the responsibility of ensuring socio-economic and physical development of all communities in the district. As such, the ANDA oversees and coordinates the preparation and implementation of planning schemes to guide the growth and development of all the communities in the district including Abuakwa. However, the study results show that the ANDA is unable to provide the development control institutions with adequate logistics to enable them function effectively. As a result, there is high prevalence of haphazard and unauthorized physical development in the most of the communities in the district including Abuakwa.

Building Inspectorate Division (BID)

This Division was established under the Metropolitan, Municipal and District Assemblies and is responsible for ensuring the enforcement of and compliance with building regulations. The Division in the AND is supposed to carry out this function by inspecting progress of development in Abuakwa and other communities in the district. However, the Division rarely functions as it is handicapped in the areas of logistics such as vehicles for inspection. The Division is also confronted with limited operational powers and lack of support and collaboration from other physical development management stakeholders.

State Housing Company Limited (SHCL)

The SHCL formerly Gold Coast Housing Corporation was established in 1955 as the main housing development agency of the Government of Ghana to ensure efficient housing development in the country. The company's influence on the physical development of Abuakwa is manifested in its acquisition of land and construction of houses for the middle income group and workers of both the formal and informal sectors in the northern part of the town. The study analysis shows that this action of the company has contributed significantly to the rapid expansion of the town, although the development was undertaken in an orderly manner.

From the above discussions, it is ostensibly clear that physical development in Abuakwa involves many actors, some which are categorized under different parent institutions with diverse interests. As a consequence, there is lack of coordination and cooperation among the actors which has contributed to haphazard development, conflicting land uses and break down of formal development control processes in Abuakwa.

Housing development in Abuakwa

Houses are the most important manifestation of physical development in Abuakwa. The acquisition of development and building permits is the main prerequisite for carrying out any physical development in Ghana especially in areas that have Approved Planning Schemes. This is done to regulate the type,

nature and characteristics of the housing or physical development that are carried out on any piece of land. The survey revealed that 58.0 percent of house owners acquired development and building permits from planning authorities while 42.0 percent did not acquire any permits before developing their lands. This indicates that almost half of housing development in Abuakwa had not been authorized by the planning authorities. The reasons cited for the refusal to acquire permits were the high cost and bureaucratic processes or delays involved in the acquisition of permits.

Additionally, the traditional leaders have set a certain timeframe for the developers to start construction. This timeframe, which differs from one traditional leader to another, when elapsed, permits the traditional leaders to demand extra money or lease the land to another developer. As a result, prospective developers resort to development without planning authorities' approval. This situation further highlights the haphazard and unregulated nature of physical development in Abuakwa.

The study revealed that majority of the houses (67 percent) fall into the single family detached houses category. Other housing types were compound and semi-detached which constituted 26 percent and 7 percent of the total housing stock respectively. The dominance of the detached houses is attributed to the settlement's transformation from rural to urban status which has led to a steady shift from the traditional compound housing to modern single family housing system. This current housing preference has contributed to the rapid expansion of the town as the single family detached houses accommodate few people per square kilometer and consumes more land leading to the lateral expansion of the town.

Characteristics of physical development in Abuakwa

Leap frog development

It was realized from the study that physical development in the town has occurred in a spatially fragmented pattern, due to speculative buying or acquisition of land. This has resulted in the presence of patched of undeveloped land (brown fields) located within the built up areas. The survey found that such green field sites occupy about 55 acres of the total residential land area of the town. According to the TCPD at ANDA, the leap frog development in the town is fuelled by double allocation of lands by land owners (traditional leaders) which has led to land litigation as well as incremental housing development, which is a common phenomenon in Ghana. These undeveloped patches of land serve as den for criminals and sites for indiscriminate disposal of refuse leading to wasteful and unsustainable use of land.

Land use (in) compatibility

Analysis of land use location and relationship showed that there is high level of land use compatibility in Abuakwa because of the dominance of residential development (see **Fig. 3**). However, major cases of land use incompatibility identified included a noisy making and obnoxious odour emitting industrial activities such as metal products, processing firms and a poorly managed abattoir all located in the midst of the residential areas. These activities need to be grouped on a clearly defined location to internalize the problems associated with them.

