The environmental impact of rapid urbanization in the peri-urban area of Accra, Ghana

Paul William Kojo Yankson & Katherine Venton Gough

Abstract

Like many African cities, Accra has experienced rapid urban growth in recent decades. This paper focuses on the changes taking place in the peri-urban area of Accra where urban development is occurring both within and around the indigenous villages. The impact of rapid urbanization on the physical and residential environment is illustrated and the implications of these changes for environmental management discussed. It is shown how the peri-urban area has been neglected in development plans with severe consequences for the environment. There is a need for a greater awareness of environmental issues and increased co-ordination between the various actors involved in urban development.

Keywords

Urbanization, environmental management, peri-urban, Accra, Ghana.

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Urban growth in sub-Saharan Africa is mainly taking place in an unplanned manner creating sprawling low-density development and uneconomic use of environmental resources. Most urban areas in the region are faced with deteriorating environmental conditions and a weak public sector unable to provide adequate services (Stren and White, 1989; Nordberg and Winblad, 1994; Peil, 1994). Ghana is no exception and most residential areas are characterised by poor environmental quality (Tipple and Korboe, 1995). Concerns for urban environmental problems and health risks in Accra, the capital city, have recently been expressed forcefully (Benneh et al., 1993; Songsore and McGranahan, 1993). The poverty of the urban environment has been blamed on a number of factors, not least on the inefficiencies of the public sector service delivery agencies and ineffective urban governance (Yankson, 1995).

As cities expand rapidly, the rural-urban fringe becomes a zone of interaction where urban and rural forces meet and competition for land and other natural resources between newcomers and old communities arises (Beesley, 1993). The fringe zone is characterised by mixed land uses, where rural activities and mode of life are in rapid retreat and many forms of urban land use are being established (Thomas, 1990). This can have severe consequences for the environment in these areas. In Ghana, the few existing studies on urban fringe zones have focused on land-use change in peri-urban Accra (Møller-Jensen and Yankson, 1994; Kufogbe, 1996), the land market in peri-urban Accra (Kasanga et al, 1996), and the land and housing market in the fringe areas of Kumasi (Edmundson, 1996). The consequences of rapid urbanization on the environment (both built and non-built) of the peri-urban area of Accra, and the challenges these pose for environmental management have not been studied.

This paper focuses on the impact of rapid urbanization on the physical and residential environment of peri-urban Accra and the implications of these changes for the environmental management of urban fringe areas. The paper is guided by the following key questions. What are the effects of the rapid physical expansion of the city of Accra on land cover and land use in the peri-urban area? How is the physical environment affected by these changes? How

is the residential environment of the old villages and the newly developing areas in the fringe zone changing? What are the challenges of these changes for the environmental management of the peri-urban area? The paper is divided into several sections. In the next section, urban planning and development in peri-urban Accra are outlined and the study settlements presented. The changes in the physical environment, especially land cover and land-use changes, are then discussed. In the subsequent section, an analysis of the changes in the built environment, including service needs and provision, are presented. The major environmental problems and the ways in which these are being tackled are then discussed. The final section summarises the conclusions and outlines some recommendations for the environmental management of the peri-urban area of Accra.

Peri-urban Accra

Accra was founded as a fishing village by the Ga in the 16th century, but after being chosen by the British as the seat of their administration in the late 19th century it began to grow rapidly. By 1984, Greater Accra Metropolitan Area (GAMA) had a population of almost a million, which is estimated to be approaching two million today. The stagnation of the economy in the 1970s and early 1980s resulted in the breakdown of service provision and the deterioration of the existing infrastructure. Since the implementation of an Economic Recovery Programme in the middle of the 1980s, however, the economy has recovered somewhat. Construction activities have boomed since the early 1980s, particularly in the fringe zones of Accra where new residential neighbourhoods have sprung up virtually overnight. Areas of land, which two decades ago were used for agricultural purposes, have now been almost completely covered with new physical structures (Fig 1). In the process, some old indigenous villages are now encircled by new developments, though they remain distinct in terms of their form and the quality of their physical structures. The land tenure system in Ghana is highly complex as a result of being shaped by both customary land laws and the British Conveyancing System (Larbi, 1995). In Accra, stools, represented by a chief and elders, hold land in trust for the subjects of the stool in accordance with customary law; any member of the stool has the right to use the land but the rights are only usufructory (Quarcoopome, 1992).

Figure 1: Newly developing area in peri-urban Accra.

The chiefs and elders, however, are increasingly selling plot leaseholds in peri-urban Accra to non-indigenous people mainly for building purposes.

