Review Paper

Ghana's post-MDGs sanitation situation: an overview

Eugene Appiah-Effah, Godwin Armstrong Duku, Naziru Yakubu Azangbego, Ransford Kojo Aduafo Aggrey, Barbara Gyapong-Korsah and Kwabena Biritwum Nyarko

ABSTRACT

This paper presents an overview of Ghana's sanitation situation post-Millennium Development Goals (MDGs). It specifically examines why the MDG target on sanitation was missed, Ghana's preparedness towards achieving the Sustainable Development Goals (SDGs) sanitation target, potential barriers and opportunities for the sanitation sector. An eight step policy analysis framework guided the review. The findings indicate that the low sanitation has largely been driven by rather complex economics, institutional and sociocultural factors including inadequate financial commitment, poor implementation of policies, bad attitude and perception towards sanitation and extensive use of shared and public toilets. Nevertheless, it was found that recent reforms and programmes in the sanitation sector such as the creation of new Sanitation and Water Resource Ministry, National Sanitation Authority (NSA), introduction of sanitation surcharges included in property tax, and programmes such as the Greater Accra Municipal Assembly sanitation and water project put Ghana in a better position to rapidly increase its coverage. However, efforts would have to be accelerated by forging partnerships with the private sector to provide efficient and low-cost technologies, financial schemes, human and technical resources for improved service delivery.

Key words | financing mechanisms, Ghana, post-MDGs, sanitation coverage, SDGs, toilet technologies

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INTRODUCTION

Since the adoption of the Millennium Development Goals (MDGs) in the year 2000, the international community has committed itself to improving health, reducing poverty, promoting equality and supporting socioeconomic development, for which, improved WASH services are central. The global community has devoted significant resources and energy to achieving the fundamental targets of ensuring access to safe, affordable, acceptable, available and accessible drinking water and sanitation for all by 2030 (UNCG & CSO 2017) since every human has the right to safe drinking water and improved sanitation (UN Human Rights Council 2002). Although significant progress has been made since the MDGs era until now, billions of people worldwide are still faced with daily challenges accessing even the most basic of services.

Recent statistics from the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) Joint Monitoring Platform (JMP) indicate that over 844

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million people still lack access to potable water and 2.3 billion people lack access to improved sanitation. It is evident that on the global scale, sanitation lags behind water as only 68% of the world's population has access to basic sanitation compared to 88.5% with access to basic water services. The current situation in Africa is even more disturbing as only 28% of the people in sub-Saharan Africa have access to basic sanitation (WHO/UNICEF 2017).

Like other African countries, Ghana faces serious constraints to meeting the challenge of providing adequate and improved sanitation for its rural and urban inhabitants. The economic growth in Ghana has been accompanied by rapid urbanization, putting a strain on infrastructure and the provision of sanitation facilities (Mariwah 2018). Among competing demands for public investment (including education, health, transport electricity and water), sanitation has not been prioritized. Thus, not much progress has been made in achieving the sanitation target with the current coverage of 21% (Figure 1) still lagging behind the MDG target of 54%.

Inadequate sanitation leads to the transmission of pathogens through faeces and to a lesser extent, urine (Hutton & Chase 2016). An estimated 842,000 people in low- and middle-income countries die each year from diarrhoea and other causes associated with inadequate water, sanitation and hygiene, with children under five years bearing the greatest burden (WHO 2018). In Africa and Ghana, diarrhoeal diseases cause about 16% and 25% of deaths among children under five years, respectively (Binka *et al.* 2011). In addition to the health risks, poor sanitation causes considerable financial and economic losses. The WSP (2012) reported that the annual economic loss to Ghana due to poor sanitation was US$290 million, equivalent to 1.6% of GDP.

Hutton & Chase (2016) argue that as the world moves into the post-2015 era, greater understanding of the challenges facing the world to meeting the universal access to sanitation is needed. Considering the current sanitation coverage in Ghana and the ambitious targets of Sustainable Development Goal 6 (to ensure access to safe water resources and sanitation for all by 2030), there is the need to explore the factors behind the low sanitation coverage if the ambitious targets of the current Sustainable Development Goals (SDGs) on sanitation are to be achieved by 2030. The study is focused on the status and trends of sanitation coverage in Ghana, why the MDG target on sanitation was missed, Ghana's preparedness and potential barriers towards achieving the SDGs sanitation target and opportunities for the Ghana sanitation sector.

STUDY METHODOLOGY

This paper presents an overview of Ghana's post-MDGs sanitation situation and recommends future focus areas for research, policy and action. It focuses on why the MDG target on sanitation was missed, Ghana's readiness towards achieving the sanitation targets of the SDGs, the anticipated

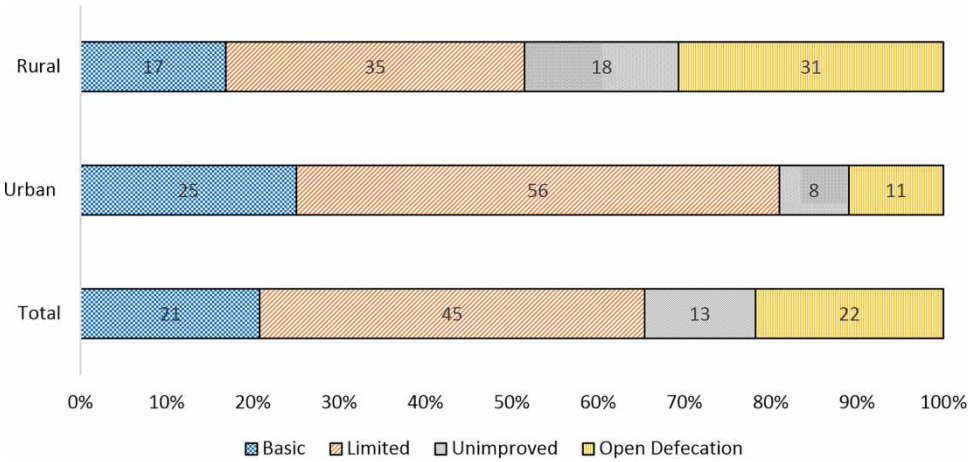

Figure 1 | Current sanitation service levels in Ghana (*Source:* GSS 2018).

or potential barriers towards achieving the SDGs targets and the opportunities available for the sanitation sector.

The review was guided by the policy analysis framework developed by Collins (2005) using the following eight steps: (Step 1) define the context; (Step 2) state the problem; (Step 3) search for evidence; (Step 4) consider different policy options; (Step 5) project the outcomes; (Step 6) apply evaluative criteria; (Step 7) weigh the outcomes; and (Step 8) make the decision. Steps 1–3 were used to develop comprehensive background information on the WASH situation in Ghana and to understand the determinants of the problems that form the basis for the study. They were used to examine the discrepancies between the existing WASH situation (national coverage) and the planned national and global targets to understand the reasons for the differences. Steps 4–7 focused on examining the WASH landscape and identified gaps and opportunities. Policies or sector documents were assessed based on the specific objectives which served as the themes of the review (Step 8).

The review covers evidence showing progress in water and sanitation coverage from the MDGs era up until the present. The study followed well-structured thematic discussions covering sanitation trends, financing mechanisms, institutional reforms and arrangement, policy and regulatory reforms, monitoring, human resource capacity, technological issues and perceptions of people. Guided by the topic areas outlined above, evidence was sourced mainly from published synthesized reviews such as systematic reviews and literature reviews as adopted by Hutton & Chase (2016). Data used for analysis of water, sanitation and health (cholera) trends and coverage in this review were a combination of user-based data, provider-based data (WSMP Ghana 2010; Mariwah 2018) and data from monitoring programmes such as the WASH Joint Monitoring Programme (JMP). All these data sources are secondary data sources.

