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Sanitation: A drawback to achieving the Millennium Development Goals? The situation in Ghana

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Abstract

In sub-Saharan Africa, socio-economic development tends to generate all kinds of sanitation problems which in turn lead to unhygienic and poor health conditions. This means that improvement in sanitation has direct effects on human health and productivity. However in Ghana, basic sanitation coverage in 2010 was about 14 per cent, although the country is expected to achieve 54 per cent coverage in basic sanitation by 2015 (Target 10 of MDG 7). This paper examines the implications of low sanitation coverage in Ghana using secondary data from GDHS, 2008, GLSS, 2008, 2006 Multiple Cluster Indicator Survey (MICS) and other relevant sources. The paper adapted the transmission pathways of faecal-oral disease as its conceptual framework. The results indicate that poor sanitation is prevalent in most communities in Ghana due to low coverage of improved sanitation facilities. Access to improved sanitation at the household level is based on affordability (neo-liberalism) which the poor cannot afford. Consequently, sanitation-related morbidity and mortality are common among the poor who must pay a higher fee for ill-health. With poor health status, productivity is lowered and the vicious cycle of poverty is entrenched. The provision of improved sanitation facilities that separate faeces from human contact and good hygiene practices are the two most effective ways to reduce ill-health due to poor sanitation. This paper has policy implications on the quality of the population and human capital development which is one of the four thematic areas of government's development agenda.

Keywords: Sanitation, MDGs, Health, Neo-liberalism, culture, Ghana

Introduction

Sanitation refers to the principles and practices relating to the collection, removal or disposal and treatment of human excreta, refuse, household wastewater, drainage of storm water and treatment of industrial effluent as they impact upon people and the environment (Adubofour, 2010). It has been observed that globally, sanitation coverage does not keep pace with population growth. For instance, it has been noted that in the 1990s, about 1.7 billion of the world's population were without sanitation but this increased to 2.5 billion in 2012 (Whittington et al. 1993; WHO and UNICEF (2012)). It is estimated that in Sub-Saharan Africa, only 36 per cent of the population has access to basic sanitation (UNICEF et al. 2004). Also, Adubofour (2010) observes that over the period 1990 – 2006, although 146 million people in Africa gained access to sanitation, the number of people without sanitation increased by 159 million, from 430 million in 1990 to 589 million people in 2006 and this was due largely to population growth and urbanisation (WHO, 2008).

To meet the MDG for sanitation alone implies that sanitation must be provided for approximately 2.1 billion people in the world from 2002 to 2015 when adjusting for population growth. In order to provide toilets for 2.1 billion people over 13 years requires a minimum of 44,300 installations per day for 13 years (assuming one toilet for every 10 people) (UN Millennium Project 2005).

Sanitation is one of the key drivers of a nation's development as it affects the quality of life and productivity of the population. Poor hygiene and sanitation practices pre-dispose the population to avoidable diseases which exact a heavy toll on productivity. Diarrhoea is a major cause of infant and child morbidity and mortality. Poor hygiene, poor health and low productivity combine to entrench poverty in already low or no income communities in the developing countries. In Ghana, for example, it has been estimated that labour loss each year due to productivity losses whilst sick or accessing healthcare or absence from work or school

due to diarrhoea and time spent caring for children under-5 diarrhoea or other sanitation-related diseases amounts to USD1.5 million (Quansah, 2011). Also, it has been noted that 70 per cent of all Out-Patient Department (OPD) cases are sanitation related. Furthermore, sanitation and water quality are linked such that poor sanitation leads to water contamination and the incidence of various water borne and water washed diseases (UNICEF et al. 2004). In this respect, Chadwick has observed that ‘better sanitation is a good investment and prevention of diseases could offer greater benefit than the building of hospitals to treat those diseases’ (Lee & Mills, 1983 in Antwi, 2008). Kendie (1992) observed that provision of safe water points did little to reduce the occurrence of water and sanitation related diseases in the Upper West and Upper East regions. So, the issue of the sanitary handling of the water (which is an attitudinal issue) becomes important in the prevention of these diseases.

In the year 2000, the United Nations adopted eight goals and 18 time-bound targets known as the Millennium Development Goals (MDGs) as indicators for measuring socio-economic development of countries. It has been observed that improved sanitation coupled with access to safe drinking water and better hygiene will accelerate progress towards achieving a number of the MDG goals, particularly MDG 4, target 5 (reduce under five mortality rate by two-thirds between 1990 and 2015; MDG 5, target 6 (reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio) and MDG 7, target 10 (halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation (World Bank, 2003).