Land use change

As presented in **Table 1**, it was observed from the study that Abuakwa has been characterized by substantial land use conversion mainly from undeveloped to residential as well as the introduction of mixed uses (e.g. location of residential and commercial uses in a single building). While the residential land use has extended into the undeveloped land and facilitated the lateral growth of Abuakwa, the mixed uses are concentrated along the major roads and in the Central Business District of the town. The development of mixed uses is fuelled by the desire of the house owners to earn high rent; as data gathered show that a single residential room earns a monthly average rent of GH¢10.00 while a store room goes for GH¢30.00. Despite the emergence of mixed uses, none of the house owners acquired permit before effecting the changes in the use of their buildings. This indicates the extent of non-compliance to planning regulations which is a threat to orderly and sustainable physical development. The negative consequences of such unauthorized conversion include traffic congestion and poor sanitary conditions. This land use change is likely to continue as the town becomes more urbanized and as such efforts should be made by the planning authorities to order its occurrence in the future.

Physical development or land use zones

As a typical peri-urban area, Abuakwa depicts three distinctive spatial zones. The zones include the core or indigenous, newly developed area or urban shadow and estate housing areas as illustrated spatially in **Fig. 5**. The core or indigenous area is where physical development started and is dominated by multi-family compound houses with most of them (85%) having existed for more than forty years. The zone is characterized by mixed land uses due to the conversion of buildings to commercial and residential uses by the house owners. **Figure 5** shows the land use zones in Abuakwa.

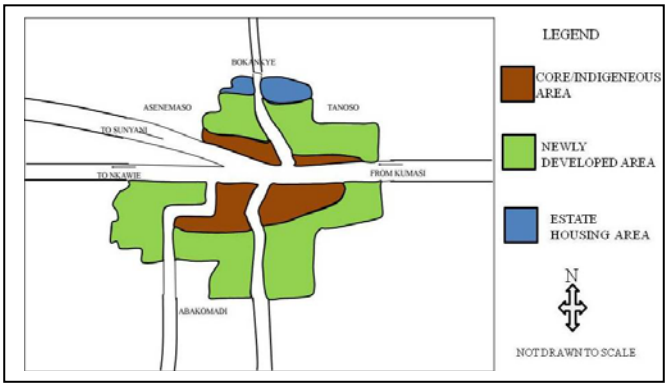

Fig. 5 Spatial Development Zones in Abuakwa, 2010.

The newly developed area started experiencing intensive physical development in the mid 1990s and it is mainly dominated by single family-detached houses. Most of the people who live in these areas are relocated settlers from Kumasi who commute daily to the city. The estate housing area, which is located in the northern part of the town, comprises prototype residential houses which were built by the SHCL, Ghana. Most of the inhabitants (76%) work in the service sector and commute to work daily in Kumasi.

Factors influencing the physical development pattern in Abuakwa

The pattern of physical development in Abuakwa is influenced by the interplay of several factors. These factors emanate from conditions within and outside the town. Seven factors were identified to have accounted for the physical development pattern in the town. Four of these factors are peculiar to Abuakwa and they include land tenure challenges, the syndrome of planning chasing development, government of Ghana's housing policy and the categorization of planning institutions under different parent institutions. The three remaining factors are universal and include relatively low land values, good transport system and greenery environment. These factors are analyzed in the following paragraphs.

Land tenure system in Abuakwa greatly influenced physical development pattern. Land in Abuakwa is under stool lands with traditional authorities serving as custodians. However, the study found out that in Abuakwa the land is owned by seven different stools who 'sell' the lands in an uncoordinated manner without consulting the planning authorities. It was uncovered through the study that there have been several instances where the traditional authorities have allocated land to developers for various purposes contrary to the proposals on the planning schemes. This land ownership and management practices that is embedded in the institution of chieftaincy has contributed to the distorted and unauthorized physical development in the town.

The syndrome of planning chasing development is key factor accounting for Abuakwa's growth. The study revealed that planning institutions in charge of managing the physical development of peri-urban Abuakwa are constrained in both logistics and personnel. This has hampered their ability to undertake regular inspection of physical development. Moreover, the late preparation of planning scheme to regulate development has resulted in a situation where haphazard physical development in Abuakwa is influencing planning scheme preparation. To illustrate this, the current planning scheme was prepared as late as 1993 and does not even cover all areas of the town that have been developed, and has not been revised.

The government of Ghana's policies to meet the housing needs of the citizens has also contributed to the rapid physical development of Abuakwa. Among such policies was the establishment of the SHCL to construct houses and sell them to the populace at moderate prices. In the case of Abuakwa a whole area (Kagyaase Stool Lands) was acquired by SHC and developed into an estate for workers of both the formal and informal economy. This action of the SHC led to massive expansion in the size of the town and brought a range of working-class people to this peri-urban community.

