

BRIEFING NOTE

GHANA

Key findings:

- Compared with a national MDG target of 80% for water supply and existing coverage of 86% (2010), Ghana has met the 2015 target for drinking water. To avoid regressing, attention needs to be paid to cities that will experience a high urbanisation rate and the concomitant demand on service provision.
- The sanitation coverage is 14% and Ghana has not made much progress in reducing the proportion of the population with no access to improved sanitation and the MDG target will thus not be achieved by 2015 if the current trend continues. However, the low figure of use of improved sanitation is to a great extent due to the high incidence of use of shared facilities in both urban and rural settings. The number of people in Ghana not using improved sanitation facilities by 2015 will be approximately 24.5 million.
- Of the total deaths in Ghana, 12.2% are WASH-related with the overwhelming proportion of these deaths being of young children¹.
- The sanitation sector is still institutionally fragmented and despite recent efforts there is still a lack of investment.
 - Whilst the sanitation function was transferred to local government, the Ministry of Health still trains staff for sanitation-related jobs and continues to receive funds for that. The transfer of financial resources to the local government for capacity building is limited.
- Whilst it is recognised and efforts are invested in sanitation this report concludes that compared with water supply, professional capacity is still less for sanitation sector.
 - There are more engineers and degree holders in water supply than sanitation sub-sector in Ghana.
 - There is institutionalised training for technical artisans and operators for urban water supply, but no such arrangement for sanitation. There is no institutionalised training of water operators and latrine artisans for rural WASH service delivery.
 - In the sanitation sector, the key challenge relates to inadequate professional personnel, especially sanitation engineers and technical staff. The fact that there is a stigma attached to toilet management and because salaries in the sanitation sector are lower than similar positions in the health sector professional staff is not attracted to the sector.
- There was no career succession plan to replace aging engineers and key technical staff in the WASH sector. This has resulted in shortage of mechanical, electrical and civil engineers in the urban water sub-sector.
- Public sector faces highest shortages:
 - Public agencies are limited by the government in terms of the number of personnel they employ. This creates an obstacle in the sector, even where urgent shortages appear.
 - International NGOs and some private sector organisations attract more qualified people than the public sector because they pay higher salaries.
 - The service conditions in the public sector are not attractive enough to draw the right calibre of certain category of personnel (civil, mechanical, electrical, computer engineers) into the WASH sector.

Background

This Briefing Note summarises the findings from an IWA-led study in Ghana, made possible through the support of the United States Agency for International Development (USAID) under the auspices of their West Africa WASH (WA-WASH) program and was co-funded by Department for International Development (DFID UK). The study in Ghana was executed by staff of the Kwame Nkrumah University of Science and Technology (KNUST) and supported by Cap-Net who facilitated the connections with the country study team.

Ghana is located on the West Africa's Gulf of Guinea, only a few degrees north of the Equator. The country is plagued by recurrent drought in the north which severely affects agricultural activities. Deforestation, overgrazing, soil erosion, poaching and habitat destruction threatens wildlife population and water pollution and inadequate supplies of potable water.

Ghana is one of the most thriving democracies on the continent and has often been referred to as an 'island of peace' in one of the most chaotic regions on earth. It shares boundaries with Togo to the east, Cote d'Ivoire to the west, Burkina Faso to the north and the Gulf of Guinea to the south. The country covers an area of 238,500 square kilometres, has an estimated population of 25 million, drawn from more than one hundred ethnic groups - each with its own unique language. As of 2009, life expectancy at birth was about 63 years for males and females with infant mortality at 51 per 1,000 live births. The adult literacy rate in Ghana was 65% in 2007, with males at 71.7% and females at 58.3%. Annually, 12.2% of all deaths recorded in Ghana was directly related to the water and sanitation insufficiencies.

Assessment approach

The main objective of this study was to assess human resource requirements in the water supply and sanitation sectors to facilitate achieving MDGs target 7c in Ghana. In addition, the methodology adopted in this study also estimated the human resources requirements to achieve universal coverage of water supply and sanitation for the predicted population in 2015 for comparison.

The study focused on the human resource requirements from the public sector and parastatal institutions, and the private sector (private consultancy companies, individual contractors, etc.), as well as NGOs and CBOs active in the WASH sector.

Methodological framework

To assess the human resources requirements in WATSAN sector, in terms of numbers (shortages), skills and competencies (gaps), the methodological framework, has set the following steps, to:

1. Estimate the 2015 population to incorporate growth.
2. Determine the current water supply and sanitation coverage and calculate the increases needed to achieve a) the MDGs and b) full service coverage.
3. Estimate a proxy of human resources demand per type of service delivery per 10,000 people.
4. Determine the existing human resources capacity in the country in terms of numbers and skill sets.
5. Assess the human resources supply in the years up to 2015 in terms of graduates as well as vocational training.
6. Calculate the human resources shortages and assess the human resources gaps.