Although Ghana has already achieved MDG 1, i.e. ‘reduce by half the proportion of people whose income is less than one dollar a day by 2015’, and is also on track to achieving the MDG on access to improved drinking water by 2015, it is off target in achieving the health-related MDGs (MDGs 4, 5 and target 8 of Goal 6) by 2015 especially considering the poor basic sanitation situation. For example, data from the GLSS -5 indicates that about 20 per cent of all households in Ghana do not have access to toilet facilities, about 10 per cent of households used flush toilets, 1.3 per cent had access to KVIP whilst three out of ten and about four out of ten used pit latrine and pan/bucket respectively (UNDP, 2009). On access to improved sanitation facilities in Ghana, the national coverage increased from 4 percent to 12.4 percent between 1993 and 2008. Among urban populations, improved sanitation coverage increased by about 8 percent appreciating from 10 percent in 1993 to about 18 percent (17.8 per cent) in 2008. For rural populations, improved sanitation coverage increased from 1 percent to 8.2 percent between 1993 and 2008 (WSMP, 2009). Ghana has achieved the first target of the MDG 1 (reduce by half, between 1990 and 2015, the proportion of people whose income is less than one dollar a day) and also attained a Lower Middle Income status in 2010 after the rebasing of the economy. However, what are the prospects for sustaining these achievements in the face of the rather low sanitation coverage? The objectives of this paper were to:

- assess the status of sanitation in Ghana vis-a-vis the MDGs,
- outline trends of sanitation-related morbidity and mortality in the country, and
- examine the implications of poor sanitation to the achievement of the MDGs and the overall socio-economic development of the country.

The paper used secondary data from Ghana Statistical Service publications such as the Ghana Demographic and Health Survey (GDHS) reports and the Ghana Living Standard Survey reports (GLSS). It is structured as follows: the first section examines the institutional framework for sanitation policy planning and development in Ghana. This is essential to show the range of institutions responsible for ensuring liveable environments in the

communities. The second section discusses the conceptual issues guiding the study focusing on the relationship between poor sanitation and hygiene on the one hand and disease causation on the other. These also include the extent to which neo-liberal economic policy does not allow for more effective state intervention in the sanitation sector and how this accounts for the poor sanitation conditions in rural and low income urban communities. Also, examined are the social conditions which lead people to adopt or not to adopt good hygiene practices. A detailed discussion of sanitation in Ghana ensues in the next section and we conclude with a discussion of the sanitation-health-economic productivity nexus.

Institutional framework and policies on sanitation in Ghana

The Ministry of Local Government and Rural Development (MLGRD) published the National Environmental Sanitation Policy in 1999. The policy looks at the basic principles of environmental sanitation, problems and constraints. The membership of the National Environmental Sanitation Board includes the Ghana Health Service /Ministry of Health (GHS/MOH) Ghana Education Service (GES), Ministry of Environment and Science (MES), Environmental Protection Agency (EPA), Representatives of Metropolitan, Municipal, and District Assemblies (MMDAs), Council for Scientific and Industrial Research (CSIR), the Private Sector and Non-governmental Organizations. The MLGRD has also developed a technical guideline document titled 'The Expanded Sanitary Inspection and Compliance Enforcement (ESICOME) Programme guidelines'. The programme guidelines which are implemented by the MMDAs emphasize four broad areas namely; effective environmental health inspections, dissemination of sanitary information, pests/vector control and law enforcement. All MMDAs have developed waste management and environmental health plans to help solve the numerous sanitation problems.

In addition, the national laws, specifically the Criminal Code (Act 29), 1960, and Revised Bye-laws of all the MMDAs have enough laws to support Environmental Sanitation Service delivery and enforce compliance of sanitation rules. It is however noted that these laws are not deterrent enough and logistical problems make MMDAs impotent in ensuring clean, safe and healthy environment. For general waste or sanitation management in the country, the Metropolitan, Municipal and District Assemblies are responsible for the collection and final disposal of solid waste through their Waste Management Departments (WMDs) and their Environmental Health and Sanitation Departments. The policy framework guiding the management of hazardous, solid and radioactive waste includes the Local Government Act (1994), Act 462, the Environmental Protection Agency Act (1994), Act 490, the Pesticides Control and Management Act (1996), Act 528, the Environmental Assessment Regulations 1999, (LI 1652) the Environmental Sanitation Policy of Ghana (1999), the Guidelines for the Development and Management of Landfills in Ghana, and the Guidelines for Bio-medical Waste (2000). All these Acts and Regulations emanate from the National Environmental Action Plan. In effect, Ghana has the laws and the institutions to ensure a safe and liveable environment in her communities. However, as we will demonstrate later, sanitation conditions are poor and hygiene related diseases occur more frequently than is desired. It is important to find out why these problems still persist.

Conceptual issues

Improved sanitation as defined in the MDG refers to the availability and use of facilities that hygienically separate human excreta from human, animal and insect contact. Toilet facilities that constitute improved facilities, according to the World Health Organization and United

Nations Children's Fund's Global Water Supply and Sanitation Assessment 2000 Report, are sewers or septic tanks, pour-flush latrines and simple pit or ventilated improved pit latrines or pit latrines with slab and composting toilets provided that they are not shared by multiple households and the public. Unimproved sanitation facilities include flush or pour-flush to elsewhere, pit latrine without slab or open pit, bucket, hanging toilet or hanging latrine and no facilities or bush or field defecation (WHO/UNICEF, 2008).

In general, poor sanitation leads to water and food contamination. In many parts of the world, the main source of water contamination is due to sewage and human waste arising principally from poor hygiene (UNICEF et al. 2004 in Moe et al. 2006). This paper adapted the transmission pathways of faecal-oral disease by Kendie (2002). The framework has four main transmission components beginning with the disease pathogens or excreta (both human and animals) through intermediary components to the final host or humans (Figure 1). Human excreta contaminates the fingers through direct contact or indirectly through flies, land and water bodies are polluted through surface water sewage systems, non-recycling latrines and animal droppings and all these transmission paths together contaminate food and drinking water. Through both drinking water and food, humans contract all kinds of hygiene-related diseases through food and water contamination. To break the transmission pathways of diseases, improved sanitation coverage has been strongly advocated (see, for example, Adubofour, 2010). Through the safe disposal of human faeces, the pathogen load in the ambient environment can be reduced. The other option Billig and others (1999) recommended is increasing the quantity of water which allows for better hygiene practices. Finally, Kendie (2002) advocates hygiene education to change people's attitudes towards sanitation so as to improve upon the provision, use and care for sanitation facilities.