The sources of the user-based data used for this review were the Ghana Multiple Indicator Cluster Survey (MICS), Ghana Population and Housing Census (GPHC) and Ghana Living Standards Survey (GLSS). All these surveys are conducted by the Ghana Statistical Service (GSS) at regular intervals. In this paper, data from service providers were obtained from the Ghana Health Service, a public service body established under Act 525 of 1996 as required by the 1992 constitution of Ghana as an autonomous executive agency responsible for implementation of national policies under the control of the Minister for Health through its governing Council. Data on water and sanitation coverage in Ghana over the years 2000 to 2015 were obtained from JMP whereas data on sanitation for 2018 were obtained from the Ghana Statistical Service.

The documents reviewed were selected to include policy documents that address the above-listed objectives of this paper. Key national policy and strategy documents selected for review were the National Environmental Sanitation Policy (NESP), National Environmental Sanitation Strategy and Action Plan (NESSAP), Strategic Environmental Sanitation Investment Plan (SESIP) and Rural Sanitation Model and Strategy (RSMS). All relevant documents were thoroughly read and the contents critically assessed. Initiatives that did not focus on the objective of this paper were excluded.

STATUS AND TRENDS ON SANITATION COVERAGE IN GHANA

In spite of the critical role effective human excreta management and, for that matter, sustainable environmental sanitation plays in human development, the MDGs target on basic sanitation was widely unachieved. The country registered an increase in access to adequate basic sanitation over the 15-year period of the MDGs from just 11% in 2000 to 15% in 2015, as shown in Figure 2. This means that sanitation coverage only increased by 4% since the year 2000

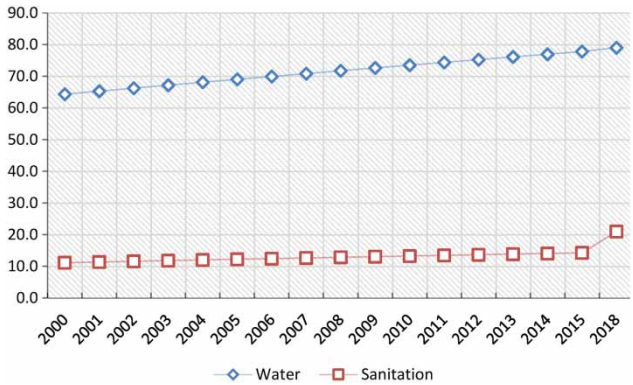

Figure 2 | Improved water and sanitation coverage trend in Ghana (*Sources:* WHO/UNICEF (2017) and GSS (2018)).

(at 11% coverage) to 2015 (WHO/UNICEF 2015). Currently, available data show that the total access to basic sanitation in Ghana is estimated at 21%; with rural and urban coverage of 17% and 25%, respectively (Figure 1) (GSS 2018). There has been an increment of 6% after the MDG era with the remaining 79% left defenceless against the inevitable consequence of poor sanitation. Only one in every five households in Ghana has an improved sanitation facility for their household (GSS 2018).

Undoubtedly, much progress has been achieved in the water sector as access to basic drinking water is estimated at 79%; 93% urban coverage and 68% rural coverage (Figure 2) (GSS 2018), achieving the 77% national MDG target seven years ahead of schedule. However, this achievement is eclipsed by the mere 21% coverage in the access to basic sanitation. Although Monney & Antwi-Agyei (2018) opine that if current efforts towards access to improved drinking water are sustained, Ghana will achieve universal access to potable water by the year 2030, the same cannot be said for sanitation. WaterAid (2010) asserts that it will take over a century for Ghana to achieve its sanitation target. The fact that nearly 80% of the Ghanaian population lack access to hygienic toilet facilities is a very worrisome situation because it poses a grave public health threat (Mariwah *et al.* 2017).

The issue of limited sanitation service ('limited sanitation service' refers to an improved facility shared with other households) in Ghana is a thorny one, given its widespread occurrence. Sharing of sanitation remains prevalent, and one in every four household populations use public facilities (GSS 2018) (Figure 3). Currently, over 13 million Ghanaians representing 45% use shared facilities. The high proportion of this population is mostly concentrated in low-income urban settlements, notwithstanding the fact that some significant rural populations do rely on these facilities. The most disturbing is the percentage (22%) of Ghanaians who still

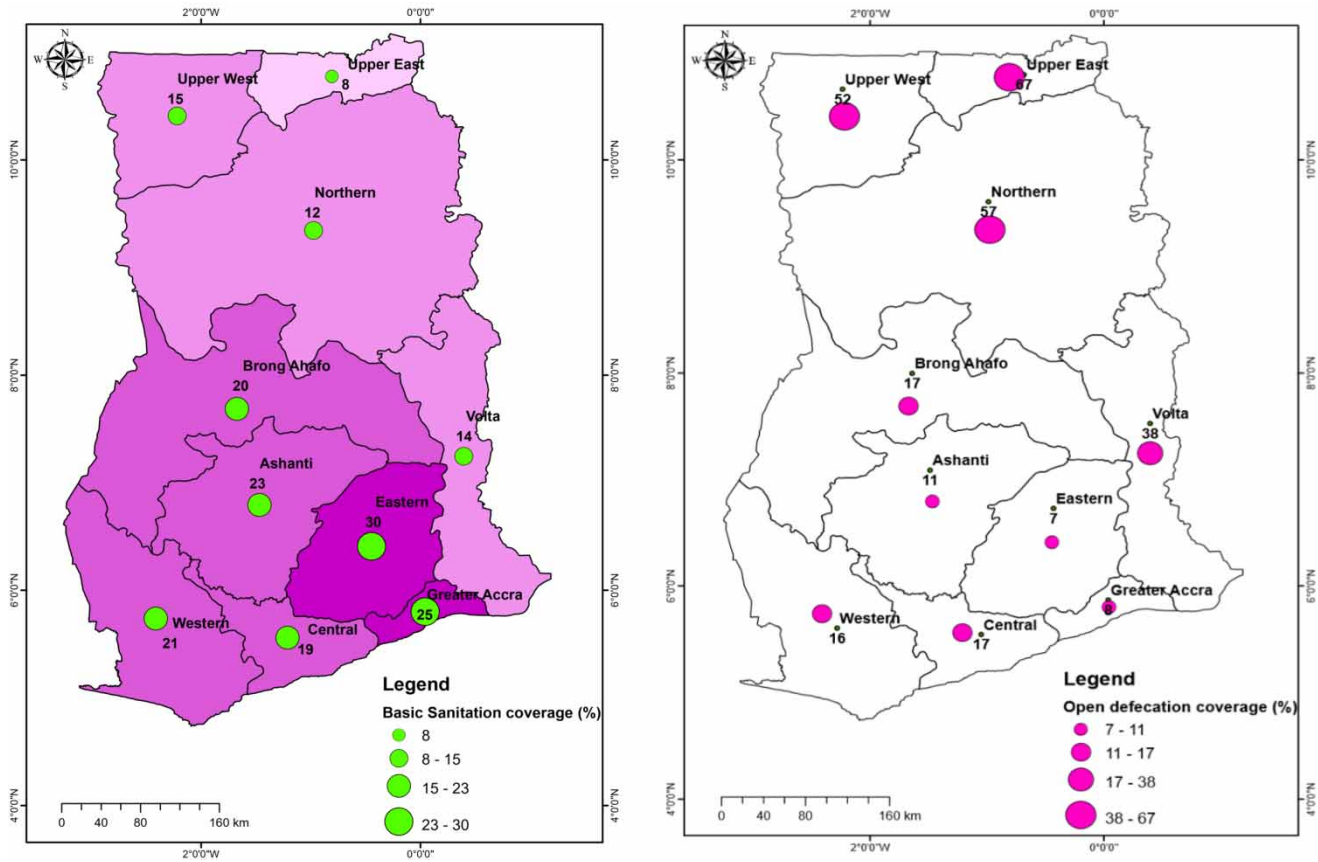

Figure 3 | Spatial distribution of basic sanitation coverage and open defecation in Ghana (*Source:* adapted from GSS (2018)).

practise open defecation (Figure 3). This is especially more rampant in rural Ghana with about 4.2 million people (representing 31% of rural population) engaging in this practice. Meanwhile, about 1.8 million representing 11% of the urban population equally practise open defecation. The use of unimproved toilet facilities (facilities that fail to separate human contact with excreta) is also widespread with 13% of the population using such facilities.