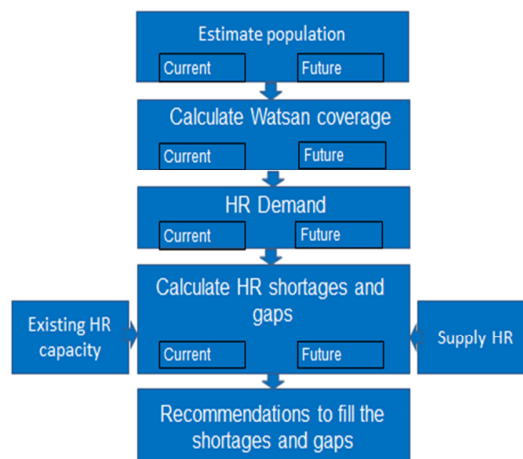


Figure 1: Methodological framework to assess human resource shortages and gaps

7. Provide recommendations for the way in which training institutions can address the shortages and gaps, as well as provides recommendations for alternative ways to meet the said shortages and gaps.

Disciplines to map human resources capacity

The study used the following disciplines to map human resources capacity in the water supply and sanitation sectors:

- **Technical specialisation specific to water and sanitation services** (WATSAN technical personnel): a person who is professionally engaged in a technical field specifically related to the provision of water and sanitation facilities or infrastructure (for instance civil/environmental engineers).
- **Technical specialisation, not specific to the provision of water and sanitation services** (other technical personnel): a person who is professionally engaged in another technical field that is required in the planning, design or operation of water and sanitation facilities or infrastructure (such as hydro-geologists, mechanical/electrical engineers), but is not water and sanitation sector specific.
- **Management and finance:** a person who is professionally engaged in management (for instance finance, human resources (HR) or strategic managers and office managers fulfilling administrative functions) as well as persons who procure goods and services or cost planners.
- **Social development:** a person who is professionally engaged in hygiene promotion or other relevant water, sanitation and health professions in the social sciences (for instance health promotion specialist, sociologist, community development worker).

Components of the WASH service delivery pathway

This study investigated the capacity of these four disciplines noted above, and the methodology directs to distinguish between the human resources requirements for three different types of work noted below. While this study reflects data from the water supply and sanitation sectors, the research considered hygiene practices as defined by the WASH sector:

1. Design and construction of new infrastructure
2. Operation and maintenance
3. Community mobilisation and hygiene promotion.

Data collection

Data collection was done through desk reviews, key informant interviews, baseline surveys, organisational capacity surveys and a gap analysis. The study results were validated during a workshop in which the results were presented.

Location / sample of study

A survey and case study methods were used to collect data from the WASH sector organisations and training institutions. The data from public sector organisations, namely ten regional offices of Ghana Urban Water Limited, ten regional offices of the Community Water and Sanitation Agency, six Metropolitan Assemblies, 55 Municipal Assemblies and 155 District Assemblies cover all regions as per figure 2.

Most private organisations and NGOs are headquartered in the Northern, Ashanti and Greater Accra regions, but operate beyond their boundaries. Six NGOs and five private consulting firms were sampled from within these regions. Additionally, two contractors, and seven private operators (five water and two sanitation) were sampled.

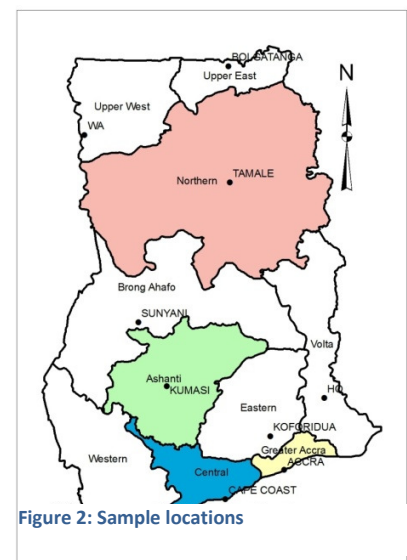


Figure 2: Sample locations

On the supply side of HR, five out of eight public universities and four polytechnics were sampled. The shaded regions on the map indicate where a greater part of the study organisations are located.

Assumptions and limitations

The methodological framework hinges on a number of assumptions:

1. Existing coverage data (JMP) is sufficiently accurate;
2. The methodology uses Joint Monitoring Programme (JMP)¹ coverage definition, which is 'improved' levels of water and sanitation;
3. Different settlement sizes are typically served in each country by the same water and sanitation service delivery mechanism;
 - a. To fit the country context the size of dispersed rural communities as set out by the methodology was lowered to 5,000 rather than 10,000.
 - b. Urban communities in Ghana are all settlement sizes from 5,000 upwards. This comprises the rural village, small towns, large towns and city in the methodology.
4. The methodology assesses professionals, hence does not include unskilled labour, household and community involvement.

Limitation

As the construction of sanitation facilities in both rural and urban areas is not formalised, it is difficult to determine the HR capacity for construction. The results of this research could underestimate the capacity for sanitation construction.

Sector context

The Government of Ghana (GoG) has committed itself over the years to developing systems and structures that would improve access to WASH nationwide. Although Ghana has a Strategic Investment Plan for water and sanitation, the financial requirements exceed the existing commitments of both government and donors to the sector. According to WaterAid estimates, a total of GH¢2.4 billion (US\$1.6 billion)² is required to meet the sanitation and water MDG targets. Together, the government and donors need to close the water and sanitation finance gap. To achieve this, a Multi-Donor Budget Support (MDBS) system is being established where donors pool all of their funds and enable the government to allocate the funds in line with its own development and sector priorities.

