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Mapping human resource capacity gaps in the water supply and sanitation sector

Country briefing note Ghana

Human resource capacity assessment

Briefing Note • Ghana

KEY POINTS

- Ghana has met the 2015 target for drinking water. To avoid regressing, however, attention needs to be paid to cities that will experience a high urbanisation rate.
- 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. The number of people in Ghana not using improved sanitation facilities in 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 young children[1].
- 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 its importance is recognised and efforts are made in sanitation, this report concludes that compared with water supply, professional capacity is still less for the sanitation sector.
  - There are more engineers and degree holders in water supply than sanitation.
  - There is institutionalised training for technical artisans and operators for urban water supply, but no such arrangement for sanitation.
  - In the sanitation sector, the key challenge relates to inadequate professional personnel, especially sanitation engineers and technical staff.
- There is a shortage of mechanical, electrical and civil engineers in the urban water sub-sector, due to failure of replacing aging engineers and key technical staff in the WATSAN sector.
- Public sector faces highest shortages:
  - Public agencies are limited by the government in terms of the number of personnel they employ. The service conditions in the public sector are not attractive enough to draw the right calibre of certain categories of personnel (civil, mechanical, electrical, computer engineers) into the WASH sector.
  - International NGOs and some private sector organisations attract more qualified people than the public sector because they pay higher salaries.

BACKGROUND

This Briefing Note summarises the findings of 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 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 causes 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. 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

1 Safer Water, Better Health WHO 2008

sectors to facilitate achieving MDG target 7c and, for comparison, 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) universal 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.
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.

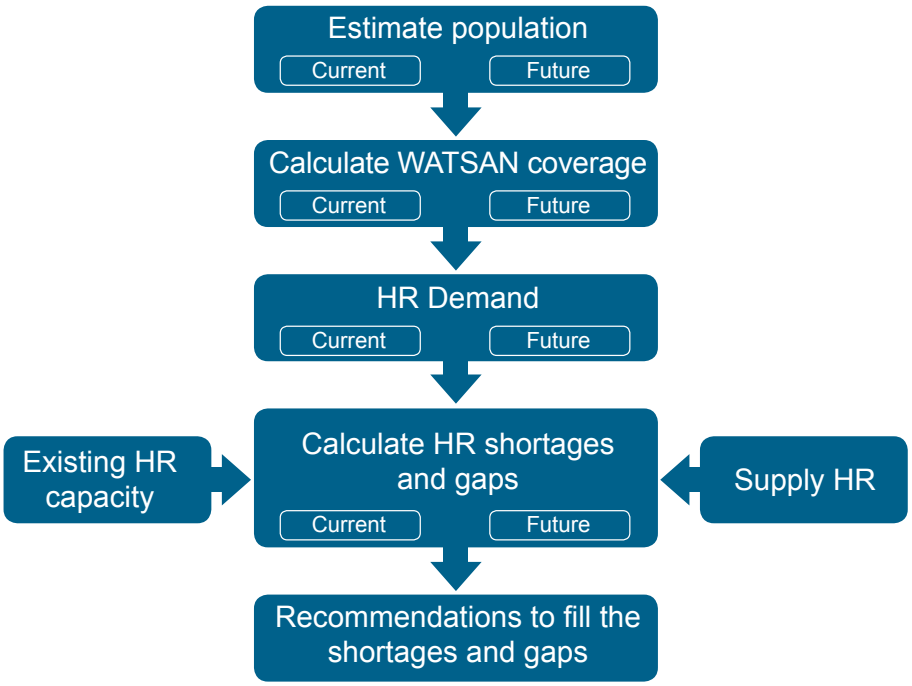

Figure 1: Methodological framework to assess human resource shortages and gaps

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.

1 Design and construction of new infrastructure

2 Operation and maintenance
3 Community mobilisation and hygiene promotion.

While this study reflects data from the water supply and sanitation sectors, the research considered hygiene practices as defined by the WASH sector.

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

The data came 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.On the supply side of HR, five out of eight public universities and four polytechnics were sampled.

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)[2] 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.

2 http://www.wssinfo.org/

Figure 2: Ghana

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)[3] 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. The urban sanitation oversight role falls under

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

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

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	
	MDG access: Sanitation MDG target by 2015 is 52%, rural = 50.5%, urban 55%						
	MDG access: water target by 2015 is 80%, rural = 76% , urban 85%						

the responsibility of 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. 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. However, in reality households assume responsibilities.

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. 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.

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.

