Pictures Don't Lie

Norman Ishmael D.^{1,2}, Binka Fred Newton³, Norvivor Forgive Awo⁴

¹School of Public Health, (Hohoe campus) University of Health and Allied Sciences Ho, Volta Region, Ghana

²Institute for Security, Disaster and Emergency Studies Sandpiper Place, Langma, Central Region, Ghana

³University of Health and Allied Sciences Ho, Volta Region, Dept. of Epidemiology and Disease Control, Ghana

⁴School of Public Health, (Hohoe campus) University of Health and Allied Sciences Ho, Volta Region, Ghana, Dept. of Epidemiology and Disease Control

Email address:

ishmael_norman@yahoo.com (Norman I. D.), fredbinka@gmail.com (B. F. Newton), a4woforgive@gmail.com (N. F. Awo)

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Abstract: Ghana is confronted with persistent environmental challenges such as its inability to re-cycle its domestic and industrial waste. Ghana has no adequate waste treatment plant in any of its leading cities or towns and a general lack of best environmental practices, although there are currently plans to install state of the art waste management plant in the capital city. The Central Government does not adequately resource the municipal governments with the constitutionally allocable portions from the centrally planned budget to be able to provide services such as sanitation, refuse collection, road maintenance and related functions to improve the health of the environment and thus the communities. The public-private-partnership meant to supplement municipal environmental waste and sanitation management has been co-opted by central government operatives so much so that they appear as if they are inseparable and integral part of the municipal governments. Due to such close association and other systemic failures, the public-private-partnership in the industry is fraught with allegations of cronyism, rent-seeking behaviors, and sweet-heart arrangements. As a result, the arrangements do not function efficiently or effectively, except in very limited city spaces in the central business districts and neighborhoods with large expatriate presences together with high ranking government functionaries. Generally, the public health of the population is compromised. The lack of good programs and operations in Ghana's environmental practices has led to the outbreak of diseases such as malaria and cholera resulting in morbidity and mortality among the population on a yearly basis. Cholera, an internationally reported disease, is a significant killer in Ghana today. In many nations in the 21st Century, this disease does not even feature in the list of threats to the health of the public. Malaria continues to be a major public health saboteur disease. There appears to be official denial about the lack of real improvements towards the Millennium Development Goal 7. This paper attempts to provide photographic evidence about the situation on the ground in the capital city of Ghana, Accra; and to raise the alarm that the veracity of Ghana about its progress towards MDG 7 may be in serious doubt.

Keywords: Millennium Development Goal, Public-Private-Partnership, Sanitation, Refuse Collection, Environment

1. Introduction

Ghana has reported that it has made substantial progress towards several multinational agreements on the environment, such as the Hyogo Framework for Action: Disaster Risk Reduction and the MDGs (Vordzorgbe, et al. 2008; UNISDR 2013 a, b, c, d). Yet, there is a general lack of best environmental practices not only in parochial cities and towns but even in all of Ghana's major cities of Accra, the capital, Tema, the leading industrial city in the Greater Accra Region, or Kumasi, decidedly a leading cultural center, in the Ashanti Region, Takoradi, a leading port city, in the Western

Region, Sunyani, a leading agricultural center, in the Brong Ahafo Region, and Obusua, a leading gold mining city, also in the Ashanti Region, to mention but a few (Boadi and Kuitunen 2005). The public health of the population of Ghana is compromised by the apparent persistent neglect of the environment. Charles-Edward A. Winslow (1920) defined public health as "the science and the art of preventing disease, prolong life, and promoting physical health and efficiency through the organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of hygiene, and the organization of medical and nursing service for the early

diagnosis and preventive treatment of disease". As a general matter, it is fair to conclude that there is sufficient 'prima facie' evidence for the reasonable person to conclude that public health in Ghana is under serious threat from environmental abuse and neglect by government, the population and society. The organized effort of the national community does not affirmatively support the expectation that the population lives in good health, hygiene and enjoys the early diagnosis and prevention of infectious diseases. If it were so, the nation would not have experienced perennial outbreaks of cholera and other infections like cholera (Ofori-Adjei and Koram, 2014).