Ghana does not have a strong tradition of physical planning nor an effective urban environmental management system. During the colonial era, physical planning activities occurred only in the areas where the colonial administrators and expatriate personnel lived. Beyond those areas, the city developed in a disorderly manner creating a fragmented urban structure and a totally uncontrolled urban development pattern (Larbi, 1996). This pattern of uncontrolled urban development in the centre of Accra is now being repeated in the peri-urban area due to a continuing lack of planning and effective development control measures.

The Town and Country Planning Department (TCPD) is responsible for the formulation of goals and standards related to the use and development of land, and the preparation of comprehensive development plans and proposals to direct growth and development (Ministry of Local Government, 1992). Under the Town and Country Planning ordinance of 1945, the physical planning for an area begins with a declaration by the minister responsible that a particular area is a statutory planning area. A planning committee is then appointed to provide the minister with information regarding an area's present and future planning needs. The TCPD proposes a scheme that is discussed with the affected land owners, the community, expected beneficiaries, and state agencies. No person is permitted to carry out any development in an area until a final scheme has been approved by the minister. In practice, however, the TCPD does not have the necessary re-

sources to fulfil the role allotted to it and is unable to prepare all the planning scheme layouts required. Furthermore, the procedure for processing applications is very bureaucratic resulting in many planning schemes being out of date before they are even approved. Consequently, much of the development of peri-urban Accra is taking place before any planning schemes have been prepared.

The local government system of district assemblies, which was established in 1988, forms the basic unit for planning and development at the district level in Ghana (Crook and Manor, 1995). The primary role of the district assemblies is being responsible for the overall development of the district including the formulation of development plans and budgets (Mohan, 1996; Ayee, 1997). The district assemblies are tasked with the implementation of basic infrastructure programmes and the provision and maintenance of municipal works and services as well as the development, improvement and management of human settlements and the environment (Ministry of Local Government, 1992).

GAMA comprises three administrative districts: Accra Metropolitan Area, Tema District and Ga District (Fig 2). The boundaries of Accra have been revised several times and the current boundaries of the three districts were fixed in the late 1980s. Despite this, a considerable amount of the urban area of Accra lies outside the Accra Metropolitan Area boundary especially in Ga District. Within Ga District, residential development has occurred in a haphazard, sprawling manner with barely sufficient infrastructure to support it. The area is covered with a large number of houses at differing stages of construction, the completion of which is often affected by a lack of financial resources and land litigation. As well as new house builders, there is also a movement of tenants to the peri-urban indigenous areas in search of cheaper accommodation. Thus, the existing structures in the indigenous settlements are being expanded resulting in increasing densification within the old villages.

To examine the changes taking place in peri-urban Accra, five study sites were selected for the fieldwork (Fig 2). The settlements chosen were located in three broadly defined zones within the urban fringe: the inner zone, where old communities have almost completely been surrounded by urban expansion; the intermediate zone, where land is

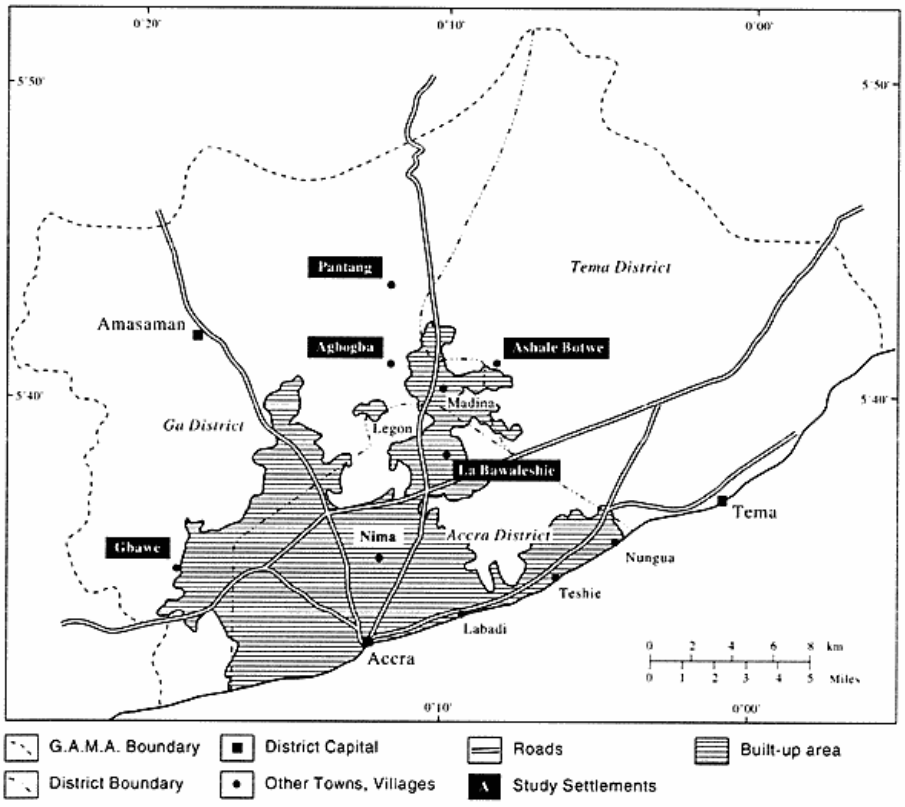

Figure 2: Map of Greater Accra Metropolitan Area showing study settlements.