Analysis of the actors involved in the physical development and management process in Abuakwa revealed that each of the actors have different interests with many of them categorized under different parent bodies or institutions. For example the TCPD is under the Ministry of Environment, Science and Technology at the national level and the Ministry of Local Government and Rural Development at the district level, while the BID is mainly under the ANDA. This situation, according to the study results, has resulted in the Departments being under-resourced, thus serving as a barrier to effective coordination and collaboration with the other actors in managing physical development.

Discussing the universal factors, the study findings indicate that the availability of relatively low land value is Abuakwa has contributed to the unregulated physical development. This was identified as an important pull factor which had contributed to the high rate of physical development. From the survey, 41.3 percent of the house owners indicated that they were attracted to the town because of low land value. The price of a residential plot (80×100 ft) in Abuakwa cost at the time of the survey GH¢5,000.00 which was relatively cheaper compared to that of Kwadaso (a suburb within the Kumasi Metropolis) which was GH¢7,500.00 (TPCD, ANDA). This has been an important attractive factor to developers and business operators leading to accelerated physical development in Abuakwa.

Another universal factor relate to the good transport system. As the Kumasi city grows and spreads out into the surrounding countryside, new investments in transportation infrastructure have been made to open up previously less accessible lands for physical expansion. Among such developments was the improvement of the Sunyani and Bibiani Trunk roads which traverse Abuakwa Township (Owusu-Ansah & O'Connor, 2006). This made accessibility between Kumasi and Abuakwa as well as the outlying settlements easy. Given its high accessibility level, the survey showed that 9.7 percent of the house owners were attracted to the town due to easy access to and from Kumasi.

Greenery and serene environment has also contributed to the increasing physical development in Abuakwa. The survey results indicate that 32.0 percent of the respondents were attracted to Abuakwa because of the serene environment in the town. These people perceived the environmental conditions in Kumasi to have been deteriorated by numerous commercial and industrial activities and hence their choice of the peri-urban town. This means that Abuakwa will continue to experience more extensive physical development even as Kumasi continues to urbanize very fast with its associated environmental concerns.

Effects of Increasing Physical Development on Abuakwa

The study unraveled that the physical development pattern in Abuakwa presents both opportunities and challenges. The various consequences which were identified are elaborated as follows.

Loss of agricultural land was identified to be the major effect of increasing physical development in Abuakwa. Given the location of the town, agricultural activities were dominant especially in the 1990s. However, the study indicated that Abuakwa has expanded over a wide area and consumed valuable agricultural land (undeveloped land). The indigenous people, who are mainly farmers, are being denied their livelihood. In addition, there is an upsurge in land value from GH¢250.00 in 1993 to GH¢5000.00 in 2010 pricing out the indigenes and low income earners from the land market.

According to the utility service providers, the high rate of physical development in Abuakwa outstrips their capacity to serve all areas of the town. As a result of this, about 36.9 percent and 25.3 percent of the houses are not served with water and electricity respectively in the town. Most of these houses are found in the newly developed areas. Again, flooding is a major effect of increasing and unguided physical development. Although the town has not experienced any major flooding, about 3 percent of the respondents complained about the water lagging conditions in Abuakwa, a situation which affects residents' movement especially during heavy downpours. This phenomenon has emanated from the construction of buildings in water ways and waterlogged areas.

Abuakwa is characterized by poor internal circulation. The physical survey of the town showed physical development has encroached on most of the access roads and lanes. This happened through the extension of buildings, erection of fence walls and inappropriate siting of "containers" for commercial purposes. It was realized that in areas where the access roads exist, they are in deplorable conditions which render them unusable by motor vehicles especially during rainy seasons. Examples of these are shown in **Fig. 6**.

Fig. 6 Encroached and Poor of Roads.
Source: Field Survey, 2010

Abuakwa is a major traffic generation point of Kumasi as about 60.0 percent of the working force commute to work in the city daily. This leads to heavy traffic congestion on the Kumasi-Abuakwa corridor which results in average travel time of one to two hours during peak hours over a distance of 12 km. This has the potential to affect workers productivity as it results in loss of working hours, tiredness and stress. Again, the conversion of land uses which promotes the growth of commercial activities along the roads and around the central business district further results in traffic congestion.

Analysis of housing documents reveal that the total housing stock in Abuakwa has increased from 1030 in 2000 to about 1630 in 2010. This means that more housing unit has been built to accommodate the increasing influx of people. More importantly the survey revealed that the pattern of physical development offers accommodation to the low and middle income earners most of whom could not have afforded housing in the city. The development pattern has therefore played a very essential role in meeting the housing needs of urban residents especially migrants and middle income earners.