Since the 1972 Stockholm UN Conference on the Human Environment, a great deal of changes to ensuring environmental sustainability in Ghana has taken place. The Stockholm Conference led to the creation of the Environmental Protection Council of Ghana in 1974. The council's functions and duties culminated in the formulation of the 1990 Environmental Policy which became the Environmental Protection Act 1994, Act 490. These administrative and legislative activities were impressive, giving a new impetus to the expectation that operational efficiencies for the protection of the environment would be improved en masse in Ghana and in other SSA nations.

Fig. 1. Heap of Garbage at an unlined Landfill, Weija, Accra, Ghana, Courtesy Adzokatsey, K and Norman, I. D. (2013).

Between the call at Stockholm in 1972 to ensure the observance of proper safeguards in the planning and execution of all development projects and 1999 when LI 1652 was passed, the regulatory mechanism for the protection of the environment in place was scanty. Much of the practice was limited to administrative oversight, issuance of permits, and the conduct of sporadic inspections. The mandate of the Environmental Protection Agency of Ghana is not broad enough to spearhead the integration of sustainable development into national policy. At any rate, the 1994 EPA Act in Ghana was quickly endowed with its Legislative Instrument in 1999: LI 1652, then the LI 1703 of 1999 for Environmental Assessment, which was amended by LI 1652 to introduce processing fees and other administrative matters. Attempts were made to develop an Environmental Action Plan from 1991 through 2000 until finally in 2012 the Action Plan was presented to the public.

On paper, therefore, there is a great deal of activity to safeguard the environment for all in Ghana in terms of the development of the legislative framework. Even so, even in this area, there are many gaps as demonstrated in the following paragraphs: Environmental practice in Ghana is influenced by both national and international legislations, regulations, protocols and programs. Environmental law deals with many different kinds of laws including treaties, conventions, statutes, regulations, common law or judge made law based on decided cases. These together work to regulate human activity in respect to biological, chemical and physical environmental and the impact of human activities out of these determinants. The purpose is to reduce the impact of human activities on both the natural environment and on humanity. Environmental law is divided into two broad topics: Environmental pollution and Resource conservation and management. The laws dealing with

pollution are often stand alone laws, i.e.: air or water, whether surface water, groundwater or oceans, or soil. Such laws control both emissions of pollutants into the medium, as well as liability for exceeding permitted emissions and responsibility for cleanup. Laws regarding resource conservation and management generally focus on a single resource such as forest or mineral deposits, or animal species, or more intangible resources such as especially scenic areas or sites of high archeological value - and provide guidelines for and limitations on the conservation, disturbance and use of those resources. The main environmental laws in Ghana one can readily find are only a handful: (a) the various EPA regulations, Act of 1994, legislative instrument and executive instrument. (b) There are also the Local Government Act and the Bye-laws of the various district assemblies. We have (c) the Ozone Protection Act and other occupationally related laws such as the Factories, Offices and Shops Act, the

Mining Act.

As the world marches forth towards the end of 2015, it is, perhaps, necessary to review the Millennium Development Goal # 7 but specifically # 7.1 and 7.1. (a), which deals with environmental sustainability as the denominator for a good public health practice. In this exercise, we would also consider the national and regional program for achieving greater sustainability and resilience on individual, communal and system's levels.

The landfill in Fig. 2 below is less than a 250 meters away from major human settlements, although it is recommended that such landfills should be at least 500 meters away from human settlements (Christenson and Cozzereli 2003; Cozzarelli, et al., 2000). It is perched on a hillside which allows leachate water runoff of both organic and inorganic volatile compounds and contaminates the aquifer and farmlands.

Fig. 2. Truck load of Garbage at an unlined Landfill, Weija, Accra, Ghana, Courtesy Adzokatsey, K and Norman, I. D. (2013).

2. Procedure and Method

This paper emerged out of a larger study on disaster preparedness and resilience. Ethical clearance was sought and obtained from the Ghana Health Service Institutional Review Board.