Poor sanitation resulting from the practice of widespread open defecation has negative health and social impacts on communities with the consequences of diarrhoea and cholera (Kar 2005). Thus, the low coverage in the sanitation sector partly explains the ascending prevalence of cholera in the country. Figures provided by the Ghana Health Service (Figure 4) indicate that between 2007 and 2014, cholera cases increased from just 179 in four regions to 28,975 in all ten regions across the country (Ghana Health Service 2007, 2015). The 2014 cholera outbreak was the worst case recorded in recent years and claimed 243 lives. The Greater Accra Region recorded the highest number of cases (20,199 cases) although the region has a high drinking water coverage.

WHY THE MDG TARGET ON SANITATION WAS MISSED

Policy and institutional challenges

The water and sanitation sector of Ghana has, since the 1990s, undergone several reforms by putting in place the appropriate institutions, legal and regulatory structures to address weaknesses in the sector. In the sanitation subsector, upgrading the Environmental Health and Sanitation Division into a Directorate (EHSD) of the Ministry of Local Government and Rural Development (MLGRD) and the approval of the National Environmental Sanitation Policy in 2009 were significant developments in the sector. In addition to addressing institutional challenges, these reforms through DANIDA, UNICEF and the Dutch Government strengthened the manpower and provided logistical support to institutions in the sector (CSO 2 2015). Another major reform was in 2010, when a community-led total sanitation approach (CLTS) became prominent in the country's agenda regarding the construction of household latrines, shifting emphasis from the direct provision of subsidies. In spite of these reforms in the sector, Ghana failed (15% coverage) to meet the MDGs target of 54% coverage on sanitation by 2015. According to Obeng *et al.* (2015), some of the policy reforms simply did not yield the anticipated results. For instance, the use of hygiene education and subsidies to increase household latrine uptake under the Rural Water Supply Programme IV (2005–2009), implemented in selected districts in the Ashanti Region, failed to generate the expected response from beneficiaries (Ampadu-boakye *et al.* 2011). In each of the selected districts, 226 latrines were allocated to be constructed with 50% subsidy. However, less than 5% of the household toilets were actually constructed in some districts under the programme. Among the reasons attributed to the poor response to the intervention in these districts was the failure to conduct background studies (households need assessment, income levels) in the communities prior to the start of the project.

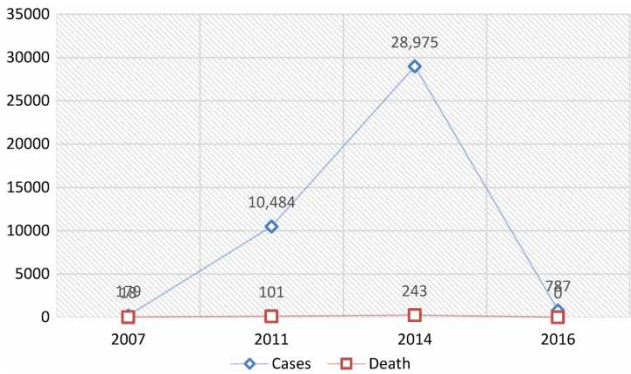

Figure 4 | Reported cholera cases and deaths in Ghana (*Sources:* Ghana Health Service 2007, 2012, 2015, 2017).

Sanitation financing

In addition to policy implementation challenges, as stated above, inadequate financing by government to the sanitation sector and related institutions hindered the effective implementation of policy reforms. Over the years, Ghana has relied on its national budgetary allocations, bilateral and multilateral donors, internally generated funds from metropolitan, municipal and district assemblies (MMDAs), non-governmental organizations (NGOs) and other non-state actors as the main sources of funding for sanitation

service delivery (MWRWH 2010). Ghana has been forecasted in recent times to move out of International Development Assistance (IDA) eligibility (ADB/OECD/UNDP 2016). In fact, statistics show that aid from the European Union, a major donor to Ghana, began to decline after the financial meltdown in 2008, reducing by half by 2013 (Forson *et al.* 2015). Between 2008 and 2011, the proportion of inflows from donors towards WASH expenditure had reduced by two-thirds (Money & Antwi-Agyei 2018). It was estimated that US$406 million in capital investment (CapEx) was required to be invested annually from 2010 to 2015 for the attainment of the MDG target on sanitation delivery in the country. However, the central government only make funds available through the annual national budget and from the District Assemblies Common Funds (DACF) (an average amount of US$41,157 (GHC 200,000) to each DA, out of which a percentage is set aside for sanitation based on the priority needs of the district (MLGRD/EHSD 2012). This allocation has been said to be woefully inadequate. According to a MWRWH (2010) report, government budgetary allocation to the sanitation sector has dwindled since 2006, with the allocation consistently falling below 2% of annual gross domestic product (GDP) in spite of government's commitment to close the financial gap within the WASH sector. The report indicated a downward trend of allocations having dropped from 1.52% in 2006 to 0.52% in 2010. TrackFin estimates that the domestic public expenditure on sanitation in Ghana amounted to about US$11.3 million in 2014, which represents only 2% of national expenditure on sanitation (GLAAS 2016; WSUP 2017). Data from the UN-Water Global Analysis and Assessment of Sanitation and Drinking Water (GLAAS) indicate that the government of Ghana WASH budget reduced from US$278 million (2012) to US $65 million (2017), which translates as a drop from 0.66% of GDP in 2012 to 0.15% of GDP in 2017 (WHO 2017). In 2010, whereas the MWRWH and the MLGRD received 2.7% and 3.55% of the total national budget, the Ministries of Education and Health received 20.26% and 11.06%, respectively. This shows how the WASH sector ministries receive less prioritization compared with the health and education sectors (MWRWH 2010). With the shift to CLTS, households were expected to meet the full cost of sanitation hardware. However, the absence of financing mechanisms to help households to acquire financial assistance for the construction of household toilets has been a major setback to the implementation of CLTS, especially in northern Ghana where poverty is prevalent.