Institutional framework for service delivery

In terms of institutional arrangements and policy formulation, Ghana's WASH sector has undergone substantial transformation over the years since the early 1990s. The sector currently has various institutions responsible for policy formulation and planning, facilitation and regulation, and service delivery.

The WASH sector is organised into three service categories: urban water, urban sanitation, and rural water and sanitation. The urban water systems are operated by the public utility company, Ghana Urban Water Company Limited (GUWL) and the water asset holder, also a public company, Ghana Water Company Limited (GWCL). The GUWL and GWCL have the legal mandate to provide, distribute and conserve water for domestic, public and industrial purposes in urban centres with more than 50,000 people. GUWL operates a total of 86 systems in ten regions.

In 1995 the oversight role for sanitation and environmental health was transferred to the Environmental Health and Sanitation Directorate of Ministry of Local Government but the training of the Environmental Health Officers is still under the Ministry of Health. In March, 2011 the role of the Environmental Health and Sanitation Directorate under the Ministry of Local Government and Rural Development was again formally transferred to the Local Government Service.

The Metropolitan, Municipal and District Assemblies (MMDAs) have the legal mandate to provide urban sanitation services to urban communities, mostly through community or privately-managed sanitation facilities in the cities, large and small towns. However, the provision of household latrines is generally the responsibility of individuals unless in some rural and urban poor communities where NGOs and donors provide the necessary financial resources for construction.

¹<http://www.wssinfo.org/>

² WaterAid (2010) Country Strategy 2010 – 2015: Sanitation and Water for All by 2015 and Beyond.

For rural water supply and sanitation (WATSAN), the Community Water and Sanitation Agency (CWSA) and Metropolitan, Municipal and District Assemblies (MMDAs) are the key institutions legally mandated to facilitate the provision of safe drinking water and related sanitation services to rural communities and small towns. This agency was established by the National Community Water and Sanitation Programme (NCWSP) – a GoG programme that emphasises demand-responsive, community-managed approaches to WATSAN services delivery and their integration to achieve maximum health benefits in rural areas. Rural communities and small towns own and manage their water supply systems. For effective management of the systems, these communities form WATSAN committees that are mandated by the local governments to manage their facilities. A few private companies operate in some small towns.

Whilst Ghana has no clear indicators to measure progress in hygiene provision, some efforts are being made. The Ministry of Education in collaboration with the Ministry of Health introduced a School Health and Education Programme (SHEP) in various schools nationwide to provide comprehensive health education and services, as well as ensure availability and use of water and sanitation facilities in schools to encourage hand washing practices. In 2008, 208 School Health Committees were formed nationwide while 684 programme teachers were trained.

Population, existing coverage, MDGs and coverage deficits

The Population and Housing Census in 2000 indicate that there were 339 urban localities making up 44% of the total population and many dispersed rural communities constituting 56% of Ghana's population. In 2010, the rural-urban split is estimated as 49% to 51% indicating a rapid urbanisation trend in the country.

Sector	Settlements	Existing coverage			2015 population	Deficit on universal coverage (2015 pop minus 2010 pop served)	MDG deficit (MDG access minus existing coverage population)
		2010 population	2010 population served	(%)			
Water	Dispersed Rural communities	12,644,381	10,115,505	80	13,621,590	3,506,085	236,903
	Rural villages,	5,449,351	4,958,909	91	6,472,119	1,513,210	542,392
	Small towns	790,137	719,025	91	938,435	219,410	78,645
	Large towns	1,666,869	1,516,851	91	1,979,717	462,867	165,909
	Cities	4,108,074	3,738,347	91	4,879,103	1,140,756	408,890
	National (total)	24,658,812	21,206,578	86	27,890,964	6,684,386	1,274,798
Sanitation	Dispersed rural communities	12,644,381	1,011,550	8	13,621,590	12,610,039	5,867,352
	Rural villages,	5,449,351	1,035,377	19	6,472,119	5,436,742	2,524,289
	Small towns	790,137	150,126	19	938,435	788,309	366,013
	Large towns	1,666,869	316,705	19	1,979,717	1,663,012	772,139
	Cities	4,108,074	780,534	19	4,879,103	4,098,569	1,902,973
	National (total)	24,658,812	3,452,234	14	27,890,964	24,438,731	11,432,767
Hygiene	Rural	12,644,381	1,011,550	8	13,621,590	12,610,039	
	Urban	12,014,431	2,282,742	19	14,269,375	11,986,633	
	National (total)	24,658,812	3,452,234	14	27,890,964	24,438,731	
<i>MDG access: Sanitation MDG target by 2015 is 52%, rural = 50.5%, urban 55%</i>							
<i>MDG access: water target by 2015 is 80%, rural = 76%, urban 85%</i>							

Table 1: Population figures, coverage and MDG/universal deficits (in population numbers)

Compared with a national MDG target of 80% for water supply and current coverage of 86% (2010), Ghana has met the 2015 target for drinking water. To avoid regression, attention needs to be paid to cities that, in light of urbanisation, will require expansion of the piped water system and/or point sources such as boreholes and hand dug wells with or without hand pumps. In addition, rural villages and dispersed rural areas will require boreholes, hand dug wells fitted with hand pumps, as well as small piped systems.