To accomplish this task, the authors and assistant took pictures in and around the twin cities of Accra and Tema over four day period at random intervals by walking through the streets. We also visited known market sites and commodity markets such as the Tema Fish market where the bulk of the inhabitants of Accra get their fish from. The aim was to document the handling of the daily catch before sending it to the market. We did not engage the fish-mongers or the

fishermen about their fresh fish handling techniques in order not to attract undue attention to ourselves. The two major cities in Ghana have a combined population of about 4.5 million people. The pictures were taken of objects and places in the public domain without compromising the privacy issues of individuals in the public. Where human subjects were photographed, their permission was first secured, and sometimes, tokens of about \$0.50 were exchanged for the pictures. Where the picture frame captured the image of a person or persons, whose permission had been initially sought, the image taken was shown to the individual who reserved the right to ask for a deletion of the picture. None did. In the market place, permission was sought from the metropolitan assembly in whose domain the market was situated. We contacted the respective duty posts within the

market and discussed the scope of the photographs we were interested in taking and permission was granted before the pictures were taken. All in all, about 90 slides of pictures were produced and the author selected the ones that supported the narrative in this paper.

3. Findings

The following are some of the findings in our research.

3.1. Collection, Disposal and Treatment of Domestic and Light Industrial Waste

At the close of 2014, no major city in Ghana, including the capital Accra, had a functioning sewage treatment plant and

the nation's urban landfills were in serious conditions of overflowing its banks. There is no real management of the landfills no matter how close they are to human settlements to reduce the negative environmental impact to the public health of the communities around such landfills (Amoah and Kosoe 2014). Leachating water from the cities' waste dumps is a serious health threat to the public, due to its ability to contaminate the aquifer, the surrounding farmlands and even playgrounds of children. Leachating water does not only contaminate ground water beneath the landfill, which is known as 'plume' but it can also travel for hundreds of meters to contaminate other ground water and produces toxic fumes and poisons the quality of air (Cozzarelli, et al., 2000).

Fig. 3. Birds fly over garbage at an unlined Landfill, Weija, Accra, Ghana, Courtesy Adzokatsey, K and Norman, I. D. (2013).

Fig. 4. Courtesy Adzokatsey, K and Norman, I. D. (2013). Leachate from Garbage at an unlined Landfill, Weija, Accra, Ghana, which is less than 200 meters away from homes and businesses is harmful to human settlements (Osei and Duker, 2008; Scholl, Cozzarelli, et al., 2001; Istok, Humphrey, Schroth, et al., 1997).

In Fig. 1 through Fig. 4, we notice the result of the public-private-partnership in refuse dumping near human settlement in Accra City. The disposal of waste at landfills in Ghana in

general is not regulated even today. Yet, the when it comes to the protection of the environment, the national legal framework is very specific in its goals. Even before the MDG

7.1 and 7.1 (a) on environmental sustainability were enunciated, the establishment Act of the Environmental Protection Agency, EPA Act, 1994 (Act 490) Section 2 (a) through (d) delineated the national goals on the environment through the expected duties of the EPA thus:

- a. to advise the minister on the formulation of policies on all aspects of the environment and in particular make recommendations for the protection of the environment;
- b. to co-ordinate the activities of bodies concerned with the technical or practical aspects of the environment and serve as a channel of communication between such bodies and the ministry;
- c. to co-ordinate the activities of such bodies as it considers appropriate for the purposes of controlling the generation, treatment, storage, transportation and disposal of industrial waste;
- d. to secure in collaboration with such persons as it may determine the control and prevention of discharge of waste into the environment and the protection and improvement of the quality of the environment;

The big question is; what really happened to the national collective consciousness on the environment after the couching of the EPA Act and the aspirations contained in this Act? Instead of driving the commitment towards enhanced environmental regime, it appears the new legislation rather had the opposite effect by slowing down the momentum. For example, at the municipal waste dumps there is haphazard dumping, although the system is designed to encourage sorting of some sort. The attendants at such landfills are untrained or if trained, are only trained to collect tolls but not to manage the actual landfill from bacteriological and toxicological view points as demanded by the EPA Act of 1994 Section 2 (h):

To prescribe standards and guidelines relating to the pollution of air, water, land and other forms of environmental pollution including the discharge of wastes and the control of toxic substances.