Personal hygiene, defined as behaviours and practices of keeping oneself and his/her immediate surroundings clean in order to prevent illness or the spread of diseases, has been widely documented in the literature as one of the most effective ways of preventing food and drinking water from being contaminated and by extension the contraction of diseases related to insanitary conditions (Kendie, 2002; Paulete, 2003; UNICEF, 2004; Moe et al. 2006, Adubofour, 2010). Figure 1 shows the faecal oral routes of disease transmission. It shows how disease pathogens can migrate from human and animal droppings through human interaction with poorly kept environments to infect humans and cause diseases.

In a paper titled 'global challenges in water, sanitation and health', Moe et al.(2006) observed from other studies that water quantity and hygiene interventions were associated with a 20 to 33 per cent median reduction in diarrhoeal disease morbidity (Moe et al. 2006). The authors also found in another study on the impact of water supply and hygiene interventions that water supply interventions in developing countries were associated with a 24 per cent reduction in diarrheal disease and hygiene interventions were associated with 42 per cent reduction in diarrhoea morbidity (Moe et al. 2006). Also, Paulete (2003) noted that information collected from twelve hand washing interventions in nine countries resulted in a median reduction of diarrhoea of 33 per cent with the most successful intervention being the provision of soap to mothers. These imply that personal hygiene is an effective intervention for reducing sanitation and water-related morbidity in developing countries.

On assessment of access to sanitation and water based on wealth quintiles at the household level, UNICEF found out that households at the lowest wealth quintile are 5.5 times more likely to lack improved water access and 3.3 times more likely to lack adequate sanitation, compared with households in the highest wealth quintile in the same country (based on

Demographic and Health Surveys in 20 developing countries) (UNICEF et al. 2004). Using household income as basis for analysis for countries in medium and low-income regions, Blakely et al. (2005) conclude that households earning less than US \$1 per day are almost nine times more likely to lack improved water or sanitation compared with those earning more than US \$2 per day.

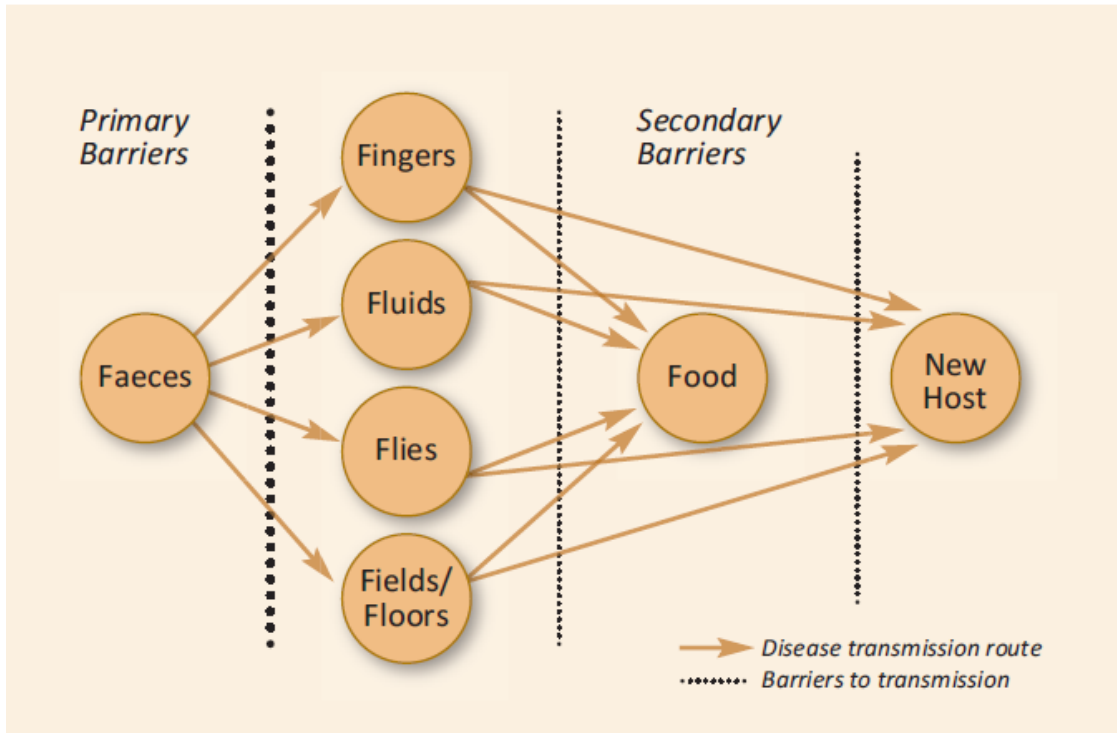


Figure 1: Transmission pathways of faecal –oral disease

Source: Adapted from Kendie (2002)

In general, the provision of adequate clean water and latrines is not effective in themselves in the prevention of diseases and must be backed by basic education on the practice and importance of personal hygiene. As Paulete (2003) opined, by improving sanitation and environmental conditions in the communities and implementing an educational program of health and hygiene education appropriate for the community, the numbers of preventable deaths and illnesses have been shown to reduce. However, it appears that the general direction of economic policy in Ghana is not allowing for much more concentrated attention to household sanitation issues. Additionally, the underfunding of sanitation related agencies especially at the MMDAs reduces the extent of coverage of safe facilities. Educational programmes on sanitation are at best perfunctory; almost ad-hoc and non-existent in many areas.