Conversely, the sanitation coverage of 14% nationwide compared to a national MDG target of 52% shows that the country is off track and at this pace; WaterAid (2010) asserts that Ghana will not achieve the sanitation target until 2130, over a century beyond the target date. Inadequate investment and low prioritisation of sanitation by government are major causes of this situation³. The deficit is particularly big in settlements of less than 5,000 people, where on-site dry sanitation (pit toilet, VIP, WC) is used. Rural villages use on-site wet/dry sanitation (VIP, WC/septic tank, pour flush) systems.

According to the 2010 survey, more than 24,5 million people, representing about 86% of Ghanaians, do not have improved household toilets. The figures also indicate that 51%, representing over 12 million of the Ghana's population, share toilet facilities with their neighbours, 15% use other forms of unimproved toilet facilities while 20%, representing about five million people do not have any form of toilet facility in their homes and therefore practice open defecation. To address this problem, the EHSD of the MLGRD reviewed its environmental sanitation policy and recommended the adoption of the community-led, total sanitation/school-led total sanitation (CLTS/SLTS) concept to ensure that every household had access to a toilet. The CLTS/SLTS concept is aimed at sensitising and creating a platform for communities to assume responsibility to construct their own toilets.

Human resources in the WASH sector

Future HR demand

In this instance 'demand' refers to the number of human resources that are considered 'ideal' to serve the population effectively, using future coverage figures (to achieve MDG targets and universal coverage). A proxy (HR per 10,000 population) was computed, according to IWA methodology, using various case studies in both rural and urban water supply and sanitation systems (also varying the computations for construction, O&M and Community mobilisation. This was used with future population figures to estimate the HR demand as seen in table 2.

HR DEMAND TO ACHIEVE MDG TARGET 7C	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT
Water delivery: dispersed rural communities	3,013	3,717	1,760	3,044
Water delivery: rural villages	1,601	1,975	935	1,617
Water delivery: small towns	94	298	143	386
Water delivery: large towns	199	629	301	814
Water delivery: city	489	1,551	742	2,007
FUTURE HR DEMAND FOR SANITATION IF ACHIEVING MDGs	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT

³ WaterAid (2010) Country Strategy 2010 – 2015: Sanitation and Water for All by 2015 and Beyond.

Sanitation delivery: dispersed rural communities	7,567	28,761	30,467	1190
Sanitation delivery: rural villages	3,916	14,883	15,766	616
Sanitation delivery: small towns	2,601	13,130	10,431	249
Sanitation delivery: large towns	5,488	27,698	22,004	525
Sanitation delivery: city	13,525	68,263	54,231	1,293
TOTAL HR DEMAND FOR ACHIEVING MDG	38,492	160,905	136,780	11,742
FUTURE HR DEMAND FOR WATER UNIVERSAL COVERAGE IF ACHIEVING	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT
Water delivery: dispersed rural community	3,634	4,890	2,098	4,005
Water delivery: rural village	1,728	2,323	997	1,903
Water delivery: small towns	111	351	168	454
Water delivery: large towns	234	740	354	958
Water delivery: city	576	1,825	873	2,361
FUTURE HR DEMAND FOR SANITATION UNIVERSAL COVERAGE IF ACHIEVING	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT
Sanitation delivery: dispersed rural communities	14,984	56,952	60,330	2,357
Sanitation delivery rural villages	7,119	27,060	28,665	1,120
Sanitation delivery: small towns	47,301	23,872	18,965	452
sanitation delivery: large towns	9,978	50,360	40,008	954

Table 2: Future HR demand to achieve MDG target 7c and universal coverage

Table 2 illustrates, in line with the low sanitation coverage, that sanitation requires an enormous number of professional capacity in order to reach universal coverage. Both construction and O&M of sanitation are dependent on the 'other technical field' category jobs.

In rural areas, the construction of household toilet facilities is carried out by local artisans with informal training. Construction is performed by a mason, labourer or a carpenter, who comes from communities and lacks formal education.

Public and institutional toilet facilities are constructed by private consulting contractors with the requisite formal training and competence. Some MMDAs operate wastewater treatment plants for treating faecal sludge from septic tanks and other public dry toilets. Institutions tasked with improving access to sanitation are also responsible for hygiene education but little is done in this regard.

In the urban areas, the HR demand was estimated on construction and O&M of water closets and septic tanks, and other sanitation facilities which resulted in less higher educated, WATSAN-specific technical personnel, but rather carpenters, labourers and plumbers. The household toilet construction is privately arranged by the households.

To achieve universal water coverage, a great number of HR is required in other technical fields and management and finance areas. This is particularly the case to operate and maintain, and whilst demand is greater in rural dispersed areas (geographic distances are great), than urban. The level of qualification for urban areas is higher, where more engineers are needed versus artisans at rural levels. The HR proxies also indicated more productivity in urban areas.