The Weija landfill is an unlined disuse stone quarry pit. Due to decomposition, rainfall and decay, precipitation and ground water seeps through the heap of waste producing leachate (Scholl, et al., 2001). As earlier noted, leachate is water contaminated from the various substances of both organic and inorganic nature and which streams off to the aquifer and contaminates the water sources and farmlands (Osei and Duker, 2008; Istok, et al., 1997). The MDGs were to particularly help emerging economies and nations to re-focus their energies on the environment, which is normally a casualty in economic development. The linkage of the environmental status of Ghana to the MDG made sense for several reasons. There appears to be synergy between global programs such as the Millennium Development Goals designed by the global community as a set of benchmarks for achieving greater sustainability and resilience and individual national development plans, at least, in Sub-Sahara Africa. Programs like the MDGs allow international actors in development not only to contribute funds for development

but also to be co-opted into the purely national processes of local development goal setting and project implementation such as the provision of boreholes for water and sanitation penetration in a given district, for example. Despite MDGs goals, the outcome on environmental sustainability has been nil or null, prevaricated and at best marginal in many nations of Sub-Sahara Africa. In the case of Ghana, 2015 is already upon us, and the environmental situation on the ground has been so bad that the government of Ghana has initiated a monthly national sanitation and cleaning exercise. The jury is still out whether the national sanitation day is sustainable in the long run, but for now, many residents reluctantly go to the cleaning exercises with the complain that the city of Accra, for example, is as filthy as it has always been (Daily Guide 2015:12)

The reasons for this belief are both subjective and objective. Objectively, it is known and easily observed that in many parts of Accra, domestic wastewater is discharged into the nearest lagoon or the Gulf of Guinea via water ditches on the roadsides. Households in certain suburbs of Accra such as North Kaneshie, Dansoman, Bubuiashie, Dzorwulu, Alajo, to mention but a few, continue to routinely discharge household effluence, which is made up of excreta and domestic water into the network of gutters in these areas, (JICA, 1999). Where effluence is collected in dug-out man-holes, in some areas the seals are opened during heavy rainfall, to allow the man-holes to be flushed out by the water run-off. The untreated domestic water has caused serious water and air pollution. Part of this problem is that Accra's sewer system was constructed during the colonial era. Some 10% of Accra's citizens use the sewer system to dispose of the wastewater and excreta. Some 40% of the citizens use buckets to dispose of the excreta, which is scooped and transported to an oxidation pond in Achimota and in Korle Gono, (AMA, 2000). Another 40% depends on suction man-hole systems to treat and dispose of wastewater and excreta (AMA, 2000). The rest 10% uses septic tanks, from which treated water flows into rainwater drainage. Public conveniences and pit latrines are also used (AMA, 2000, 2005, JICA, 1999). The World Bank conducted an "Urban Environmental Sanitation Project 1996-2000" in Accra, Kumasi, Tamale, Takoradi and Tema that included the construction of sanitary infrastructure such as night soil treatment plants and private toilets to help minimize the impact from excreta and domestic water pollution, (AMA, 2000; JICA, 1999; Istok, et al., 1997). Despite all these efforts, the city continues to be saddled with mounting garbage heaps. The city of Accra allegedly generates 1.8 metric tons of garbage daily, (AMA, 2002). It is able to carry allegedly 1.5 metric tons to landfills, leaving behind allegedly 0.3 metric tons daily, (AMA, 2002). This backlog compounds the daily output and increases the volume of uncollected garbage each day, (Yabani, 2006). Although these statistics predated the MDGs, the situation on the ground has gotten worse, and the revision of the statistics would reveal even more alarming outcomes.