Neo-liberalism and investments in sanitation improvement

Among other things, neo-liberal economics seeks to promote the development of a free-market economy by eliminating barriers to trade (within and between countries), stimulating the growth of private enterprise and reducing the state’s role in the economy (Aheame,

2009:16 cited from Paris 2004). The free-market economy is perceived as the best way to ensure efficient allocation of factors of production or economic resources in an economy; state intervention will simply distort market forces. By the neo-liberal economic approach, the expectation is that the poor would eventually benefit from the economic growth associated with neo-liberal policies through the 'trickle down' effects (Aheame, 2009).

Since the 1980s the International Monetary Fund (IMF) and the World Bank have, as part of Structural Adjustment Programmes (SAPs) conditionalities emphasized privatization or public/private partnerships in the provision of sanitation facilities and waste management generally. This is derived from the need to reduce public spending to balance the budget, curb inflation and service debt repayments. Other conditionalities were privatisation of state owned enterprises to encourage productive investment and further reduce public spending, deregulation and elimination of protectionism to encourage foreign direct investment (FDI), cutting public subsidies on food and other basic goods to allow the market to set the 'right price', wage restraints and higher interest rates to reduce inflation (Paris, 2004 in Aheame, 2009: 17).

In Ghana, the government adopted the SAP in 1983 and the policy framework included trade liberalization, export-sector support policies, public expenditure policy, public sector reforms, revenue management and privatization of state-owned enterprises (SOEs) through liquidation of the bulk of SOEs via divestiture (Aryeetey and Kanbur, 2008). Through the neo-liberal economic policies, government has privatized waste management services through public-private participation or through outright privatization of refuse collection. But household sanitation was neither privatized nor seen as an issue in the public domain. In rural areas, for example, latrine and excreta provision are left to the individual households. Although the District Assemblies and some NGOs do support household latrine construction through the provision of building materials and skilled personnel, this occurs at a very slow pace because it is not a priority in the District Assemblies' plans. From the perspectives of the free-market enterprise, household latrines have no market value and so are not allocated any resources. The story is similar in urban areas. Available data show that wealthy households are able to provide household sanitation facilities for their exclusive use (see Kendie, 1990, 1992, 2002). However, given that apart from Tema, no city in Ghana has a central sewerage system, human wastes are retained in individual septic tanks which are periodically dislodged and disposed either in the sea or on designated lands. There are two negative implications from this mode of excreta management: first dislodging into the sea encourages poorer households to engage in open defecation on the beaches with the excuse that they get the cue from the city authorities that this is good practice. Secondly, pollution of the land disposal sites is obvious as no further effort is made to prevent run-off.

Poorer households and itinerant visitors including traders in the cities must rely on public latrines which are generally not well kept thereby encouraging defecation in gutters and open spaces; slum conditions do not allocate space for the construction of household septic tanks so that even richer households in these settings have difficulty in constructing household latrines. Sanitation is a public good and because the market will not allocate resources for its provision, state investment is the only alternative. This is so even in the developed countries—the champions of neo-liberalism. In rural areas programmes for poverty alleviation are required to assist households provide household latrines so that the MMDAs and the private sector can concentrate on garbage collection. In the cities, investments in public housing which also provide household latrines are needed to decongest the slums at the same time that programmes in urban poverty reduction are instituted. The private sector is already active in waste collection and management.

We recognise that poor sanitation is as much an economic issue as it is attitudinal. It is economic because of the investments required to provide good facilities capable of breaking the transmission routes. While the investments required for rural communities may be low especially for household improved latrines, the low incomes in these areas make the use of the 'bush' a better economic alternative. Also, while formal education has a positive effect on hygiene and sanitation behaviour, we also recognise that especially for the female population in poor countries, literacy rates are still low which translates into poor knowledge of disease causation. Low incomes and low literacy rates interact to influence hygiene behaviours in negative ways so that children growing up in such environments easily imbibe these behaviours into adulthood. Attitudes towards the use of latrines are related to the level of formal education of the individual (Kendie, 2002).

Belief systems and attitudes towards latrine and latrine usage

In a study titled "*Towards total sanitation: socio-cultural barriers and triggers to total sanitation in West Africa*", carried out in four West African countries — Burkina Faso, Ghana, Mali, and Nigeria--on open defecation in rural communities and the cultural values that reinforce its practise, Dittmer (2009) observed that shame, smell, social status, obligation to host, evil and ancestral practices were the barriers to abandoning open defecation in the study communities. People feel ashamed or embarrassed when they are seen by anybody including their close relatives, walking in the direction of a latrine or toilet. Defecation is seen as a private issue and thus defecating in the bush offers the needed privacy. It also revealed that all respondents in the four countries indicated that living with human excreta was unacceptable because of the offensive smell. For example, respondents from Ghana said they preferred open defecation to latrines because of the unpleasant smell one experiences after using the latrine. In one ethnic group in Burkina Faso, the perception was that latrines are owned by only rich people and that one should not build a latrine even if one can afford the cost. Another view from Burkina Faso, according to the report, was that a guest is obliged to defecate in his/her host's field (and fertilise the crops) as an act of reciprocating whatever food one has eaten from his/her host. Thus, human excreta are perceived as fertiliser and people who cannot afford chemical fertilisers encourage defecation in their fields, as it is a ready and cheap source of fertiliser. Building latrines in some communities is perceived as depriving growers of a useful resource (Dittmer, 2009).