rapidly being converted to urban uses but there are still tracts of land available for agriculture and future urban expansion; and the outer zone, which is beyond the physical expansion of the city and where the old communities are largely rural in character. La Bawaleshie, located on the northern edge of the legal boundary of AMA, was chosen to represent the inner zone. Ashale Botwe, Agbogba and Gbawe were chosen to represent the intermediate fringe zone and Pantang was chosen to represent the outer fringe zone. These communities were established between 150 and 250 years ago by indigenous Ga who moved from the coastal settlements of Ga, Labadi and Teshie to settle in the rural hinterland (Gough and Yankson, 1997). The number of houses in the settlements today ranges from 48 in Pantang to 154 in Gbawe, the average size being 84 (Table 1). The average number of households per house was 3.4
and the total number of inhabitants in all the settlements studied was over 4,500.

In each of the five areas, both the indigenous settlements and the newly developing areas were studied using a range of methodologies. As the latest official census survey in Ghana dates back to 1984, a census survey of all the housing units and households in the old villages was conducted. A random sample of households was subsequently selected for a questionnaire survey of 233 households; a 20 percent sample was taken in La Bawaleshie, Ashale Botwe, Agbogba and Pantang, whereas in Gbawe a 15 percent sample was taken due to its larger population. Focus group discussions were held with the chiefs and elders, the women's groups and the youth groups in the old settlements, and with the residents' associations in the newly developing areas. Questionnaire surveys of 80 new land acquirers and 40 caretakers in the newly developing areas were also carried out. Furthermore, in-depth case histories of individuals in the old villages were conducted. Interviews were also held with officials in the planning authorities at the district and national level, as well as with relevant service agencies.

Settlement	*Number of houses*	*Number of inhabitants*	*Households per house (mean)*
La Bawaleshie	*77*	*1061*	*4.1*
Ashale Botwe	*65*	*605*	*2.3*
Agbogba	*74*	*734*	*2.8*
Gbawe	*154*	*1662*	*3.2*
Pantang	*48*	*486*	*3.0*
All settlements	*419*	*4548*	*3.4*

Source: Census survey of the old villages, 1996.

Table 1: *Size and population of the study settlements.*

Changing physical environment and land use

Urban growth inevitably has severe consequences for the physical environment, especially in the fringe areas where land-use change is rapid. The land around the old villages in the peri-urban area of Accra used to be covered with forest but much of this has been cleared over the years, initially by local community members for agricultural purposes and firewood harvesting, and later by newcomers who acquired land for residential purposes (Fig 3). The extent to which the vegetation has been degraded varies, with villages closest to the built-up urban areas having lost a greater amount of vegetal cover (such as La Bawaleshie) due to more intense pressure on the land than in villages located farther away from Accra. Bush fires caused by hunters pursuing rodents during the dry season and by farmers preparing their fields for cultivation just before the onset of the rains are another major cause of vegetal degradation.

Fuel wood harvesting has also been a major cause of the decrease in the number of trees in the periphery. Wood fuel is still used as the principal source of cooking fuel by 90 percent of the residents of the old villages with just over a third of these using firewood, the remaining two-thirds now being dependent on charcoal. Women have traditionally collected the firewood themselves. Increasing urbanisation and deforestation, however, have increased the distance that the women have to go to collect the

Figure 3: *Few trees remain in peri-urban Accra.*

firewood to between one and three miles from their villages. Firewood harvesting and charcoal production were previously important income generating activities for farmers during the dry season but these have been rendered virtually impossible now due to the shortage of trees. To a great extent, dealers have now taken over the supply of firewood and charcoal.

The adoption of Christianity and the subsequent demise of many traditional beliefs have also contributed to the reduction in the number of trees in the peri-urban area. In the past, all of the indigenous villages had several sacred groves where they had their fetish shrines. People were not allowed to enter the groves hence the vegetation was left untouched. These taboos served as a means by which the traditional societies conserved their environmental resources. Today, however, only a few of the sacred groves are left. Gbawe was the only study site which reported that they still have several sacred groves where customary rites are performed during certain periods in the year.