Reliance on shared toilet facilities

The continuous reliance on shared facilities by more than half of the country's population (56.7%) was a major dent in the country's efforts to achieve the MDGs, as shared facilities do not qualify under the JMP definition of improved sanitation (WHO/UNICEF 2017). The concern of WHO/UNICEF is on the actual accessibility of these facilities throughout the day and about the security of users, especially at night (JMP 2008). Additional concerns were the distances involved in accessing shared facilities, their maintenance, the unhygienic nature of these facilities since shared toilets were usually accessible by a great many people and the lack of accommodation for children under the age of five (Peprah *et al.* 2015). Mazeau (2013) argued that, even though these concerns were actually in order, there were limited data that confirmed the widely held perception that many of these facilities, especially public ones, fail to ensure hygienic separation of human excreta from human contact. Shared toilets encompass a range of facilities from a toilet shared among tenants to public toilets shared by transient and residential populations. These facilities mostly serve high populated low-income communities in urban areas as an alternative to open defecation. The dominance of shared toilets in Ghana is as a result of unplanned urbanization, specific features of housing, socio-economic characteristics of the population and political orientations (Mazeau 2013). While urbanization has a positive impact on the economy and on the lives of the migrants themselves, it usually results in the development of low-income and often unplanned settlements, regularly labelled as slums. In sub-Saharan Africa, a UNFPA report indicates that the growth of slums and urbanization has become synonymous. According to the World Bank (2017) report on development indicators, the population living in slums (% of urban population) in Ghana was reported to be 37.9% in 2014. These settlements are often characterized by a high density of population. High density may facilitate the provision of infrastructure and service to a larger population and decrease the cost per inhabitant of an infrastructure. However, high density

reinforces technical challenges, particularly when it comes to sanitation (Mazeau 2013). The high density of some areas, poor physical planning, size of the streets and their irregular patterns and the challenge of multi-storey houses often reduce the number of feasible technical options available to slum dwellers (SuSanA 2008). In addition, lack of formal recognition of some peri-urban settlements makes investment to sanitation unattractive. Unreliable water supply in these settlements often limits the use of some sanitation technologies and the low-income levels of most dwellers make sanitation facilities unaffordable to some households (Hogrewe *et al.* 1993; Parkinson & Tayler 2003; MWRWH 2007). Also, the high density of these settlements and the associated demand for rental accommodation in slums has compelled some landlords to convert toilets into living rooms, as observed in some parts of Accra (MLGRD 2010b). This practice compel tenants to rely on public toilets for their excreta disposal.

Public toilets were first constructed in Ghanaian cities by the British Government in the 1930s. Their numbers continued to increase during the post-colonial era as they came to be a practical means for addressing the sanitation needs of growing urban populations and a reliable source of revenue for sub-metropolitan councils (Ayee & Crook 2003). As a result, public toilets are dotted across the length and breadth of the country. Accra Metropolis alone, as of 2012, was reported to have over 340 registered public toilets within the jurisdiction of the Assembly. The type of housing system in the country is another contributing factor to the high reliance on shared facilities. According to the Ghana population and housing census (2010), about 51.5% of households in Ghana reside in rooms in compound houses. Households living in such facilities usually share toilet facilities with other tenants. These toilets, most of which are improved, are considered to provide limited sanitation service according to JMP.

GHANA'S PREPAREDNESS TOWARDS ACHIEVING THE SDGS SANITATION TARGET

Financing mechanisms

Sustainable financing is crucial for the adequate provision and maintenance of new and existing WASH infrastructure. However, it is argued that heavy reliance on donor funding presents a huge challenge to sustaining achievements in the WASH sector in the long term (ADB/OECD/UNDP 2016). Therefore, to achieve the SDG target, efforts will have to be accelerated, taking on board all the various instruments and tools that exist to facilitate financing. This means that innovative financing mechanisms are required to adequately finance sustainable, cost-effective and pro-poor sanitation services. The innovative financing tools used to attract capital to finance water and sanitation infrastructure include financial guarantees, insurance, subsidies, equity grants, tenor extensions, pooled finance, Project Preparation Funds, hedging instruments, benchmarking, microfinance and credit ratings (Kolker *et al.* 2015).

Fortunately, Ghana appears prepared to finding other ways of closing the financial gap as financial assistance from development partners continues to dwindle. One of the few innovative approaches is the introduction of 'sanitation surcharges' included in property tax piloted in Ga West Municipal Assembly (GWMA) of Ghana with the support of Water & Sanitation for the Urban Poor (WSUP). The GWMA (a district of Greater Accra) approved in October 2016 a '10% surcharge on property rate to be ring-fenced for sanitation services within the Municipality', with effect from January 2017 (WSUP 2018). With the aim of ensuring adequate funding for sanitation services, the funds are expected to be ring-fenced for capital investments in low-income communities. A recent research around sanitation surcharge included in property tax in Ghana demonstrates that the GWMA has been successful in mobilizing funds through the surcharge policy. Since the implementation of the surcharge policy in 2017, the total revenue generated (10% of property rate) at the end of 2018 was estimated to be GHS 30,365. There was, however, no record to show whether this has significantly contributed to increasing access to sanitation services. A similar model has been applied in the Akwapim North Municipality in the eastern region of Ghana (WSUP 2018). With support from the Global Affairs Canada, iDE Ghana, through its Rural Sanitation and Hygiene Marketing in Northern Ghana project (RuSHing), established the Sama Sama in 2016 to provide a complete solution for households looking to build a toilet. The Sama Sama is a sanitation project piloted in the Savelugu-Nanton Municipality in the northern region

serving about ten districts in the northern and upper east regions where it has provided improved toilet facilities to over 600 households. Customers are given the opportunity to purchase a toilet for $515 or choose an 18-month financing option, which requires a down payment of $43. This has afforded households the flexibility to own and pay for household toilets.

In demonstrating the nation's commitment to solving the sanitation challenges, the government of Ghana has signed into the Sanitation and Water for ALL Global Partnership to finding a lasting solution to the financial gap that exists in the WASH sector. Through this initiative, the government of Ghana has secured a total of US$150 million to help improve the water and sanitation situation within the Greater Accra Metropolitan Assembly (GAMA) (The World Bank-IBRB-IDA 2013). The GAMA Sanitation and Water Project is a government of Ghana project supported by the World Bank and the Global Partnership for Output-based Aid. With the aim of increasing access to improved sanitation and water supply in low-income communities (LICs) within the GAMA, close to about 250,000 people are expected to have access to improved sanitation and water supply services (The World Bank-International Development Association 2013); at least 19,000 household toilets are to be constructed to serve poor households in these LIUCs. Output-based subsidies are provided to beneficiaries in targeted low-income urban communities to enable them to obtain toilets at reduced prices. To facilitate scaling up of implementation, the GAMA has involved licensed financial institutions that are willing to offer regular savings plans and affordable loan products that would enable eligible households to mobilize their lump sum contribution required before toilet construction can begin (Tenders.com.gh 2017). Available information on the progress of the GAMA project shows that about 18,363 household toilets have been constructed in 12 Assemblies and 406 school toilets have been constructed so far (GAMA SWP 2019). The total number of household toilets that have been constructed is about 96% of the target of 19,100 toilets envisioned for the end of the project.

In addition to manifesting its intentions, the government of Ghana has pledged to spend US$200 million per year on sanitation and water, US$50 million per year to reinforce hygiene education and an additional US$150 million for hygienic treatment of sewage and faecal sludge (Government of Ghana 2010; MWRWH 2010; The World Bank-International Development Association 2013). Although little of this funding has yet been seen, the government of Ghana (GoG) has demonstrated its serious intent by upgrading the Environmental Health and Sanitation Unit at MLGRD into a full directorate (EHSD), the procurement of vehicles and the recruitment of 40 engineers to support the waste management departments of the metropolitan and municipal assemblies (MMAs) nationwide.

Institutional reforms and arrangement

An important aspect of the implementation of the sanitation strategies is ensuring effective inter-institutional coordination and collaboration. Over the last two decades, the government of Ghana has introduced important institutional reforms in the water and sanitation sectors, aimed at improving governance by clearly separating the different roles. In 1993, the government of Ghana initiated a comprehensive decentralization reform, under which, the 110 MMDAs at the time were given the responsibility for infrastructure development and management of sanitation services (The World Bank-IDA 2013).