One other predominant view noted in some study communities in Ghana, according to the findings, was the fear of being possessed by demons or losing one's magical powers if one uses a latrine. In one study area in Nigeria, the report indicated that husbands do not allow their wives or daughters to share latrines with them, and that they are not also prepared to pay to build latrines for the use of female family members.

On the concepts of dirt and cleanliness, McConville (2003) opined that these vary from one culture to the other. In most cultures, children's faeces are considered harmless and therefore are not disposed of in latrines. In terms of gender, McConville (2003) noted that in many cultures women need separate facilities from the men, because they need more privacy and will boycott facilities that do not provide adequate privacy. Also, in a study titled '*Linking Water Supply and Hygiene in Northern Ghana*', Kendie (2002) observed that beliefs, attitudes and perceptions which emanate from the socio-cultural milieu or domain are strong barriers to the use of latrines or toilet facilities in the study communities. In other words, socio-cultural beliefs and practices perpetuate the continuous practice of open defecation in

some communities. Attitudes, he concludes, are learned response sets and so can be changed with sustained education.

Sanitation has for long been considered in Ghana as an individual affair (Kendie, 1990). This thinking also permeates official policy leading to the rather low allocation of funds to direct sanitation facility provision in Ghana. The lack of facilities in rural areas and the mountains of garbage in low income urban communities bear testimony to this attitude. Childhood diarrhoea remains a killer in Ghana at the same time that periodic outbreak of cholera is a public health menace. The current economic development philosophy of neo-liberalism does little to improve on sanitation. The next section presents data on the current state of sanitation in Ghana.

Current state of sanitation in Ghana

Table 1 shows that only six per cent of Ghanaians used improved sanitation facilities in 1990 while the rest (94 per cent) used sanitation facilities which were generally regarded as unimproved such as shared (29 per cent), unimproved (43 per cent) and open defecation (22 per cent). The proportion who used improved sanitation in 2008 was more than twice (13 per cent) that of 1990 but more than half of Ghanaians used shared sanitation facilities in 2008 while two out of ten people still used open defecated system or free range. About six out of ten Ghanaians had access to shared sanitation facilities in 2010 while access to improved sanitation increased marginally to 14 per cent. This means that since 1990 less than two out of ten Ghanaians had access to improved sanitation facilities as defined in the MDGs. The MDG target for sanitation coverage is 54 per cent by 2015. Although 2015 is about three and half years away, given the present level of improved sanitation coverage and the predominant use of shared sanitation facilities, there is enough evidence that Ghana cannot achieve the Target 10 of MDG 7 on basic sanitation coverage. Achieving the MDG target for improved sanitation would require an average of six percent coverage per annum between 2008 and 2015 (WSMP, 2009).

Table 1: Sanitation coverage in Ghana

| Year | Improved | Shared | Unimproved | Open defecation |
|------|----------|--------|------------|-----------------|
| 1990 | 6% | 29% | 43% | 22% |
| 2008 | 13% | 54% | 13% | 20% |
| 2010 | 14% | 58% | 9% | 19% |

Source: WHO/UNICEF JMP, 2010

Regional distribution of access to improved sanitation (2008)

Access to improved sanitation in 2008 by region reflects the low national sanitation coverage. Besides the Greater Accra and Eastern regions where access to improved sanitation was above the national average of 13 per cent, the rest of the regions had values less than the national average (Figure 2). In particular, access to improved sanitation in six out of the ten regions is lower than 10 per cent, implying that about one out of ten people have access to improved sanitation in those regions. This means that there is predominant use of unimproved sanitation facilities (shared, unimproved and open defecation) across the country. This has implications for water quality, health and quality of the population.