The rapid urbanisation of the fringe zone has led to a shortage of land for farming and residential purposes for the inhabitants of the old villages. In the past, the villages were surrounded by land which was devoted almost entirely to agricultural pursuits. However, land for farming has become scarce for most of the indigenous people living in the inner and intermediate zones of the periphery. This coupled with an inadequate and unreliable rainfall pattern, the high incidence of bush fire, a reduction in soil fertility, and hence low yields has seriously affected farming which is the traditional occupation of the people. Farming as an occupation has thus declined, mainly because of the increasing inaccessibility of land for farming purposes around the villages. La Bawaleshie, for example, does not have any more land for farming purposes since most of their land holdings have been acquired by the government or sold to private individuals. The few remaining farmers in La Bawaleshie are farming land that belongs to public institutions but which is currently lying fallow. In the other study sites, and particularly in Pantang, some land is still available for farming purposes. This land, though, is today located farther away from the villages, which was the reason given by some elderly farmers as to why they no longer farmed. The increased pressure on land means that it can no longer be left fallow. As the farmers rarely have the necessary resources to intensify their cultivation practices, the fertility of the soil has suffered, yields are low and farming has become unattractive particularly to the young people of the villages.

In the words of the chief and elders of Pantang:

> *'In the past there was forest and big trees but now the forest is no longer here. The big trees too are missing. The land is becoming grassland. The strangers who have acquired the land also develop their sites and have cut the trees to build their houses. Bush fires are also destroying the forests. There is pressure on farmers. In the past the farmers were shifting from place to place thus leaving the land to fallow because there was more land. The place was left for 6 or 7 years so that by the time you returned to the old place the trees had grown and there were always forests. Now more farmers are using the same site continuously'.*

A considerable number of the residents of the indigenous villages now find employment in stone- and sand-winning activities. Some residents approach the chief and elders to request for land on which they can extract stone and sand, while others work on a daily basis extracting sand and stone for someone else who has obtained permission. The government has designated specific areas where sand and stones can be extracted but despite these restrictions, indiscriminate sand-winning activities continue clandestinely. In some areas, such as in the hills around Gbawe village, these activities have resulted in scars in the landscape and subsidence. Rain water collects in the pits, which have become breeding grounds for mosquitoes and dangerous reptiles. Uncontrolled sand winning also deprives the land of fertile soil for agricultural purposes and aggravates the problem of the loss of vegetal cover of the land. Once the surface has been exposed, the soil is washed away resulting in the silting up of streams and ponds. Some of the major rivers, such as the River Densu, which drains Ga District, are faced with severe problems of degradation partly as a result of siltation. Soil erosion has also become a severe problem in the old settlements where lack of drainage facilities results in the roads often becoming rivers after heavy rain. Consequently, some of the houses end up with their foundations considerably higher than the level of the street. The new townships are not devoid of the problems of soil erosion, but the problem is not as severe as more of the vegetation cover remains.

Some ponds, which were previously used by inhabitants of the old villages as a source of water and fish, have now either dried up or been drained for housing development.

Water courses have also been diverted or blocked through the construction of houses. Houses have been built in areas liable to flooding after heavy rains and in wet lands that were previously sanctuaries for birds and other wildlife. These activities have compromised the ecological integrity of the areas. These changes in the environment have had severe consequences for animal life in the area. With the destruction of their habitats, many birds and animals of different species are no longer seen in the peri-urban area.

Changing built environment

Rapid urbanisation in the rural-urban fringe affects not only the physical environment but also the residential environment. Within the old villages, especially those located close to the built-up area, there has been an appreciable amount of transformation of the housing stock. This has taken the form of some households rebuilding their houses with more permanent building materials, for example, sandcrete instead of mud. Others have extended their compound houses in order to provide extra space for household members or for rental purposes. A few new houses have also been built within the old settlements, but there is increasingly a lack of space which can be used for the expansion of the indigenous villages as much of the land has been sold leasehold to new land acquirers. These land transactions have led to the development of new residential areas, which in some cases now entirely surround the old villages.

As the peri-urban area becomes increasingly urbanised, the ways in which the environment can be used, as either a source or means of disposal of services, changes. Here, three of the most essential services will be dwelt on: the changing nature of the water supply, the mode of liquid waste disposal, and solid waste disposal.