3.2. Environmental Health Impact from Mining and Radiological Waste Management

Currently Ghana seems to have a major mining related environmental concern and radiological waste management on her hands (Donkor et al. 2006). Cyanide, mercury and other harmful chemical compounds have been found in oranges from Obuasi, a major gold mining town. Mercury, one of the chemicals used in the extraction of gold and which is routinely discharge into the tailings and other landfills, is injurious to human health. It causes kidney damage, arthritis,

liver and psychological problems, (<http://www.oxfamamerica.org>), also (Adimado and Baah, 2002). Adimado and Baah, (2002) writing on mercury in human blood, urine, hair, nail and fish from the Ankobra and Tano River Basins in southwestern Ghana, maintained that these substances stay in water bodies, animals and fishes for a long time and eventually, becomes part of the food chain. 'Beyond a critical threshold, humans are not able to excrete enough mercury and the toxicity restricts sperm production' (Murphy, et al., 2008).

Fig. 5. Tema Fish Market, Ghana, Credit: Adzokatsey, K and Norman, I. D. (2013).

Fig. 6. Fishermen mending nets in polluted water; Korle Lagoon, Accra, Credit: Adzokatsey and Norman, 2013. Fish is likely to be contaminated in untreated sewage in contiguous water at the harbor basin. This is most common cause for seafood related diseases and illness (FAO 2001; 2003; 2004; UNISDR 2013).

Certain types of mercury are naturally available in the soil, (Adimado and Baah, 2002). During mining, this and other chemicals and gases are uncapped and unearthed, (Oxfam, 2000-2). Ghana needs to attract foreign investors, it is

becoming harder and harder to find a negative environmental impact assessment of the pre-investment activities of gold mining and other minerals exploitative companies, (Angotti, 2006).

Added to these environmental challenges is the deliberate uses of radioactive materials for industrial, medical and research application. Although radioactive material has been in Ghana for more than four decades, there has been no deliberate infrastructure and effective legal framework to control and regulate such activities, (Darko and Fletcher, 1998). The Atomic Energy Act, 1963, (Act 204) and the Radiation Protection Instrument, LI 1559, (1993) sought to provide guidelines for waste management but these were found to be inadequate (Darko and Fletcher, 1998), and this was followed by the Atomic Energy Act, PNDCL 308 creating a center for radiological waste management. Darko and Fletcher, (1998) argued that the expanded use of nuclear facilities and radiation sources in Ghana with the concomitant exposure to human population necessitates effective infrastructure to deal with the increasing problem of such waste.

3.3. Cholera Incidence and Prevalence

A 2014 editorial commentary in the Ghana Medical Journal opined that:

Cholera in Ghana is an urban problem with high impact on the urban poor. The unprecedented unregulated growth of urban areas has resulted in poor environmental conditions, lack of access to clean potable water and excruciating challenges in waste disposal. Urban authorities need to re-examine their strategies with a focus on explicitly pro-poor community-led orientation to provide lasting solutions to the now nearly annual epidemics of cholera (Ofori-Adjei and Koram, 2014).

It is often reported in scientific journals and writing that the first bacteriological case report of cholera in Ghana was in 1st September, 1970 (Osei and Duker, 2008). If such is the fact of the history of cholera in Ghana, then it is fair to say that the environmental degradation of Ghana in as far as the health of the public is concerned, has been on-going for over 45 years. So much has been neglected with respect to the environmental sanitation of Ghana that to reverse the degradation in the face of climate variability and its attendant challenges of adaptation and containment after 45 years seems almost hopeless (Dempouo Djomassi, et. al., 2013).

“The cholera outbreak in Ghana, which was declared in June 2014, continues to seriously affect people in the south of the country. As of 18 August 2014, over 6,000 cases have been reported in five regions. To date, 47 deaths have been registered in the affected regions, including 45 in Greater Accra. The Ghana Health Service has warned of a possible cholera outbreak in Accra due to the current insanitary conditions in the capital coupled with the onset of the rains (OCHA 2015).”

“On 11 April 2012, the Ministry of Health (Ghana) notified WHO of a cholera outbreak in the Greater Accra Region. Between January and 6 May 2012, a total of 3,216 cases and 28 deaths were reported from 20 districts. (WHO, 26 May 2012) The cholera cases and deaths increased steadily with the Ghana Health Service reporting 6,000 cholera cases with 69 deaths by the end of August (IFRC, 4 Jan 2013). For the year 2012 as a whole, WHO reported 9,548 cases and 100 deaths (WHO, 7 Feb 2013).”