The social development categories are particularly high for water supply services which reflect the need for social scientists involved in mobilising the communities and their involvement in the construction phase as well as for hygiene education. Particularly in more rural areas, the projects are managed by jobs within this category. The current shortfall in sanitation coverage on top of that requires a lot of HR for promotion (such as CLTS promoters, and sanitation marketing specialists). Again, hygiene promoters, and community mobilisers fall under this category.

HR CAPACITY	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT	Total
NGO Existing HR capacity in water	100	50	200	375	725
NGO Existing HR capacity in sanitation	20	10	40	75	145
Private sector Existing HR capacity in water	489	195	195	130	1,708
Private sector Existing HR capacity in sanitation	213	84	84	253	635
Public sector Existing HR capacity in water	1,347	1,251	736	257	3,591
Public sector Existing HR capacity in sanitation	6	53	432	3063	3,554
TOTAL NUMBER WORKING IN WATER	3,851	1,568	1,824	762	6,023
TOTAL NUMBER WORKING IN SANITATION	243	147	556	3,391	4,334

Table 3: HR existing capacity

Capacity and Competence in Water

Ghana Urban Water Limited employs 2,911 and 216 employees work at the Community Water and Sanitation Agency (CWSA). In the private sector, there are approximately 2,300 employees involved in water and sanitation. The estimated HR strengths of the nine international NGOs and the 51 Ghanaian NGOs in the country are approximately 210 and 660 respectively. There are 397 small towns water systems in the country out of which 390 are community-managed and seven are privately managed. Privately-managed systems have a total staff complement of 63 whilst the community-managed systems have been estimated to have approximately 2,000 professional employees.

Capacity and Competence in Sanitation

In 2010 there were six metropolitan, 55 municipal and 155 district assemblies. The metropolitan assemblies each have a waste management department (WMD) and an environmental health department (EHD), both headed by officers with BSc degrees. The MMDA's HR for sanitation and environmental health is 3,122 excluding unskilled labour. The MMDA staff deals with the O&M of the urban sanitation. The staff is required to have an environmental health qualification to fill positions on full time basis. Only Kumasi out of the six metropolitan areas has engineers working in sanitation, being one of the factors contributing to the low sanitation coverage. There are also 400 workers in charge of sludge collection.

For household rural sanitation, construction is carried out by artisans who acquire their skills in the non-formal way. These artisans provide a demand-driven service, where householders request their services as and when they have the necessary resources.

HR capacity of the WASH sector according to job categories

Ghana Urban Water Limited has the highest staff complement among the public water sector organisations, due to the scope of their operations and the large number (11 million) of people they serve nationally. Currently, the company operates 86 urban water systems, serving settlements with more than 50,000 inhabitants. Each MMDA has a three-member Water and Sanitation Team (WST) in charge of water and sanitation services, comprising representatives from the works, community development and environmental health (EH) departments. Staff from the environmental health departments deal with sanitation issues as well.

The MMDAs has a total HR strength of 3,122 excluding unskilled labour. Since most of their task is related hygiene education and promotion, and enforcement of public health regulations, a major proportion of their personnel fall under the social development category.

Organisation	WATSAN technical field	Other technical field	Management and Finance	Social Development	Total
Water					
CWSA	19	11	164	22	
GUWL (urban water)	1,304	1,022	566	19	
WRC (water)	24	2	6		
MMDAs (works)		216		216	
Sub-total	1,347	1,251	730	257	3,591
Sanitation					
MMDAs (sanitation)	6	53	432	3,063	
Sub-total	6	53	432	3,063	3,554
					7,139

Table 4: Existing HR in the public sector

Remuneration

Although employees in the public sector enjoy job security, the remuneration packages and other conditions of service were not attractive to those seeking higher pay, again particularly for the sanitation sector. Some public sector organisations offer added benefits such as transport and accommodation for senior employees.

In general, salaries, benefits (transport, accommodation) and opportunities for on-the-job training are the incentives for staying in the sector. The salary scales in the public sector are not different from one public sector organisations to another but some differences exist in other benefits such as allowances for transport and accommodation.

In addition to job security the public sector employees enjoy other benefits, such as study leave with pay for further training even though this is difficult to secure. The job security particularly results in a lower staff turnover in the public sector than the private sector. The high turnover in the private sector is due to poaching where workers leave in search of higher pay and greener pastures beyond the WASH sector. Due to the low level of emoluments paid in public sector and the competition from other private sector industries, the WASH sector will have to improve their retention strategies and efforts to sustain the development of the sector.

Besides low salaries (in the public sector), the obvious disincentives are the lack of career progression and the lack of recognition of further education where employees may not get promoted after attaining higher degrees. This exacerbates the movement of qualified personnel to the private sector. When it comes to field work, other factors include inadequate equipment and tools to perform critical tasks, unfavourable policies and implementation strategies, political interference and inadequate collaboration among stakeholders. In the case of NGOs, attracting or retaining personnel is difficult, since they offer project-determined, temporary positions. This leads to frequent staff turnover.

The private sector and the international NGOs have attractive salaries and so are able to attract qualified personnel. Their total HR capacity nationwide has been computed by extrapolating from the sample organisations selected as shown in table xx.