Water supply

A supply of water, which is easily accessible, potable, and affordable, is a prerequisite to good hygiene and sanitation and hence central to the general welfare of a household. In the past, the inhabitants of the indigenous villages relied on streams and ponds for their supply of water. With increasing urbanisation, these sources have in most cases either become polluted or have dried up resulting in the inhabitants seeking alternative sources. In theory, much of peri-urban Accra should be supplied by piped water, but in practice this supply is very poor. In several areas, the pipelines that have been lain are too small in diameter to carry the amount of water demanded. Even where the pipes are of an adequate size, the demand for water exceeds the supply to such an extent that the pressure is so low that the water does not flow. As a result, some of the peri-urban areas are only served by water one day a week and others not at all. Of the settlements studied, La Bawaleshie and Gbawe have a relatively reliable water supply, but Ashale Botwe, Agbogba and Pantang have an acute water supply problem.

The main source of water thus varied between the settlements. In La Bawaleshie and Gbawe, all the households interviewed obtained their water from a tap. However, only a few (approximately 3 percent) of these households had the exclusive use of a tap with an additional 10 percent having a tap in their compound. Most households bought water from the few households who had their own tap, hence had to go outside of their compound to fetch water. In Ashale Botwe, the main water supply for almost all the households was water sold from privately owned, large storage containers, which were regularly filled from tankers. For three-quarters of the population of Agbogba, their main water source was still a stream, but this was often supplemented by water bought from private taps in houses in the newly developing area. In Pantang, for the majority (84 percent) of households, their main source of water was a nearby pond, though this was often supplemented by water bought from a private vendor who sold treated water. These changes have resulted in the vast majority of the households in the indigenous settlements (85 percent) no longer having access to a free supply of water, but now having to pay for their water, usually by the bucket or container. Those who rely entirely on natural water sources run a high risk of contracting illnesses if they do not boil the water before drinking it, as the sources are polluted.

In the new residential areas, the inhabitants fared rather better. Two-thirds of the new house owners had private taps in their homes, 18 percent obtained water from private taps in other nearby homes and 16 percent purchased water from private water tanker operators. Many of the new house owners complained, though, that their water supply was very unreliable. Households in the indigenous settlements and the newly developing areas paid a remarkably similar amount on a monthly basis for water, despite the consumption of the former being considerably less, as it is

more expensive to pay for water by the bucket than for metered piped water. As Benneh et al. (1993) found, poor households end up paying the highest price for their water.

Liquid waste disposal

In rural settlements, the bush can be used for the disposal of human waste, however, as areas become increasingly urbanised, this possibility rapidly diminishes. In urban areas, the adequate disposal of human waste is essential to maintain public health and the quality of the environment. Most of GAMA does not have adequate sanitation facilities (Ministry of Local Government, 1992). None of the houses in the peri-urban area are attached to a mains sewerage system and the facilities available vary widely between the settlements. In Ashale Botwe and Gbawe where improved pit latrines (KVIPs) have been constructed, they are the toilet facility used by the majority of inhabitants (Table 2). Despite La Bawaleshie being the most centrally located of the villages studied, most households still use pit/pan latrines as no KVIP has been constructed in the area. In Ashale Botwe and Pantang, the toilet facilities are even more limited and the majority of the inhabitants use the 'free range' mode.

Almost half of the houses in the newly developing areas have flush toilets that empty into septic tanks in the garden. Almost 40 percent, though, are still dependent on pit/pan latrines while a few use the free range system. Most of the houses will eventually have flush toilets but as many of the houses lack an adequate water supply they have yet to obtain them.

In the indigenous settlements, sullage waste from body washing and the washing of utensils and clothes is usually just thrown onto the ground where it is either channelled into a roadside ditch or forms its own cesspool (Fig 4). Stagnant sullage pools often result which become the breeding ground for mosquitoes and let off unpleasant odours.

Settlement	*Flush toilet*	*KVIP*	*Pit/pan latrine*	*Free range*	*Sample size*
La Bawaleshie	*1*	*4*	*65*	*30*	*54*
Ashale Botwe	*-*	*75*	*22*	*3*	*27*
Agbogba	*-*	*12*	*20*	*66*	*42*
Gbawe	*1*	*90*	*7*	*1*	*29*
Pantang	*-*	*-*	*31*	*69*	*71*
New housing area	*47*	*12*	*37*	*3*	*80*