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

Table 2: Future HR demand for achieving MDG target 7c and universal coverage (including those with informal training)

HR DEMAND FOR WATER TO ACHIEVE MDGs	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	1617
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 TO ACHIEVE MDGs	**WATSAN TECHNICAL FIELD**	**OTHER TECHNICAL FIELD**	**MANAGEMENT & FINANCE**	**SOCIAL DEVELOPMENT**
Sanitation delivery: dispersed rural communities	7,567	28,761	30,467	1,190
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
FUTURE HR DEMAND FOR WATER TO ACHIEVE UNIVERSAL COVERAGE	**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 TO ACHIEVE UNIVERSAL COVERAGE	**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	7119	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
Sanitation delivery: city	24,591	124,115	98,602	2,352

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 situation[4]. 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, did not have access to improved sanitation. 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 aimed at sensitising and creating a platform for communities to assume responsibility to construct their own toilets.

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

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.

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. This 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), the level of qualification for urban areas is higher, where more engineers are needed versus artisans. 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.

EXISTING HUMAN RESOURCE CAPACITY

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.

Sanitation

In 2010 there were six metropolitan, 55 municipal and 155 district assemblies. The metropolitan assemblies each have a waste management department

Water	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT	Total
Total NGO	100	50	200	375	725
Total Private sector	489	195	195	130	1,708
Total Public sector	1,347	1,251	736	257	3,591
TOTAL NUMBER WORKING IN WATER	3,851	1,568	1,824	762	6,023

Sanitation	WATSAN TECHNICAL FIELD	OTHER TECHNICAL FIELD	MANAGEMENT & FINANCE	SOCIAL DEVELOPMENT	Total
Total NGO	20	10	40	75	145
Total private sector	213	84	84	253	635
Total public sector	6	53	432	3,063	3,554
TOTAL NUMBER WORKING IN SANITATION	243	147	556	3,391	4,334

(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 according to discipline and type of organisation

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. The MMDAs has a total HR strength of 3,122 excluding unskilled labour. 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, which is why a major proportion of their personnel fall under the social development category.

Their total HR capacity nationwide has been computed by extrapolating from the sample organisations selected as shown in table 5.

Table 4: Existing HR in the public sector

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	736	257	3,591
Sanitation					
MMDAs (sanitation)	6	53	432	3,063	
Sub-total	6	53	432	3,063	3,554
					7,139

Table 5: Existing HR capacity private sector and NGOs

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

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.

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. However,Tthe private sector and the international NGOs have attractive salaries and so are able to attract qualified personnel.

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.

For water sector construction the size of the project determines the employees' qualifications, and can range from certificate, diploma to first degree. As the construction of sanitation facilities in both rural and urban areas is not formalised, it is difficult to determine the HR capacity. Most sanitation and environmental health employees include public health engineers, environmental health technologists, environmental health officers and environmental health assistants. 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%.

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). This is also seen in participation levels in training where 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.

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.

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

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

HR SUPPLY	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

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.

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 were lost to the system, either because they did not get absorbed or because of the poor conditions of service.

Environmental Health Assistants (EHAs) who desire to be promoted to Environmental Health Officers (EHOs) 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, which significantly impacts their willingness to stay in the 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, the sanitation sector fails to attract management and finance staff. There is a shortage of social development staff in the water sector but a surplus in the sanitation sector.

Shortages exist in the engineering fields, especially sanitation engineers, since education institutions do not

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

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

offer specific training in environmental 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 mostly be needed in the rural areas since it has lower sanitation coverage. However, with the high rate of urbanisation, long term HR planning should consider this.

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.

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.

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

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

- 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. Government should ensure proper planning of human resources in the water and sanitation sector, considering dynamic changes of the labour market, and contextual influencing factors.
- 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.
- Sanitation service delivery can be improved if the sector is able to attract and retain competent professionals. This would require:
  - The Ministry of Local Government and Rural Development should be adequately resourced to be in charge of sanitation implementation, including the training of personnel and job placement.
  - In-service training of existing staff – in form of seminars, workshops, or at universities (KNUST, UEW, UCC, UDS);
  - Improvement in conditions of service (remuneration) - budget allocation for staff training and incentive schemes should be a priority
  - To develop curriculum and run BSc training in Environmental Sanitation and BSc Sanitary Engineering
  - 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 to re-structure sanitation HR within the MMDAs to recognise degree holders. This could be done be providing career development plan with well-defined degree programmes to be pursued in order to progress from non-degree level to degree (professional) level.

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 available at www.iwahq.org/hrcapacity

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