Today, the Ghana WASH sector has a well-established and structured institutional set-up with clear lines of responsibility. WASH service delivery is decentralized with national-level institutions providing the policy and monitoring frameworks, while local governments have responsibility for implementation at the MMDAs level. The Ministry of Sanitation and Water Resources (MSWR) has the responsibility for policy formulation, harmonization and coordination of WASH activities, through its Water Directorate and Environmental Health and Sanitation Directorate.

The provision of sanitation services, rural and small towns' water service delivery is decentralized under the MMDAs. MMDAs have autonomy for planning, budgeting and implementation, based on local priorities and guidelines provided by the National Development Planning Commission (on planning) and from the Ministry of Finance (on budgeting and expenditure reporting). The Office of the Head of Local Government Service has the responsibility to ensure that local authorities are staffed with the qualified personnel. Given the seriousness

attached to sanitation service delivery, there are plans to create a National Sanitation Authority (NSA). The MSWR has indicated that the NSA will have a regulatory function – setting national standards for sanitation – and will manage a National Sanitation Fund. The reforms described above have led to a clear institutional separation for the provision of sanitation and water supply services, as depicted in Figure 5.

Policy and regulatory reforms

The main legal act governing the provision of sanitation services is the Local Government Act (Act 462), which assigns MMDAs the responsibility to provide sanitation services. The Local Government Service Act allocates the responsibility to provide technical assistance for MMDAs and regional councils so as to enable them to perform their functions to the Local Government Service, which is the national body responsible for personnel in the assemblies. The roles of the various institutions mandated for water and sanitation service delivery are spelled out in the National Water Policy (NWP) and the National Environmental Sanitation Policy (NESP), respectively. The National Environmental Sanitation Policy (NESP) provides a clear and nationally accepted principle of environmental sanitation as an essential social service and a major determinant for improving health and quality of life in Ghana (MLGRD 2010a). The NESP emphasizes the need for a cost-effective sanitation model, based on the CLTS approach. Following the adoption of NESP, a National Environmental Sanitation Strategy and Action Plan (NESSAP), 2010–2015, was produced by the Environmental Health and Sanitation Directorate (EHSD) of the Ministry of Local Government and Rural Development (MLGRD) to serve as an implementation plan for the NESP. The NESSAP thus provides the basis for the systematic

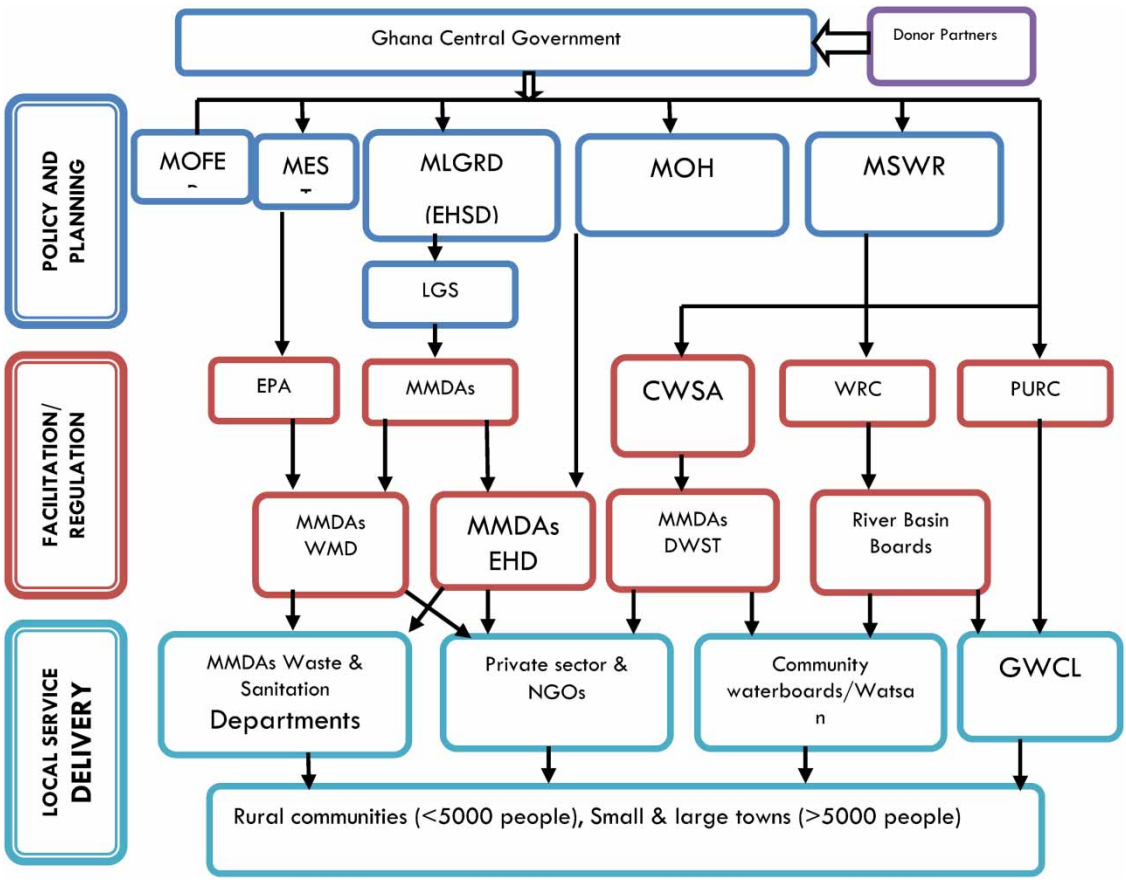

Figure 5 | Institutional arrangement for WASH sector in Ghana (*Source:* adapted from Oduro-Kwarteng *et al.* (2015)).

implementation of interventions for improving environmental sanitation infrastructure and services (MLGRD & EHSD 2010). These documents provide the framework for setting national strategies and investment envelopes for agreed national sanitation targets. In addition to the NESP and NESSAP, a complementary Strategic Environmental Sanitation Investment Plan (SESIP) was developed in the year 2012 to indicate the projected costs of interventions for meeting defined policy measures. Based on recommendations from stakeholder consultation on the implementation of the CLTS approach as indicated in the NESP, a RSMS was developed in 2012 for scaling up CLTS and hygiene and sanitation marketing in rural communities. Intrinsic to the model is the development of a sanitation marketing (SanMark) strategy at the district level as a measure to engage private sector participation (MLGRD/EHSD 2012).

The MMDAs serve as the pivot for implementing the NESP, NESSAP, SESIP and RSMS at the local level (MLGRD/EHSD 2012). As an implementation measure at the district level, district assemblies are required to prepare District Environmental Sanitation Strategies and Action Plans (DESSAPs) together with District Water and Sanitation Plans (DWSPs) as medium-term plans or strategies for tackling sanitation at the local level (MLGRD/EHSD 2012). Cumulatively, both the DESSAPs and DWSPs are expected to elaborate on the objectives and implementation strategies for sanitation service delivery (MLGRD & EHSD 2010). The DESSAPs and DWSPs have now become one of the indicators for receiving funds under the District Development Fund (MLGRD/EHSD 2012).

In contrast, urban sanitation interventions have been rather piecemeal, without a concerted national strategy. To help address such deficit, a national urban strategy is being developed to address sanitation, particularly in urban slums, communities and schools. UNICEF Ghana has received funding from the government of the Netherlands as part of Ghana Netherlands WASH Programme (GNWP) to support the government of Ghana to develop and implement a national urban strategy under the urban sanitation project titled 'Improving Sanitation Access in Urban Ghana' (UNICEF/GNWP/GoG 2017). The urban sanitation strategy is anticipated to address aspects such as sanitation behaviour change and demand generation, WASH in schools, appropriate low-cost sanitation and wastewater treatment technology options, sanitation marketing, financing mechanisms, regulations, supply chains and business development.