Private sector & NGOs	Total number nationwide (A)	Average HR per organisation (B)	Total HR nationwide (AxB)
Consulting firms	13	12	156
Contractors	20	43	860
Area mechanics, rural water	840	1	840
Private sector operators involved in faecal sludge collection	200	2	400
Private sector operators, treatment plant	4	6	24
Private sector operators, water	7	9	63
Sub-total (C)			2,343
International NGOs	9	23	207
Ghanaian NGOs	51	13	663
Sub-total (D)			870
Total (C+D)			3,213

Table 5: Existing HR capacity private sector

The private sector employs approximately 2,300 people and the NGO sector approximately 870 nationwide. In most instances, NGO staff is project dependent and thus relatively fluid. NGOs are involved in construction of boreholes and hand-dug wells as well as community mobilisation. The involvement of private firms and NGOs in sanitation was low since there were more water projects than sanitation. The NGOs employees' qualifications range from certificate, diploma to Masters degrees. The only positions occupied by trained staff in some NGOs are for health and hygiene promotion and community mobilisation. Some NGOs employ secondary or high school graduates and train them to do the field work whereas other NGOs employ BA social science and social work graduates to do the field work. There is no well-defined career progression in the NGO and private sector involved in WASH, since people are employed for specific positions.

Occupational sector focus

When investigating the proportion of HR involved in various aspects of national WASH service delivery a greater proportion of the HR in the WASH sector (about 54% of the total workforce) focuses on O&M. In Ghana the move from urban to rural O&M, shows a downscaling in the level of qualifications required: in small towns, water operators require diploma qualifications, and rural water points with hand pumps are managed by WATSAN committees that are supported by trained area mechanics, who have basic education and are WASH trained. There was no formal or institutionalised arrangement for capacity building of latrine artisans. Both the training of area mechanics and latrine construction artisans are project-based.

For water sector construction the size of the project determines the employees' qualifications, and can range from certificate, diploma to first degree. The construction firms employ people who have work experience and the required qualification to fill positions. There is no well-defined career progression in the construction sector.

As the construction of sanitation facilities in both rural and urban areas is not formalised, it is difficult to determine the HR capacity in that regard. Most sanitation and environmental health employees include public health engineers, environmental health technologists, environmental health officers and environmental health assistants. The MMDAs employ people with the required environmental health qualification to fill positions. Environmental health officers (EHO) and environmental health assistant (EHA) are posted to MMDAs to take up positions in the Environmental Health Departments or the Waste Management Departments.

Gender inequality

The female and male distribution shows that there are more males than females in water provision with percentage of females out of the total HRs in the organisations ranging from 11% to 45%. The number of females in GUWL is 16% of total skilled personnel. On average, the proportion of females in the public sector is somewhat higher than that of the private sector with averages of 20% to 27%. Females are usually employed in management and social development positions since female participation in technical training programmes in tertiary institutions ranges between 0% and 20%, whilst up to 63% of participants in management and social development programmes are females.

The proportion of female employees under the ‘management and finance’ as well as ‘social development’ categories (female-dominated programmes in training institutions) are comparatively higher than ‘WATSAN technical’ field and ‘other technical’ field (male-dominated programmes in training institutions).

Supply of human resources to the WASH sector

Universities and technical Institutions

A number of training institutions in the country currently produce graduates with the requisite qualifications and competencies for the WASH sector. The table 6 shows the graduate turnout in the different education categories qualifying in water and sanitation technical field programmes.

TYPE OF TRAINING INSTITUTION	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT
Total estimate of HR supply to WATER sector per year	506	606	1,403	303
Total estimate of HR supply in WATER sector to 2015	2,530	3,030	7,015	1,515
Trend up or down				
Total estimate of HR supply to SANITATION sector per year	253	303	702	152
Total estimate of HR supply in SANITATION up to 2015	1,265	1,515	3,508	758

Table 6: HR supply (graduates and undergraduates) to the WASH sector

The table 6 shows the graduate turnout in the different education categories qualifying in water and sanitation technical field programmes. Almost 90% of the figures shown at the top of this table, represent undergraduate levels, since graduate level programmes in water and sanitation are expensive compared to undergraduate levels. A smaller proportion of graduates from the universities are absorbed into the WASH sector after graduation. There can be various reasons for this, such as the government embargo on employment that affects the attraction of qualified HR, or with regards to sanitation, the stigma that is attached to toilet management.

Other Levels of Education

Informal training of personnel in the sector is important as it provides the needed HR capacity for construction works as well as O&M of some water and sanitation facilities in rural areas. In Ghana, the majority of artisans (masons, carpenters, plumbers, etc.) acquire their skills through informal training and are capable of constructing and maintaining sanitation facilities in both urban and rural centres. Therefore, they are a very important human resource if the MDG targets are to be reached.

Although the country has a number of training institutions that formally train artisans – including the National Vocational Training Institute (NVTI) - they have made little impact due to lack of opportunities for further WASH training and education for these types of jobs in the country. These institutions, apart from being sparse, often also lack the necessary resources to train more people. There is therefore a huge gap in the sector and the government should make it a priority to invest in formalising the informal training of WASH artisans and operators as it is a vital part of the needed HR to achieve the water and sanitation-related MDGs.