Source: Questionnaire surveys, 1996

Table 2: *Type of toilet facility used by settlement (percent).*

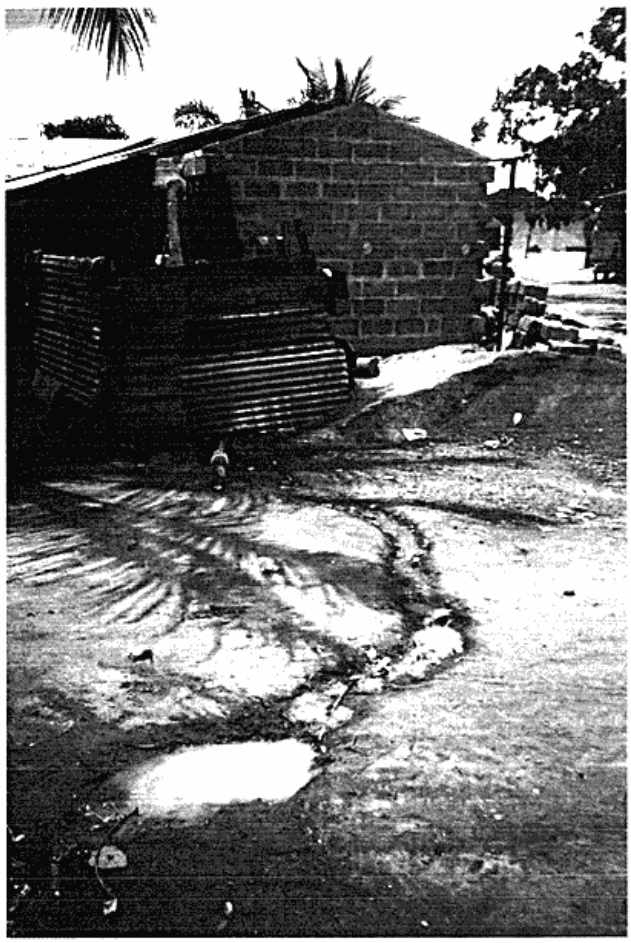

Figure 4: *Sullage water from a house in La Bawaleshie.*

Solid waste disposal

As areas become increasingly urbanised, the spaces which can be used for the disposal of solid waste become fewer at the same time as the amount of waste created by the inhabitants tends to increase. An efficient system of solid waste disposal is, therefore, essential for the maintenance of a healthy urban environment. In Accra, only 5 percent of houses have their waste collected by the Waste Management Department of AMA. The bulk of the population has to take their waste to containers at sanitary sites that are supposed to be removed daily by trucks (Ministry of Local Government, 1992). In Ga District, there is no comprehensive waste disposal system operating. In the old villages, solid waste is most commonly dumped on empty lots or fields located around the villages (37 percent of households), while 30 percent of households deposit waste at official dumping sites (Fig 5). In the newly developing areas,

Figure 5: Empty land littered with garbage.

about 10 percent of households pay to have their solid waste collected by private collectors but most (35 percent) burn their solid waste whilst 20 percent throw it on empty lots and fields especially on underdeveloped plots.

The edges of the old villages are littered with non-degradable waste, which is not only an eye-sore but also a potential health hazard. With the rapid urbanisation of both the old villages and the new areas around them, a more acceptable and safer means of waste disposal will have to be found as there will soon be no empty space to support the waste disposal system currently being practised.

Management of environmental problems

The inhabitants of the indigenous settlements were asked what they considered to be the most pressing environmental problems in their communities. As Table 3 shows, the provision of basic services, especially water and toilets, are their most pressing environmental problems. It is notable that almost all of the women's groups mentioned lack of pipe-borne water as being their major problem; this is due to the fetching of water being their responsibility. The poor standard of many of the roads was especially mentioned by the chiefs and elders. The problem of solid waste disposal is noticeable by its almost complete absence, which reflects both the lack of knowledge of the health hazard posed by rotting waste, and the inhabitants being faced with more pressing problems.

As outlined above, responsibility for managing the environment and providing services is split between national level agencies and local level government. Here, the attempts being made to tackle some of these problems by both state institutions and the residents of peri-urban Accra will be outlined.

State institutions

Much of peri-urban Accra lies within Ga District Assembly, which is responsible for the development of the district including the provision of services at the local level. The main priorities of the assembly have been the provision of health and education, with 60 percent of the budget being spent on rehabilitating and building schools. Consequently, Ga District Assembly is doing very little in terms of the provision of services, such as water, roads, drainage, waste disposal and electricity.