Central to the proper implementation of the policies is monitoring and evaluation of WASH activities with the MMDAs. Monitoring and evaluation of the WASH activities are carried out within the framework of the NESP and NESSAP. District performance monitoring is based on Basic Sanitation Information System (BaSIS) for Rural Sanitation, District Monitoring and Evaluation System (DiMES) for rural and small-town water services and Education Management Information System (EMIS) for WASH in schools. There is no dedicated tool or reporting system for urban sanitation but, currently, efforts are underway to develop a reporting tool to facilitate monitoring. Table 1 presents a summary of the main policy and strategy documents for sanitation in Ghana.

POTENTIAL BARRIERS TOWARDS ACHIEVING THE SDGS TARGET FOR SANITATION

Unclear guidelines for sanitation service delivery

Despite the existence of the NESP and strategy that set ambitious targets for the country, the support structure to MMDAs for the planning of sanitation services is quasi-non-existent outside donor projects (WSUP 2017). Existing guidelines do not specify management requirements for sanitation services (liquid waste or faecal sludge) (WSUP 2017) and, as a result, MMDAs focus on solid waste services. Most assemblies give priority to solid waste rather than sanitation services. This is because solid waste is seen as a greater challenge since heaps of uncollected solid waste are visible to all and are usually associated with public outcry. For example, human excreta, however, is less visible because excreta is usually disposed of into drains, unauthorized places at the outskirt of the cities or wrapped in plastic bags and disposed of into solid waste. In fact, for most politicians, the mention of sanitation brings to mind solid waste. Hence, the limited resources available for the waste management are spent on solid waste rather than on faecal sludge management.

Table 1 | The main policy and strategy documents for sanitation in Ghana

Policy and strategies	Key points
Environmental Sanitation Policy (MLGRD 2010)	Covers all aspects of environmental sanitation, including solid waste, liquid waste, excreta, industrial wastes, health-care, and other hazardous wastes Recognizes the need to provide inclusive sanitation services, especially to protect the vulnerable, women, and children Allocates responsibilities between ministries and local governments Promotes private sector participation (PSP) and NGOs' involvement in the delivery of sanitation services Acknowledges the challenge of urban sanitation (including excreta management, referred to as 'liquid waste') and the lack of planning Makes households responsible for financing their own household facilities
National Environmental Sanitation Strategy and Action Plan (MLGRD & EHSD 2010)	Recognizes that communal and public facilities will continue to be an important aspect of excreta management for some time to come Proposes franchising the management of public toilets and the provision of cesspit emptying services by private operators Recognizes the need for appropriate low-cost treatment and disposal facilities for faecal sludge
Strategic Environmental Sanitation Investment Plan (adapted from WSUP (2017))	Provides a financing plan for implementing the NESSAP Proposes an increase in the annual allocation of the DACF to MMDAs to fund their financing gaps (from 7.5% to 15%) and 'ring-fencing' the amount for environmental sanitation (including solid waste) programmes Proposes the establishment of a national revolving fund for household sanitation to be managed by microfinance institutions

Source: adapted from WSUP (2017).

High cost of sanitation technologies and extensive use of public latrine

Sanitation is traditionally a private good (Sijbesma 2011) and Ghana's NESP makes households responsible for financing their own household facilities (MLGRD 2010a) Available data suggest that over the past years (2010–2014) the vast majority of the total spending in the WASH sector has come from households (GLAAS 2016; WHO 2017). In the years 2013 and 2014, for instance, with total WASH expenditures of US$1.260 million and 1.252 million (GLAAS 2016), respectively, the vast majority (74.2% in 2013 and 74.9% in 2014) (GLAAS 2016) of this spending came from households (users) 'self-provision'. However, one of the major challenges affecting sanitation delivery in Ghana is the high cost of sanitation facilities (Duku 2017; WSUP 2017). Due to the limited or, in some cases, the lack of sewerage systems, on-site systems are predominantly used. On-site sanitation facilities that are considered as improved (septic tanks, ventilated improved pit, pour-flush, composting toilets) (WHO/UNICEF 2017), based on the WHO and UNICEF JMP definition, are relatively expensive. These options usually cost up to US$1,000 to install (WSUP 2017; Duku *et al.* 2018), which is prohibitive for low-income households as many of these households in Ghana rely on the informal economy where incomes are generally earned on a daily basis (WSUP 2017). Considering that the average annual household income for those within the three lowest income quintiles range between GHS 6,571 (US $1,516) and GHS 14,823 (US$3,420), investing in household facilities would represent between 66% and 29% of a household's annual income (WSUP 2017). The World Bank also reports that the costs of poor sanitation are inequitably distributed and regressive, with the highest economic burden falling disproportionately on the poorest (The World Bank-IDA 2013). The average cost associated with poor sanitation constitutes a much greater proportion of a poor person's income than that of a wealthier person (The World Bank-IDA 2013).

Furthermore, as in many densely populated areas, the lack of space is a challenge for the construction of household toilet facilities. As a result, shared, communal or

public toilets appear to offer solutions, especially to households dwelling in the urban slums or densely populated areas (WSUP 2017). A significant number of urban dwellers in Ghana rely on public toilets (The World Bank-IDA 2013), and public toilets continue to be in widespread use, particularly for people living in low-income, high-density urban settlements. Mariwah *et al.* (2017) reported that while international agencies and the global community continue to advocate for private single-household toilets as the preferred form of sanitation, this is unlikely to be realized in the short term for many of the urban poor communities or households. This is because, currently, in Ghana (and in many other countries that have failed to meet their MDG sanitation targets), public toilets represent the main alternative in high-density, 'informal' urban settlements to the far more dangerous (and growing) practice of open defecation (Mariwah *et al.* 2017). The worrying aspect is that there seems to be an entrenched perception that public toilets are acceptable and fulfil their sanitation needs. The use of public toilets is deep-rooted in the lives of urban dwellers to the point where they have become socially acceptable means of sanitation (WSUP 2017). However, due to poor hygiene practices, maintenance (Mariwah *et al.* 2017) and irregular tariff structure (The World Bank-IDA 2013; WSUP 2017) as a result of the lack of regulation for public toilets, it deters many people from using public toilet facilities and resorting to open defecation as an alternative means – which is far more dangerous.

Again, Ayee & Crook (2003) opine that the widespread traditional use of public toilets for sanitation in Ghana has created the impression that the government or an external agent should be responsible for sanitation provision. This explains why there is low demand for sanitation and low private investment in sanitation, with only 15% household coverage in Ghana (WHO/UNICEF 2017).

Institutional/human resource capacity

Adequate human resource development for the water and sanitation sector has long been recognized for decades as a priority issue (Bos 2006), as illustrated by the Mar del Plata United Nations Water Conference in 1977, International Water Supply and Sanitation Decade (1981–1990) and the UNDP Symposium on Capacity Building for the Water Sector (Cavill & Saywell 2009). It is indisputable that the availability of local capacities is essential in achieving the SDGs targets for water and sanitation. According to Oduro-Kwarteng *et al.* (2015), adequate human resource capacity in the water and sanitation sector plays a pivotal role in improving and sustaining access to potable water and improved sanitation. The lack of capacity has been well documented as one of the main constraints to achieving the MDGs in low-income countries (4th WWF 2005; Morgan *et al.* 2005; World Bank 2005).