Formal training and the on-the-job training of employees in the sector for NGOs, private and public sector organisations is often an individual choice. In most instances, first degree training is done in Ghana. Some employees get the opportunity to do their MSc degree outside the country, especially staff from the public sector as they have the opportunities to get study leave on full pay.

In some organisations, on-the-job training is offered to all new employees in order to stay abreast of operations in the organisation. The positions requiring on-the-job training are newly-recruited extension services specialists, district and regional WATSAN teams. The newly-employed extension services specialists are trained in communication, facilitation, research, report writing, critical thinking, fast meaningful reading, computer literacy, monitoring and evaluation and advocacy.

For NGOs, field staff who interact with rural populations are trained in orientation and short training in community-led total sanitation (CLTS), and project staff are trained in report writing, monitoring and evaluation methodology.

Graduates entering the sector often have general knowledge but no specific job-related knowledge and skills. On-the-job training is often provided, conditional on available funds. The training is provided by teammates, through workshops, conferences and short courses.

Environmental health and sanitation

In the 1990s interested EHOs who wished to develop themselves applied to do a second diploma course in environmental health technology at the KNUST. Most environmental health technologists (EHTs) from the KNUST are close to retirement. A few of them continued to do graduate courses such as civil or sanitary engineering, but most of these graduates are lost to the system, either because they did not get absorbed or because of the poor conditions of service.

EHAs who desire to be promoted to EHO grade must first undertake the three-year EHO training or other diploma programmes. After completion, none of the previous years served is credited to them but they restart from the lowest EHO grade irrespective of the number of years served or experience gained. The graduates who have so far exited from universities are not yet promoted and is thus a disincentive to retain staff in the sanitation sector. Currently, some young staff furthers their education in Health Sciences Education, development studies, water and sanitation, etc. There is no well-defined career progression for those who wish to further their education by doing new degrees, so they leave the sanitation sector or join private sector organisations. Dialogues with employers indicate that training institutions do not collaborate with employers to facilitate better absorption into the workplace of newly-qualified staff.

This is, in some way understandable since students are not trained specifically for a specific sector in the country. They are generalists, trained to fit anywhere in the job sector because they may not always find jobs if the programmes are skewed towards only one sector.

Human resource shortages: comparing HR demand with existing capacity and supply

The analysis of the shortages was done by comparing HR demand with existing capacity and HR supply. There is no shortage for management and finance in the water sector because there are several institutions in the country turning out a surplus of graduates. However, management and finance staff is in short supply in the sanitation sector. There is a shortage of social development staff in the water sector but a surplus in the sanitation sector.

QUANTIFYING THE SHORTAGES	TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT
WATER SECTOR				
HR shortage for achieving MDG	930	3,644	- 4,265	4,893
HR shortage for achieving full service coverage	2,302	5,603	-3,335	6,706
SANITATION SECTOR				
HR shortage for achieving MDGs	31,592	151,072	128,835	- 276
HR shortage for achieving full service coverage	59,897	280,696	242,506	3,086

Table 7: HR shortages to achieve MDGs and universal coverage (negative indicates oversupply)

Shortages exist in the engineering fields, especially sanitation engineers, since education institutions do not offer specific training in environmental sanitation engineering. The civil engineers that are trained to take up jobs as sanitation engineers find the MMDAs unattractive. The MMDAs HRs involved in environmental health perceived their training as more of a nuisance abatement and so the service delivery and sanitation system designs are not the focus of their training.

Improvement in sanitation can be achieved and sustained if there is intensive education of the public to cause the needed behavioural change. This will require more social development experts who will carry out community mobilisation. Triggering the need to improve sanitation and construction of sanitation facilities would need trained artisans who will assist in the construction and maintenance of the facilities. Therefore, this will require the formation of artisan (other technical field) groups to facilitate their training. WATSAN technical field personnel would be needed to supervise the construction of these facilities. These personnel will be needed in the rural areas since it has lower sanitation coverage as compared to the urban coverage. The proportion of people without access to sanitation facilities in rural areas is higher than those in the urban centres. However, with the high rate of urbanisation, it is expected that a greater percentage of Ghanaians would be living in urban areas. Thus, in the long term more attention should be focused on improving the personnel in the urban centres by supporting them to acquire higher qualifications related to WASH services.

The current vacancies exist in the different work areas (construction, O&M and community mobilisation), but assuming current distribution of workers for the work types is 14%, 78% and 7% respectively, it will logically follow that most HR shortages are in the area of operation and maintenance of the water and sanitation services. Despite the fact that Ghana has achieved its water MDGs, the results confirm that to sustain the coverage figures, considering preventing failures of systems and urbanisation, urban areas require more engineers planning, and O&M than are currently existing, whilst in rural areas more social development personnel will be needed to ensure that communities can operate and maintain their systems. To deal with rural sanitation, there is a high shortage in construction and social development (health and hygiene promotion) personnel.

There is a general shortage of mechanical and electrical engineers in urban water supply and replacing them seems difficult due to the unattractive salary and conditions of service. The shortage of distribution engineers (civil engineers) is ascribed to the lack of strategic planning and recruitment to replace aging engineers. The analysis of the skill set of the existing HR capacity and jobs shows that there are knowledge and skill gap for newly-employed staff for design, operation and maintenance of water supply systems. The Ghana Urban Water Company Limited has a training centre where people who graduate from basic and high schools are trained in the areas of pipe fitting, water production and treatment. The Institute of Local Government Studies does not offer sanitation-specific training. The Ministry of Health Training School of Hygiene trains people in general environmental health which incorporates sanitation in the curriculum.