Fig. 7. Fishermen bagging Tema Fish Market, Ghana, Credit: Adzokatsey and Norman, 2013.

3.4. MDG # 7 was to be the ‘do all’ Panacea for Environmental Degradation

It appears as if the MDG goal # 7 was meant to be the magic potion to cure such environmental degradation and its attendant negative health outcomes on food supply and

distribution and on human settlement so as to make the society more resilient. It, however, also appears that not much consideration has been given to the issue of food security and quality within the national public health programs and discourse in view of climate variability and the different resilience capacities of the respective communities

in Ghana.

It had been hoped that all the thematic areas of the MDGs would be integrated into the respective national development agenda without more due to the goodwill exhibited by the respective governmental institutions towards the MDGs. Despite the pedestrian nature of the MDGs and the support of the respective political machinery of the respective nations, it has been noted by researchers that in Sub-Sahara Africa, the integration of the MDGs into the national developmental agenda, conventional or not, has been very slow in many respect. While there are many ways one could rationalize the slow pace in achieving the benchmarks of the MDGs, the most obvious reason is that the MDGs did not take into account three main challenges faced by the emerging

economies:

- i. The first is the lack of seasoned capacity to drive the implementation process.
- ii. The second is the perennial lack of funds to initiate critical national programs, and lastly,
- iii. The heavy burden of institutional corruption in public works.

The malaise often noticed in corrupt public systems seems to have undermined the initial enthusiasm of the practitioners towards the MDGs, DRR integration and the broader goals of the Hyogo Framework for Action, 2005-2015. This is particularly so where the performance of official duties is not accompanied by immediate financial reward or otherwise.

Fig. 8. Fish from the Tema fish market, destined for sale at the Abglogbloshe Fish Market, Central Accra, Ghana. Credit: Adzokatsey, K and Norman, I. D. (2013).

Fish requires proper handling and preservation in order to maintain its quality. The rate of deterioration is quickened through unhygienic practices and contaminated equipment such as storage facilities (Bataringaya 2007). No ice was placed in the plastic bags to preserve the fish. The distant

from the Tema Fish Market to Abglogbloshe is 31 kilometers. In morning traffic, the journey could take several hours, during which time the quality of the fish would have deteriorated significantly.

Fig. 9. Display of fish from the Tema Fish Market for Sale, Ghana, Credit: Adzokatsey, K and Norman, I. D. 2013.

3.5. Environmental Practice

Environmental Practice, EP, is the ethical promotion of

healthy scientific and socio-economic activities that impact the environment biologically, technically or physically in order to protect, prolong and sustain lives. A credible

environmental practice would be regulated by a formally constituted professional body with rules and regulations, at least, a Constitution with licentiate authority. Ghana does not currently have a formal unique and technically sound body that licenses Environmental Health officers' and issues certification and accreditation or conducts continuing professional development. In the current mixed bag of licensing authorities, environmental practice and practitioners fall under the Ministry of Local Government, the Environmental Protection Agency, the Veterinary Services of the Ministry of Agriculture, the Food and Drug Board, the Offices, Factories and Shops Inspectorate, and the Mines Inspectorate as well as consultancies. They are diploma and certificate holders who may not have the capacity to carry out complicated toxicological examinations, for example. With such a collection of authorities all competing for control and funds from licences, it is not hard to see how the practice would be undermined by the activities of the very institutions that are attempting to regulate the practice.

3.6. Synergy Between Environmental Practice and Public Health Practice

As we continue with our analysis, we are reminded by the knowledge that environmental practice is directly related to Public Health practice (PHP) and the health seeking behavior

of the populations. Due to the organized nature of healthcare delivery system in Ghana and in many other nations, PHP appears to be more progressive than EP. This is in terms of the protections and promotion of the health of the communities from exposure to both communicable and non-communicable diseases and cure. Granted, while the immediate cause of say cholera, typhoid, or cryptosporidiosis may well be from the contamination of water by human or animal feces or urine infected by pathogenic viruses or bacteria, which are directly transmitted when water is drunk or used in the preparation of food, the proximate cause could have been environmental. Yet the average cholera patient, for example, once cured may not attribute that condition to the environment but to something else. This is particularly so for those in the urban centers, due to the apparent presumption that the urban environment is probably more sterilized than say the rural or peri-urban environment (Norman, et al., 2013). The pictures of the market below show the outcome of some of the gaps in the implementation and legislative framework. About 99% of the residents of Accra buy their food supplies from markets like this. Good Sanitation practices do not appear to be priority for either the central or municipal governments. The population is apathetic to the health threats they face from obtaining supplies from such markets.