In Ghana, for instance, although the cost of achieving the water and sanitation targets are known (Government of Ghana 2010), there exists a gap in the human resource capacity needs – the requisite skills to provide these essential services (Monney & Oduro-kwarteng 2014; Oduro-Kwarteng *et al.* 2015). It must be stated that the low coverage or poor sanitation situation in Ghana, among other factors, is as a result of the low number of the required skills or human resources to manage the sanitation facilities and implement the existing policies, regulation and strategies. For instance, when assessing the human resource capacity in the WASH sector of Ghana, Oduro-Kwarteng *et al.* (2015) and Monney & Oduro-kwarteng (2014) found a huge deficit with regards to human resources in the sanitation sector as opposed to the water sector. Both studies point out that the WASH sector has considerable proportions of its technical personnel employed in the water sector. In fact, Oduro-Kwarteng *et al.* (2015) specifically state that the public urban water utility has the highest proportion (about 75%) of technical expertise in the sector due to the nature of their work: the operation and maintenance of conventional water treatment and distribution systems. The sanitation sector is, in contrast, dominated by social development personnel with only few (2%) technical personnel. They observed that the Community Water and Sanitation Agency (CWSA), which has responsibility for facilitating the delivery of WASH services in rural and small towns, has a greater proportion of personnel in the administration and finance category than personnel in the technical categories providing technical assistance in the construction of WASH facilities. According to Oduro-Kwarteng *et al.* (2015), the agency only hires technical personnel temporarily for certain projects to augment the personnel available whenever the need arises.

Also, the proportion of technical personnel involved in sanitation design, operation, maintenance and management in the MMDAs is low. The Environmental Health and Sanitation Units in the MMDAs are basically involved in health education, health promotion and abatement of nuisance, and as a result, a good number of their personnel are found in the social development category.

Even in the private sector, the staff employed lack skills for the design, operation and maintenance of sanitation and water supply systems. This is because graduates with the required skills prefer other sectors of the economy because of relatively higher remuneration and better working conditions (IWA 2013; Oduro-Kwarteng *et al.* 2015). The International Water Association (IWA) reports that although employees, particularly in the public sector (sanitation sector) enjoy job security, the remuneration packages and other conditions of service are not attractive to those seeking higher pay (IWA 2013). Besides low salaries (in the public sector), IWA argues that other disincentives such as the lack of career progression and the lack of recognition of further education where employees may not get promoted after attaining higher degrees exacerbates the movement of qualified personnel from the sector.

Furthermore, although the Ministry of Health has three schools of hygiene that offer training in sanitation and environmental health, graduates from these schools lack knowledge in sanitation system designs (waste treatment facilities) and service delivery and, as a result, are only employed as Environmental Health Officers (EHOs) for hygiene promotion and abatement of nuisance. This is because in these schools of hygiene, technical programmes comprising design of sanitation systems and technologies do not form a key aspect of their curriculum. There is, therefore, a huge skills' gap in the design, operation and maintenance of sanitation systems (wastewater and faecal sludge treatment plants).

Perception of people towards sanitation

There is also a wider socio-cultural and attitudinal explanation for the low take-up for sanitation in Ghana. The general set-back in development of sanitation in broader terms can partly be related to the perception of people towards sanitation (Nimoh *et al.* 2014a, 2014b; Appiah-effah *et al.* 2015). The concept of latrine acceptability plays an important role in latrine uptake. There are also some cultural beliefs that encourage some people to resort to open defecation (Mariwah 2018). While some cultures consider excreta as harmless, others consider excreta as dirt and latrines as evil places. In such places where excreta is seen as dirt and evil, open defecation is considered socially acceptable and residents may not see the need to adopt latrine technologies (Cotton *et al.* 1995).

In a study conducted by WaterAid (2009) in four West African countries – Burkina Faso, Ghana, Mali and Nigeria – on cultural values that reinforce the practice of open defecation, it was 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. Defecation is seen as a private issue and thus defecating in the bush offers the needed privacy. Open defecation is seen as an ancestral practice passed down through generations and that it is a taboo to defecate in a building or superstructure. The study also revealed 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. The study also found that some people in northern Ghana still use open defecation because they believe that 'public toilets are surrounded by evil spirits and therefore should be avoided', while others believe that 'latrine use will strip the user of their magical powers'. Others defecate in the open because they want to protect their bodies from bad odour or smell from the toilet/pit latrine and which they do not even tolerate near their houses. Rosenquist (2005) asserts that this mechanism of denial causes major trouble for the implementation of new sanitation solutions.

Furthermore, some households have biased attitudes toward human excreta reuse as they perceive excreta as a waste rather than as a resource (Nimoh *et al.* 2014b). Moreover, people have bad attitudes and perceptions towards excreta, such that some households are put off immediately by the term 'faecal sludge' as it is usually considered as a dirty, smelly and harmful substance, albeit the rich resource

it provides in agriculture. According to Nimoh *et al.* (2014a, 2014b), most people from the southern part of Ghana perceive that excreta or faecal sludge should not be handled in any way and that is the reason why it is important for one to wash his/her hands after visiting the toilet.

OPPORTUNITIES FOR GHANA'S SANITATION SECTOR

The low sanitation coverage in Ghana is a great opportunity for private sector participation in activities to reverse the situation. The current state of sanitation makes it very imperative for MMDAs to open up the sanitation market and forge partnerships with the private sector to provide efficient and low-cost sanitation services to the citizenry, especially the poor households (RCN GHANA 2018). Fortunately, the government of Ghana in June 2011 published the National Policy on Public–Private Partnerships with the aim of ensuring better public infrastructure and service delivery (Ministry of Finance & Economic Planning 2011). It is anticipated that the existence of this policy will afford guidance and an enabling environment for the MMDAs to supply better services through the use of private sector collaborations to provide financial, human and technical resources for improved service delivery.

With an estimated population of 23.5 million Ghanaians without access to improved sanitation services, of which an estimated 5.1 million practice open defecation (WHO/UNICEF 2017), the current state of affairs presents tremendous opportunities to the private sector for new technological, financial and business innovations for meeting the sanitation needs of these people. For instance, in response to the high incidence of open defecation and the challenges most households face in the use of wooden slabs to construct household latrines which often become rotten and cave in during a short period of usage, the Global Communities, an international NGO in the WASH sector in partnership with the MSWR and Duraplast Ghana, has recently developed a plastic slab latrine called 'Digni Loo' to replace the non-resilient wooden and unaffordable cement slabs currently being used in the construction of household latrines in most rural areas in Ghana.

Additionally, the cost of improved household toilets suitable for low-income or densely populated areas raises issues of affordability. In the quest to solve the burden of high cost toilet facilities, UNICEF, in collaboration with MSWR and the Kwame Nkrumah University of Science and Technology, launched 'The Sanitation Technology Challenge' which was aimed at stimulating innovations in the provision of affordable toilet facilities for rural and urban Ghana. This initiative provided opportunities for toilet manufacturers, researchers, sanitation practitioners, innovators among others, to reveal their ideas to attract funding for their innovations. The sanitation technology challenge produced a great many innovative ideas from the participants, ranging from low-cost toilet technologies made from prefabricated barrels/drums (high-density polyethylene (HDPE)) to solar-aided dehydration toilets as well as low-cost lining technologies.