Another positive effect is the increases in government revenue. The acquisition and development

of land for housing, industries and businesses has led to increase in ground rent, taxes and property rates to the ANDA. In Abuakwa, annual ground rents and property rates are around GH¢8 and GH¢20 respectively per house. This shows the contribution of physical development in peri-urban areas to government revenue.

Managing physical development in peri-urban Abuakwa: the way forward

Central to this study is the understanding and assessment of the increasing physical development in peri-urban areas. The above discussions have portrayed the nature, extent and intensity of physical development in Abuakwa. The following paragraphs suggest ways of managing the increasing physical development in peri-urban Abuakwa.

To begin with, haphazard physical development in Abuakwa needs to be checked through strong institutions. The practice of planning chasing development should be checked. In relation to this, the study recommends that the state institutions concerned with physical development and land management should collaborate with the traditional authorities in the allocation of land to developers. The state institutions should be well resourced to help them examine building permits, undertake routine patrols and engage with community members in their efforts to curtail the unauthorized developments which have characterized peri-urban areas.

There is the need for the TCPD to embark on continuous and intensive public education on the processes involved in carrying out physical development. Stakeholders especially the traditional authorities and developers should be sensitized on their roles in ensuring orderly physical development. Popular participation in plan preparation should be encouraged to enable the residents understand the dynamics of physical development.

There is the need to establish CLS to co-ordinate the acquisition and allocation of land. This will ensure that decision regarding the allocation of land is well controlled and monitored instead of leaving it at the discretion of traditional leaders. This has the potential to ensure that developers receive the needed documentation covering their lands before development. The establishment of the CLS will help realize the objectives of the Land Administration Project (LAP) which is being implemented on pilot basis in some parts of Ghana.

It is recommended that physical development efforts in peri-urban areas should embrace the tenets of settlement growth management. The growth management approach should anticipate the rapid development which characterizes peri-urban areas and make provision for directing and managing it. The major elements of the growth management should include the following;

1. Development should be restricted within defined serviceable boundary. In this regard provision of services should be limited within the boundary. This will promote land use intensification and reduce the cost of providing utility services by forestalling rapid lateral expansion;
2. Phasing of development so as to manage development in specified areas within a time frame. This will enable development authorities to well monitor the growth of these areas and ensure orderly and functional settlement development in the long run;
3. Development and building permits should not be issued for areas where services have not been provided. This will ensure that every house has access to basic services. Physical development and service provision should proceed concurrently;
4. The preparation of physical development plans for peri-urban areas should be done in the framework of regional planning. Planning of peri-urban areas should be integrated into a city-wide system. This has the tendency to cater for both the internal and external factors which interplay to shape the pattern of physical development in peri-urban areas; and

The preparation of planning schemes to guide development of peri-urban areas should be premised on land capability or classification studies. The potential of every piece of land need to be assessed and utilized for such purpose. Agricultural land must be reserved for such purpose irrespective of the rate of demand for other urban land uses. This will help preserve the economic life of the people especially the indigenes. However where farming or agriculture cannot be maintained, alternative livelihood need to be provided for the indigenes or the people.

CONCLUSION

Although this paper has confirmed the general assertion that peri-urban areas experience rapid physical development (O'Sullivan, 2000; Hewitt, 1989; Buxton, 2007), and that they are characterized by high rates physical growth rate with the potential of tripling in physical size in every two decades, it has also identified certain physical development factors which are locally based.

The paper points out that the pattern of physical development is influenced by a number of local factors and they include: land tenure system and its associated traditional land management challenges; the categorization of planning institutions under different parent institutions, the syndrome of planning chasing development and the government of Ghana's housing policy. The study has revealed that the resultant

physical development which emerges through the interplay of these factors has many negative effects on the residents of peri-urban areas. These adverse consequences include loss of agricultural land, lack of access to utility services, incidences of flooding, unregulated conversion of land uses, poor internal circulation and traffic congestion.

The study therefore recommends the strengthening of planning institutions, effective coordination and collaboration between planning institutions and the application of the tenets of settlement growth management. The growth management approach has the potential of foreseeing the rapid development which characterizes peri-urban areas as result of fast urbanization and make provision for it. Consequently, this has the tendency of reversing the trend of 'planning chasing development' into 'planning directing and managing development' in peri-urban Abuakwa. Concomitantly, the adoption and implementation of the settlement growth management approach will promote orderly physical development in the urban fringes and create liveable, functional and sustainable peri-urban areas.

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