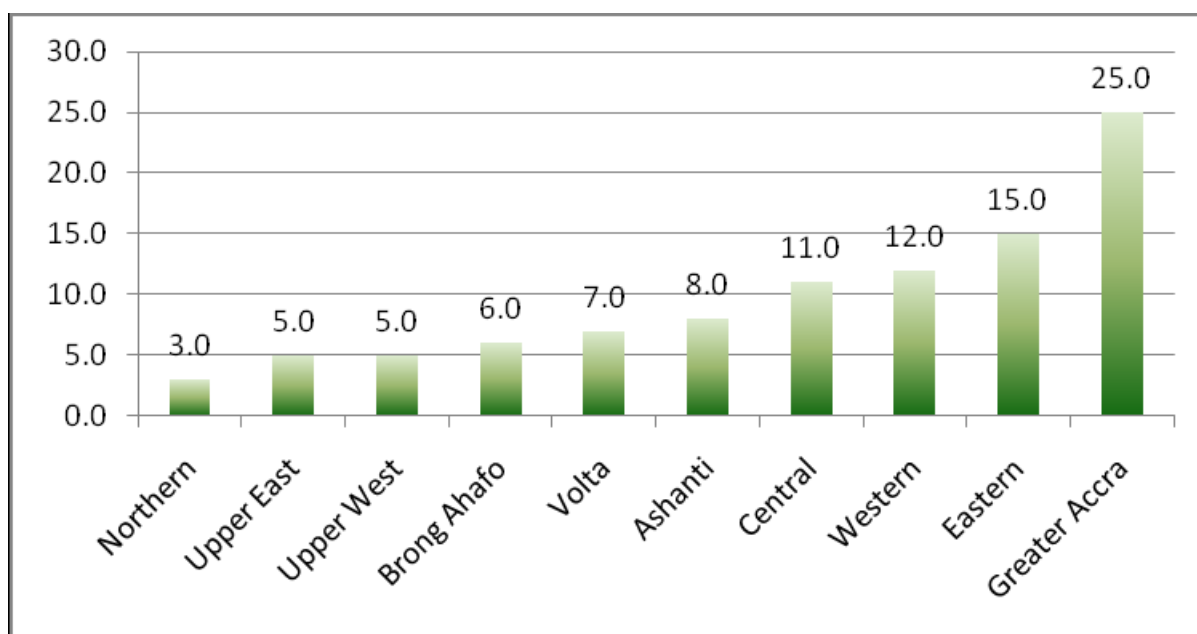


Figure 2: Regional distribution of access to improved sanitation (2008)

Source: NESCON, 2011

Table 2 indicates that both poverty and extreme poverty levels have not only declined nationally by half (from about 40 per cent in 1998/1999 to 18 per cent in 2005/2006) but also all the regions have experienced some decline in the incidence of both poverty and extreme poverty. However, poverty and extreme poverty levels in the three northern regions are still higher than the other regions. For instance, poverty levels in the three northern regions in 2006 ranged between 52 and 88 per cent which is far higher than the national average of 18.2 per cent. These three regions (Northern, Upper East and Upper West regions) also have the lowest sanitation coverage as indicated in Figure 2. It appears that poverty is associated with low sanitation coverage; those who are poor cannot afford the cost of improved sanitation.

Table 2: Incidence of poverty by region and total Ghana

| Region | Poverty | | Extreme Poverty | |
|-----------------|-------------|-------------|-----------------|-------------|
| | 1998/1999 | 2005/2006 | 1998/1999 | 2005/2006 |
| Western | 27.3 | 18.4 | 13.6 | 7.9 |
| Central | 48.4 | 19.9 | 31.5 | 9.7 |
| Greater Accra | 15.2 | 11.8 | 2.4 | 6.2 |
| Volta | 37.7 | 31.4 | 20.4 | 15.2 |
| Eastern | 43.7 | 15.1 | 30.4 | 6.6 |
| Ashanti | 27.7 | 20.3 | 16.4 | 11.2 |
| Brong Ahafo | 35.8 | 29.5 | 18.8 | 14.9 |
| Northern | 69.2 | 52.3 | 57.4 | 38.7 |
| Upper-East | 88.2 | 70.4 | 79.6 | 60.1 |
| Upper-West | 83.9 | 87.9 | 68.3 | 79.0 |
| National | 39.5 | 28.5 | 26.8 | 18.2 |

Source: Government of Ghana, 2007.

Households by locality and type of toilet used by the household (percent)

Information in Table 3 shows households by locality and type of toilet facility used in 2008. Nationally, one out of ten households used flush toilets, about 32 per cent used pit latrine while about 20 per cent had no toilet facility and thus used the bushes and beaches (commonly known as free range). Pit latrine and public toilet were the most common form of toilet facilities (56 per cent) used nationwide. In the rural areas, one per cent used flush toilet compared to 22 per cent in urban areas. Pit latrine and the use of bushes/beaches (74 per cent) were the most common toilet facilities in rural areas while in urban areas the most common facilities were public toilet and flush toilet. Thirty percent of rural households, mostly in rural savannah (69%) and rural coastal (27%), had no toilet facility. In general, the results show that more than eight out of ten households in Ghana do not have access to improved basic sanitation facilities as defined in the introductory section of the paper. The pit latrines, KVIPs, pan/bucket and public toilets are all unhygienic facilities since they are mostly used by multiple households or the public. Thus, the use of unhygienic facilities coupled with poor hygiene practices leads to the contamination of water and food with human excreta as discussed under the conceptual framework.

Table 3: Households by locality and type of toilet used by the household (percent)

| Utility | Locality | | | | | | | Ghana |
|----------------------------------|--------------|-------------|-------|---------------|--------------|----------------|-------|-------|
| | Urban Areas | | | Rural Areas | | | | |
| | Accra (GAMA) | Other Urban | All | Rural Coastal | Rural Forest | Rural Savannah | All | |
| Flush toilet | 33.2 | 16.7 | 22.2 | 1.4 | 1.1 | 0.7 | 1.1 | 10.2 |
| Pit latrine | 5.0 | 21.0 | 15.7 | 43.6 | 57.6 | 20.9 | 43.5 | 31.5 |
| KVIP | 15.8 | 13.8 | 14.4 | 11.3 | 11.8 | 4.6 | 9.5 | 11.7 |
| Pan/bucket | 3.2 | 2.3 | 2.6 | 0.1 | 0.3 | 0.3 | 0.3 | 1.3 |
| Publictoilet (flush/bucket/KVIP) | 41.3 | 37.5 | 38.7 | 13.9 | 19.1 | 4.6 | 13.6 | 24.4 |
| Toilet in another house | 0.4 | 1.3 | 1.0 | 1.9 | 2.6 | 0.1 | 1.7 | 1.4 |
| No toilet facility (bush, beach) | 1.1 | 7.4 | 5.3 | 27.2 | 7.3 | 68.9 | 30.2 | 19.4 |
| Other | 0.0 | 0.1 | 0.0 | 0.5 | 0.2 | 0.0 | 0.2 | 0.1 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Note: Flush toilet and KVIP are strictly for households