The assembly claims that it has had to limit its involvement in the provision of services due to its inability to mobilise adequate funds. Though the assembly collects development fees from new developers, the funds raised in this way are only sufficient to cover recurrent rather than capital expenditure. Moreover, the assembly has not been able to reach an agreement concerning the collection of development levies from the land-owning stools and families that sell plot leaseholds in the district, which further limits its financial base. There is also a shortage of manpower in the district assembly, which coupled with the lack

Settlement	*Chiefs and elders*	*Women's groups*	*Youth groups*
La Bawaleshie	*No farm land, toilet, drainage, roads*	*Pipe-borne water*	*Toilet*
Ashale Botwe	*Pipe-borne water*	*Pipe-borne water*	*Pipe-borne water*
Agbogba	*Pipe-borne water, toilet, road*	*Pipe-borne water, toilet*	*Pipe-borne water, toilet*
Gbawe	*Poor roads*	*Toilets, streets, drainage*	*Waste disposal, toilets*
Pantang	*Lack of rain, bush fire, toilet*	*Pipe-borne water*	*Pipe-borne water*

Table 3: Most pressing environmental problems in the study settlements
Source: Focus group discussions, 1996.

of co-ordination of plans and programmes of development agencies, have resulted in the enforcement of development control being generally ineffective. No master plan has been developed for Ga District and the structure plan for GAMA does not contain a clear policy to guide the development of the peri-urban area (Gough and Yankson, 1997). Many of the environmental problems of the peri-urban area are, therefore, not being dealt with by Ga District Assembly, which maintains that the central government agencies must tackle these issues.

The supply of water and disposal of sewage are the responsibility of the Ghana Water and Sewage Corporation (GWSC) which is facing severe constraints in its attempts to meet the increasing demand for water within GAMA. There is a plentiful water supply from the Volta and Weija Dams but the capacity of the treatment plants are insufficient to meet the demand for water and as most of the pipelines are in very poor condition, transmission loss rates are high. This has resulted in the urban fringe experiencing either a very sporadic flow of water through the pipes or none at all. GWSC is aware of the water problems in peri-urban Accra but admits that some areas in the periphery are not likely to get a reliable supply of water for a long time.

The Electricity Corporation of Ghana (ECG) is responsible for supplying the country with electricity. A National Electrification Programme was launched in 1990 that aims to extend electricity to all corners of the country by the year 2020. The pace of the expansion of the electricity grid, however, is not occurring as fast as had been hoped due to a lack of resources and is an extremely political process. There are general problems of poor distribution of electricity, power theft and inaccurate metering and billing. The ECG also has technical problems which render the expansion of the electricity supply to the peri-urban communities of Accra difficult; the main lines in Accra are choked and the number of transmission lines has to be increased before the electricity supply can be extended.

The development of the main road network has been the responsibility of the Department of Urban Roads, but this responsibility is being transferred to the district assemblies. In many of the newly developing areas, including high-class residential areas, the roads are either non-existent or are in very bad condition; most have not been paved and many are not properly aligned. The rural network of roads is poorly developed and many previously paved roads have lost their sealed surface and are in varying states of disrepair. Most of the peri-urban communities studied are poorly linked to the rest of the urban area. Within the indigenous settlements there are often no clearly demarcated roads, just a series of tracks and paths. The Department of Urban Roads is also responsible for constructing storm drains along the major roads and the district assemblies are meant to supply secondary and minor drains within the communities, but very few drains have in fact been constructed anywhere. No authority is taking responsibility for constructing and clearing the local drains, many of which are open sewers and a major health hazard.

Peri-urban residents

The residents of peri-urban Accra have become increasingly aware that the environmental problems they are facing are not being adequately dealt with by the state authorities. They are, therefore, attempting to tackle some of these problems themselves.

In the indigenous villages, Town Development Committees, comprised of representatives of the chiefs and their elders, youth groups, and women's groups, have traditionally been responsible for environmental management in the community. Although these committees have often been responsible for the maintenance of communal facilities and a clean environment, they have rarely been actively involved in service provision as previously this was not necessary. Many inhabitants now consider it to be the assemblyman/woman who should be responsible for solving the community's environmental problems rather than the traditional authorities (Gough, forthcoming) hence many of the Town Development Committees are being disbanded. The assemblymen/women represent the needs of their communities at the district assembly in order to try to channel the assemblies' resources to development projects in their localities, and also organise communal labour, especially the youth, to tidy up the villages and surroundings and to install services. Their success in maintaining a clean environment in the villages is variable and usually dependent on whether they are resident there and how actively they manage to organise the residents.

Most of the homeowners in the newly developing areas belong to the upper- and middle-income brackets. They place a high priority on living in a well-serviced, clean environment and are usually very concerned that the area they have moved to does not deteriorate into a slum. Unlike in the indigenous villages, there is no traditional decision-making group in the newly developing areas. The new land acquirers, therefore, often form their own action

groups called residents' associations. Most of these associations have been formed within the last decade, many of them since the early 1990s as new homeowners realised that they had common problems that they could only solve through their collective efforts. The tasks they perform include: lobbying for the provision of services, actively participating in the provision of services, attempting to ensure that garbage is properly disposed of, attempting to ensure that no-one builds in spaces earmarked for roads or communal areas, policing the area to improve security and reduce theft, acting collectively when trying to obtain documents, and arranging social functions.