Fig. 10. Fish Retailers at the Tema Fish market, Tema, Ghana, Credit: Adzokatsey, K and Norman, I. D., 2013.

Fig. 11. Agbogboloshie Vegetables Market, Ghana, Credit: Adzokatsey, K and Norman, I. D., 2013.

Fig. 12. Garbage dumpster at Agbogboloshie Market next to vegetable retailers, Accra, Ghana, Courtesy Adzokatsey, K and Norman, I. D., 2013.

Fig. 13. Vegetables retailers at Agbogboloshie Onion Market, Accra, Ghana. The traders swept the front of their stalls when they noticed that we were taking photos. Courtesy Adzokatsey, K and Norman, I. D., 2013.

Fig. 14. Private Community Water Supply sales Point, Ashiaman, Tema, Ghana Courtesy: Adzokatsey, K and Norman, I. D., 2013.

4. Improved Water and Sanitation

Ghana has committed to meeting specific targets as part of the national integration of sustainable development efforts. Ghana's MDG target for 2015 for improved drinking water is 78% (1990 as base year). The use of improved drinking water for 2008 was 83.3% (DHS 2008). There is no data for 2009 and 2010. According to the Ministry of Local Government,

Ghana continues to be on track to meeting the MDG target for use of improved drinking water and may exceed the target by 13% if the trend continues. In general, there is continuous increase in the percentage of the population that uses improved drinking water and improved sanitation between 1990 and 2008. This picture appears to be changing all the time in favor of improved sanitation (Demedeme, 2011).

Fig. 15. Open sewer runs through Accra City from East to West and from North to South at and from many points, Accra, Ghana.

They empty into the Gulf of Guinea, untreated and raw (Eganhouse, Cozzarelli, Scholl, and Matthews, 2001).

Courtesy Adzokatsey, K and Norman, I. D., 2013.

An improved sanitation facility according to the WHO/UNICEF/JMP is defined as 'one that hygienically separates human excreta from human contact'. Users of improved sanitation facilities are considered as having 'access' to sanitation on condition that the facility is not shared by multiple households and not public (UNICEF, and Kar, 2011).

Despite the foregoing, there are programs which are being implemented to meet the MDG targets in Ghana:

- Environmental Sanitation Policy developed in 1999 and revised in 2010
- District Environmental Sanitation Strategy and Action Plan (DESSAPs) developed,
- National Environmental Sanitation Strategy and Action Plan (NESSAP) and implemented with support from Development Partners.
- Sanitation and Water for All (SWA) Compact which spells out Government's financial commitments to improving the sanitation and water situation up to 2015
- Rural Sanitation Model Strategy (CLTS) ready for implementation
- Draft final Strategic Environmental Sanitation

Investment Plan developed and currently before Cabinet

- A Millennium Accelerated Framework (sanitation) is ready for implementation
- (Data are derived from 1988, 1993, 2003 and 2008 DHS and 2006 MICS published by the Statistical Service)

5. Conclusion

In order for Ghana to have a credible environmental practice, there are basic universal principles for sustainable ecosystem, which Ghana needs to undertake: to ensure adequate water supply, maintain vegetation cover, preserve quality soil, ensure sustainable conditions for wild life, maintain regional food production potential and create an enabling environment for humans.

Recommendation

Our recommendation is that the ministry in charge of the environment creates a national platform to advocate for reforms, design modalities for reforms and help improve environmental practice in Ghana by managing licentiate issues, overseeing the practitioners and regulating their professional conduct.

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