Source: Ghana Statistical Service, 2008

Top twenty OPD morbidity cases in Ghana from 2008-2011

Information in Table 4 shows the top twenty Out Patient Department (OPD) morbidity cases recorded in Ghana between 2008 and 2011. Malaria, diarrhoea, intestinal worm and typhoid fever which are diseases associated with poor sanitation and poor water quality accounted for 58 per cent of the top twenty OPD cases reported in Ghana between 2008 and 2011. This implies that six out of ten illnesses reported at OPD in Ghana are caused by poor sanitation and water. Malaria which has been identified as the leading cause of morbidity in Ghana account for about half of all OPD cases in Ghana as shown in Table 4.

Table 4: Top twenty OPD morbidity cases in Ghana from 2008-2011

| | |
|------------------------------------|-------------|
| Malaria | 9, 717, 445 |
| Acute Respiratory Tract Infections | 2, 594, 055 |
| Skin Diseases& Ulcers | 1, 117, 740 |
| Diarrhoea Diseases | 1, 029, 174 |
| Rheumatism & Other Joint Pains | 886, 889 |
| Hypertension | 798, 620 |
| Anaemia | 532, 928 |
| Intestinal Worms | 510, 768 |
| Acute Eye Infection | 498, 699 |
| Acute Urinary Tract Infection | 338, 463 |
| Pregnancy Related Complications | 233, 827 |
| Typhoid Fever | 232, 072 |
| Acute Ear Infection | 228, 138 |
| Home Accidents and Injuries | 205, 230 |
| Diabetes Mellitus | 190, 050 |
| Gynaecological conditions | 177, 425 |
| Pneumonia | 171, 669 |
| Vaginal Discharge | 170, 158 |
| Road Traffic Accidents | 105, 475 |
| Dental Caries | 93, 895 |

Source: District Health Information Management System/Ghana Health Service (DHIMS/GHS).

Morbidity and mortality due to malaria among top ten diseases in Ghana

In general, malaria has been identified as a disease associated with poor sanitation and it is also known to be the leading cause of morbidity and mortality in Ghana (Ghana Health Service, 2010). Table 5 shows the proportion/share of malaria from the top ten diseases in Ghana in all ages between 2008 and 2010. On the average, malaria accounts for about 40 per cent of the top ten diseases reported between 2008 and 2010 and also it is responsible for approximately 20 per cent of mortality among the top ten diseases in the country within the same period. This shows that poor sanitation has implications for human capital development, poverty reduction and sustainability of the lower middle income status of the country.

Table 5: Morbidity and mortality due to malaria in all ages (2008-2010) among top ten diseases in Ghana

| Year | Morbidity | Total top ten | Mortality | Total top ten |
|------|-----------|---------------|-----------|---------------|
| 2008 | 36.6 | 66.1 | 16.5 | 50.8 |
| 2009 | 35.0 | 58.5 | 17.3 | 39.1 |
| 2010 | 42.1 | 69.2 | 19.5 | 60.0 |

Source: DHIMS/GHS

Costs on sanitation-related morbidity and mortality

The costs associated with sanitation-related morbidity and mortality can be monetary (direct cost) and non-monetary (indirect cost). One of the ways of estimating the economic costs of morbidity and mortality is through the use of a disability-adjusted life years (DALY). It calculates the value of life lost due to morbidity and mortality by various diseases. Malaria is one of the

leading causes of sanitation-related morbidity and mortality in sub-Saharan Africa. About nine out of ten malaria-related deaths in Africa are among children, which have some demographic implications for sub-Saharan Africa. It has been estimated that malaria may account for as much as 40 per cent of public health expenditure, 30 to 50 per cent of inpatients admissions and up to 60 per cent of outpatient visits. In addition, it has lifelong effects which include increased poverty, impaired learning and decreases attendance in schools and absenteeism at workplaces (WHO, 2009 in Adubofour, 2010). In sub-Saharan Africa, it has been observed that about 11 per cent of all DALYs were lost to malaria in 1990. It has been noted that malaria ranks second after HIV/AIDS, accounting for almost 11 per cent of the disease burden in sub-Saharan Africa (Asante and Asenso-Okyere, 2003).