Recommendations for meeting human resource needs

Inadequate investment in the WASH sector, particularly for sanitation, negatively impacts on attracting and retaining workers. In addition, a government embargo on employment, affects the attraction and retention of qualified HR working in the public sector. Investment in the WASH sector, apart from its easily perceptible knock-on effect of improved access to water and sanitation, can also provide a magnet to attract and retain high calibre professionals in the sector. It can be increased if the government commits itself to increase budget allocations for sanitation and water, and work with development partners through the Multi-Donor Budget Support (MDBS) system, donors and the private sector to ensure that their annual allocations are increased not only to improve the current conditions to achieve the MDG targets but to sustain those improvements.

Sanitation implementation is fragmented, with multiple departments (the Ministry of Health and the Ministry of Local Government) involved which concomitantly leads to the budget allocations and transfers for training and investment in the public sector equally fragmented. This results in the sector being unable to attract needed qualified engineers and other personnel. The Ministry of Local Government and Rural Development should be adequately resourced to be in charge of sanitation implementation regarding the training of personnel and job placement.

The EHSD of the MLGRD reviewed its environmental sanitation policy and recommended the adoption of the community-led, total sanitation/school-led total sanitation (CLTS/SLTS) concept to ensure that every household had access to a toilet. This concept should however receive support in order to scale this up largely. CLTS is currently being piloted in the country but due to the poor capacity in terms of technical know-how and funds, up-scaling is a major problem. There is the need to train more community mobilisers and hygiene educators for this task and equip existing staff with the requisite know-how to effectively carry out CLTS in the communities. CLTS in itself does not lead to provision of improved sanitation, so there is the need to train more latrine construction artisans to provide the facilities after the trigger. CLTS will generally focus on the elimination of open defecation, which is still relatively high in rural Ghana at 33%. If Ghana wants to reduce the number of people sharing sanitation facilities it will require a different focus than the traditional CLTS approach.

Sanitation service delivery can be improved if the sector is able to attract and retain competent professionals. This would require in-service training of existing staff; improvement in conditions of service (remuneration) and the provision of basic tools and equipment for effective execution of tasks. In-service training can be in the form of seminars, workshops or sponsorships for higher learning in the various universities offering sanitation-related courses (KNUST, UEW, UCC, UDS). Budget allocation for staff training should be a priority for the government rather than concentrating on only service delivery. Productivity can be enhanced if personnel are well-trained and motivated to carry out their duties!

Short-term improvement of HR numbers

The following recommendations for improving the immediate output of human resources are drawn from the study:

- Government should make it a priority to invest in latrine artisans and water operators training as it is a vital part of the needed HR to achieve the water and sanitation-related MDGs
- Environmental sanitation and service delivery short courses should be organised for staff with environmental health background and technical courses (design, construction, operation and maintenance) for staff involved in technical WASH service delivery.
- Institutional capacity building programmes will be required to strengthen service delivery activities and performance of the MMDAs.
- Better remuneration and benefits packages for water and sanitation staff to retain existing personnel and attract new graduates to the sector. Long-term improvement of HR numbers

Long-term improvement of HR numbers

The following recommendations for improving the quantitative output of human resources over the longer term are drawn from the study:

- To address the sanitation capacity challenge there will be the need to develop curriculum and run BSc training in Environmental Sanitation and BSc Sanitary Engineering. The new skills will help them to provide WASH engineering services at the MMDAs. Existing undergraduate programmes that seek to train students for the sanitation sector need to be streamlined to conform to the requirements of the MMDAs.
- There is a need for a training school dedicated for training of HR in water and sanitation engineering and environmental sanitation.
- More focus should be placed on long term WASH courses (BSs/MSc degrees) as part of projects capacity building instead of the current short courses. Short courses should be run for those with MSc degrees to fill skill gaps in management, supervision, and project/post project monitoring and evaluation. Provide well-defined career development and progress up the ranks for young engineers in WASH. There is the need to re-structure sanitation HR within the MMDAs to recognise degree holders. This could be done by providing career development plan with well-defined degree programmes to be pursued in order to progress from non-degree level to degree (professional) level.
- To develop and retain HR, there is the need for formulation of HR capacity building policy, training policy, and career succession planning in the WASH sector organisations to replace aging the professions.
- There is the need for mainstreaming the informal sector by forming associations of WATSAN artisans and technicians, and institutionalise their recognition by the water and sanitation sector.

Improvement of Qualitative output of Human Resources

To ensure improving qualitative output of the country's human resource and ensuring training institutions are more responsive to the needs of the labour market, the following recommendations are made:

- The training needs assessment of sanitation HR will be needed to identify the short course requirement to upgrade their skills.
- Training institutions need to provide opportunities for career development in WASH technical courses to motivate young people and engineers to acquire more knowledge.
- Sponsor employees to do short courses and tailor made short courses in WASH and should be a requirement for promotion.

Full references are noted in the full country assessment reports