Although all of the associations have been successful in improving the services in their areas, including water, drainage, electricity and roads, the degree of their success varies. Some of the groups have had difficulties motivating residents to be active, especially where land acquirers had not yet moved into their houses. It is also often difficult for the associations to share the cost of the installation of services evenly as the residents move into the area at different times. The associations are aware that they cannot tackle all the problems they face alone, hence they try to liase with the appropriate agencies and institutions but often with limited success.

Conclusions and policy recommendations

The environment of the peri-urban area of Accra has changed dramatically during the past few decades. There are far fewer trees today as land has been converted to agricultural and more recently residential use. Water courses have been altered, ponds have dried up and erosion has increased. These changes to the environment have resulted in a reduction in the variety and number of birds and animals found in the area. There is now an urgent need to protect the natural environment from further degradation.

As the development of the urban fringe area has not been specifically considered in the current structure plan of Accra, the district assemblies, particularly Ga District Assembly, will have to produce a physical development plan to guide the development of the peri-urban area. This will have to be done in close consultation with the landowners, civil society and service delivery agencies. Pressure on land resources will continue to increase in the future and without a framework to structure the utilisation of land resources, a balance cannot be struck between the various competing needs for land. Such a framework should ensure that rich agricultural lands are zoned and reserved to stem the tide of urban encroachment, and that ecologically sensitive areas such as water courses, river valleys and wetlands are protected from further destruction. The district assemblies, the various communities in the peri-urban area, and NGOs could all help combat environmental degradation by mounting educational campaigns on the need to protect the environment. For example, anti bush fire campaigns can help reduce the incidence of bush fires and lead to the implementation of community afforestation programmes. These programmes can help reduce soil erosion and the siltation of rivers, streams and ponds, which are important sources of water for livestock and for domestic use.

The residential environment has also undergone severe changes. As the areas surrounding the indigenous villages are increasingly urbanised, their traditional sources of water and modes of liquid waste and garbage disposal are no longer sustainable. Both the indigenous villages and the newly developing areas are inadequately serviced today. The water supply, or rather lack of one, is the most acute problem for many residents of peri-urban Accra. The extent of the problem varies between areas in the urban fringe but is shared by new and old residents alike. However, those who end up paying the highest price for their water are the poorest households who buy water by the bucket. It can be hoped, though it is by no means certain, that the current re-organisation of GWSC, with increased private sector participation, will lead to improved services.

There is also a very real need for the provision of public toilets in the indigenous settlements as the traditional free-range mode is no longer a viable option. Likewise, the current system of disposing of waste on empty land can no longer be sustained. A more acceptable and safer means of waste disposal needs to be introduced. This should be supplemented by a culture of waste disposal which would have to be supported at a community level rather than a high authority level. The electricity supply is also inadequate in many areas and beyond the price range of most poor households who continue to rely on firewood and charcoal as their main sources of cooking fuel. Women now have to travel much further in search of firewood than in the past and in the long run the use of wood fuel is unsustainable. The possibility of using other forms of energy, such as biogas or liquified petroleum gas, needs to be explored and promoted.

The responsibility for service provision is shared between national level agencies and the local level district assemblies. The precise division of their responsibilities, however, is not always clear. There is a lack of co-ordination between the departments involved, but all of them suffer from inadequate resources. The capacity of the district assemblies needs to be enhanced in the planning, development and provision of environmental services. This should be supplemented by increased inter-district co-ordination, especially in the case of waste management, and technical support needs to be sought by the district assemblies from the appropriate state agencies.

As the needs of the peri-urban communities have not featured in any development plans, new actors have emerged in the field of service provision in the peri-urban area. In the indigenous villages, people are turning more to the assemblymen/women to solve their problems rather than the traditional authorities. The new land acquirers have established residents' associations which fulfil a range of social, economic and practical functions. One of their major roles is to actively participate in service provision, both financially and manually. Their efforts to improve the residential environment need to be recognised and supported by both the service providing agencies and the district assemblies.

The peri-urban area of Accra has been neglected by planners and aid agencies alike with severe consequences for the environment. As there are very few studies of the peri-urban areas of other African cities, it is difficult to know what the consequences of urbanisation on the environment are elsewhere. However, it is generally applicable that the needs of peri-urban areas should be recognised as it is much easier to plan in advance than solve problems later on. Although the needs of some inner city areas may appear more pressing at the moment, unless the problems being faced by the residents of the urban fringe are tackled now, they too in time will become problems on a massive scale.

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