Furthermore, inadequate faecal sludge management is a widespread problem across Ghana. There is no doubt that a huge percentage of the untreated wastewater or faecal sludge generated is discharged directly or indirectly into the environment, for which the harmful effect on public and environmental health is indisputable. This situation is often attributed to the inadequate faecal sludge collection and treatment facilities in the country. There are no proper functioning treatment facilities in the towns and cities of Ghana (WSUP 2017; Rijksdienst voor Ondernemend Nederland 2018) and viable solutions are necessary to improve this situation (Schoebitz *et al.* 2015). This means there are great market or business opportunities for collection, treatment and reuse of faecal sludge. Figure 6 shows some of the business opportunities that are available within the sanitation service chain. According to Appiah-Effah *et al.* (2015), promoting extensive use of compost from human excreta for agriculture in Ghana can significantly improve sanitation and crop production but would require strong private sector buy-in, intensive public sensitization and innovative business models (Impraim *et al.* 2014). Similarly, Schoebitz *et al.* (2015) opined that resource recovery of nutrients, water and energy from waste streams is an attractive possible solution because it could generate revenues from the sale of treated end products if there is significant and consistent market demand. For example, Safi Sana Ghana (2018) has taken advantage of the

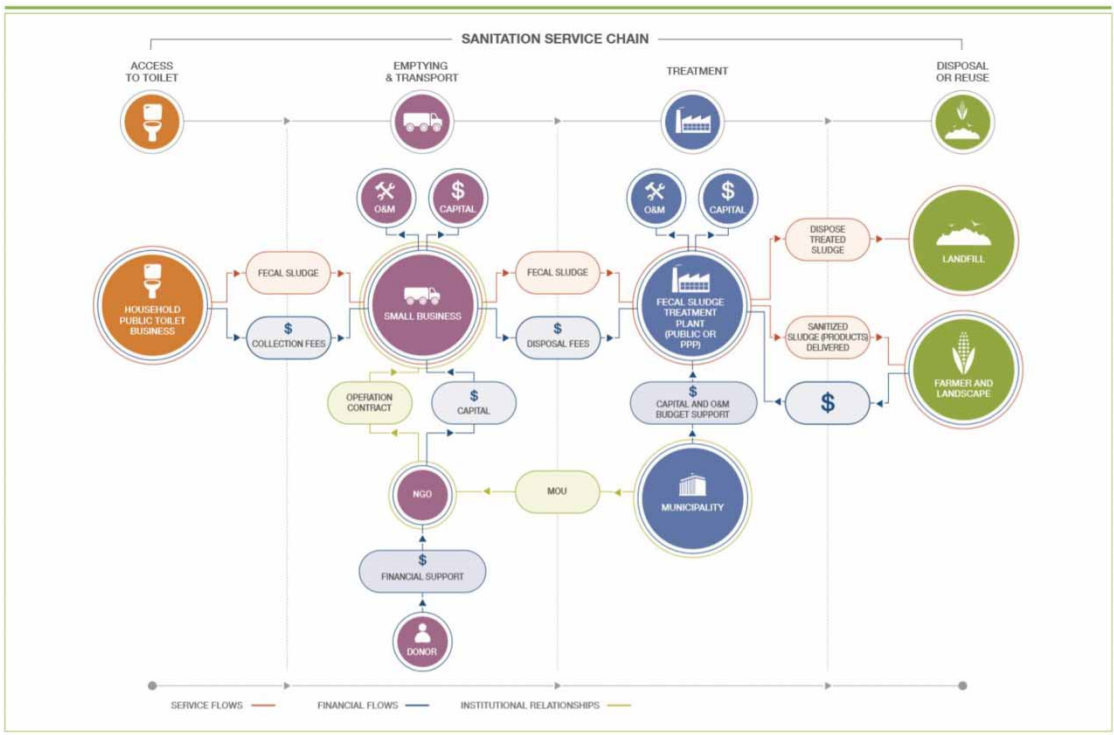

Figure 6 | Common elements of business model within the sanitation service chain (*Source:* adapted from Rao *et al.* (2016)).

opportunities in waste management to generate compost, irrigation water and energy from faecal sludge to improve crop yields, reduce pollution and provide reliable energy. The recent emergence of Sewerage Systems Ghana Limited in the waste management sector of the capital city, Accra, further proves that the involvement of the private sector in waste management is necessary because it provides profit-driven solutions to waste management problems (Schoebitz *et al.* 2015). Therefore, private sector involvement in similar profitable waste-to-value projects to other parts of the country will ensure better and improved sanitation and health outcomes.

Changing the sanitation situation in Ghana is unlikely to be achieved via a simple scale-up of public funding (The World Bank-International Development Association 2013), since sanitation services are generally considered as a private good, with the responsibility for financing resting with the beneficiaries themselves (MLGRD 2010a). However, the challenge of raising private finance to purchase or own household sanitation as a solution in Ghana is still problematic (Mason *et al.* 2015). Notwithstanding the lack of well-structured financial products targeting the provision of WASH services for the poor, a survey by Safe Water Network (2013) showed a promising future going forward. According to the report, financial solutions can be applied to support household access to improved WASH services and to promote WASH-related business activities. It indicated that there is the potential to develop and utilize financing solutions, including microcredit and small-to-medium enterprise (SME) financing, to catalyse the provision of WASH services for the poor. The experience of the USAID-funded initiative with the local microfinance institution, Youth and Social Enterprise Fund (YSEF) and Global Communities (formerly CHF International) demonstrates the potential for microfinance to be an effective tool for improving access to safe water for the poor. The initiative provided microcredit to households and WASH-related enterprises in selected communities in the Greater Accra and western regions to improve access to safe water and sanitation facilities. It could be said that providing promising loan products by financial institutions could potentially enhance access to improved sanitation solutions

for the poor in Ghana. Thus, there is an opportunity for government and private investors to catalyse the development and financing of sanitation solutions.

CONCLUSION

This paper has shown that among competing demands for public investment, including education, health and water, sanitation has not received the needed prioritization. Considering the rapid population growth and the fact that Ghana has attained a lower middle-income status, achieving sustainable universal sanitation coverage would require a paradigm shift in current efforts. The current level of sanitation financing mechanism is not sufficient to achieve the sanitation SDG targets while government allocation to the sector is reducing and support from development partners are shifting from grants towards loans. This suggests that increased government allocation and household contribution via tariffs are warranted to achieve the SDG targets in sanitation. The government needs to show a strong commitment in allocation of local fiscal resources to support the sanitation sector and move from the heavy reliance on donor funding to finding innovative ways to attract capital to finance sanitation infrastructure. It was revealed that the low sanitation has largely been driven by rather complex economic, institutional and socio-cultural factors, including inadequate financial commitment by both local and central government, poor implementation of policies, bad attitude and perception towards human excreta, high cost of existing sanitation solutions and extensive use of shared and public toilets. Although the government and the sanitation sector have taken some important steps to finding lasting solutions to bridging the sanitation gap through institutional and policy reforms, sanitation marketing programmes and other innovative financing, a great deal still needs to be done. Additionally, the government needs to provide an enabling environment for the private sector to invest in improving sanitation. Furthermore, the government of Ghana, in partnership with the private sector, should embark on a serious and consistent behavioural change campaign to alter the bad perceptions of people against sanitation and the health, economic and environmental benefits of collective efforts to attain improved sanitation status.

The current sanitation coverage presents tremendous opportunities to the private sector for new technological, financial and business innovations in meeting the sanitation needs of Ghana's rural, urban and peri-urban people. For this reason, the following are recommended:

- The MMDAs should open up the sanitation market and forge partnerships with the private sector to provide efficient and low-cost sanitation services to their people.
- A well-structured financial product such as microcredit targeting the provision of improved sanitation services for the poor or households in low-income communities be implemented to alleviate a major bottleneck in the sector.
- The private sector should be encouraged to invest in profitable waste-to-value projects in other parts of the country where there are no waste treatment or recycling facilities so as to achieve better and improved sanitation and health outcomes.

DECLARATION OF INTEREST STATEMENT

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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