The indirect cost of malaria to households is the lost of productivity time or loss of potential productivity during the period of incapacitation which includes the opportunity cost to the one who takes care of the malaria patient and the time that other relations or friends had to take off their work schedule in order to visit the malaria patient either in the house or hospital. In a study on economic burden of malaria in Ghana, Asante and Asenso-Okyere (2003) used the human capital approach to estimate the monetary value/cost of the indirect costs of malaria in their study sites (Bole, Sekyere East and Awutu-Effutu Senya districts). The results showed that the average cost (both direct and indirect costs) of malaria episode to a household was ₵133,999.19 (US\$15.79) but the indirect cost (₵75,681.21 (US\$ 8.92) per case) was greater than the direct cost (₵58,317.98 (US\$ 6.87) per case), implying that morbidity resulting from malaria has far reaching implications for members of a household and all others who interact with the affected household.

A report by the World Bank's Water and Sanitation Programme indicates that Ghana's economy loses 420 million Ghanaian cedis each year (US\$290 million, 1.6 percent of GDP) due to poor sanitation (World Bank, 2012). From the same report, the costs of poor sanitation are inequitably distributed with the highest economic burden falling disproportionately on the poorest in society. For the poorest, the report noted that poverty is a double edged sword. Not only are they more likely to have poor sanitation but they have to pay proportionately more for the negative effects it has. The report further indicated that about 74 percent of these costs come from the annual premature death of 19,000 Ghanaians. These deaths occur as a result of diarrhoeal disease, including 5,100 children under the age of five. Nearly 90 percent of the diseases are directly attributable to poor water, food, and hygiene as explained with the conceptual framework adapted.

GLSS-5 data reveal that Infant Mortality Rate (IMR), Under Five Mortality Rate (U5MR) and Maternal Mortality Rate (MMR) are higher in the poorer regions compared to the richer regions. Deaths due to malaria accounted for 21.69% of all deaths in the Upper East region (a poor region) in 2004. In the same year Under Five (U5) case fatalities were as follows: malaria 2.5%, anaemia 4.4%, diarrhoea 4.1%, Acute Respiratory Infections 3.1% and malnutrition 24%. Malnutrition and anaemia are directly related to poverty. The unacceptably high rates of deaths due to malnutrition reflect the position of the region on the poverty ladder of Ghana. Northern Ghana has always been a marginalised zone in respect of economic development policy with major economic investments being located in the southern regions and especially Accra. This social/economic marginalisation accounts for the worsening poverty situation in the three northern regions as already discussed. Food insecurity is a constant threat to the population and migration to the southern regions has for long been a coping strategy. And so malnutrition compromises human development in several ways: in addition to the high U5MR are high MMR and poor performance of pupils in basic schools.

The illiteracy rates in the north and the rural areas generally are higher than in the southern regions and urban centres respectively. With a rural literacy rate of 40.3% for females (GLSS5), it is clear that more intensive hygiene education is required in this country. Although the male literacy rate in the rural areas is 60.7%, this hides the fact that most of such literates have minimal formal education (usually terminating at the basic school level). Under such conditions, traditional norms and taboos regarding sanitation and the disposal of wastes would still predominate among the general population accounting for the non patronage of facilities in some areas.

In some respects, Ghana has made good progress in containing some diseases. At least, guinea-worm and river blindness, which are water related diseases have been contained. On the 28th of July 2011, Ghana was officially declared a guinea-worm free country after 14 months when no new cases were reported to the health facilities (Nurudeen, 2011). This may be good news to the people in the affected regions. But guinea-worm is not the only preventable (and regrettable) disease afflicting the population. Hygiene-related diseases such as cholera and diarrhoea still exact a heavy toll on human health in this country. Malaria is endemic and hygiene related diseases account for 70% of diseases reported to the health facilities. The sanitation problem is enormous (as only about 40% of the urban population and 14% of the rural population are adequately served). Service provision is not matching population growth.

Although the government of Ghana recognises the importance of water and sanitation in achieving the broader goals of poverty reduction, the evidence on the ground shows that this country cannot achieve the MDG relating to the sector. Institutional bottlenecks associated with decentralisation and inadequate funding are retarding progress. These basic issues of water and sanitation, which are the foundation of development, are likely to derail any progress made in reducing inflation, deregulating markets and instituting free trade regimes as required by the international financial institutions. These latter policies, especially cuts in social spending to maintain a balanced national budget, are partly responsible for the low investments in basic toilet facilities nationwide. The MMDAs are responsible for this; yet reports from these agencies indicate that funds for development activities have been rather low and very slow in coming. For the most part, given the infrastructural shortfalls, preference is given to schools and secondary health facilities.

Conclusion

Poor sanitation and ill-health are bed-fellows. Poor sanitation conditions characterise most of the communities in Ghana given the low coverage of safe sanitation facilities. This paper has shown the high cost to the economy of not ensuring clean environments. About 2% of the GDP is lost each year to the economy due to poor sanitation. Individual and household expenditure on health is disproportionately weighted to poor sanitation health effects. Productivity is lowered as people battle malaria with an average of 3-4 bouts per annum. Unfortunately, those most affected are already poor in rural and urban communities who must pay a higher fee for ill-health due to poor sanitation. The vicious circle of poverty is entrenched. Non-governmental organisations have been assisting the MMDAs to provide basic household toilets, and the CWSA is supporting the construction of toilets and water

facilities for schools, but these are slow. Government is fully aware of the consequences of poor sanitation; yet it is constrained by the conditions of neo-liberalism. The two most effective ways to reduce human infection from contaminated environments are the provision of facilities that separate faeces from human contact and good hygiene practices especially hand washing before handling food and drinking water. These are too easy to do and simple to provide so long as the commitment exists.

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