



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

Country briefing note Tanzania

Human resource capacity assessment

Briefing Note • Tanzania

KEY POINTS

- ▶ Significant population growth, especially urban, will require attention:
 - By 2015, the population of Tanzania will have grown, with a total of 12.6%, to almost 50 million inhabitants with the highest growth in the urban areas at an annual rate of 4.5% and 2.2% for rural areas.
 - In the urban areas the current water coverage estimated by the government is 81% (versus Millennium Development Goal (MDG) target of 93.7%) and urban sanitation coverage is 63% (versus MDG target 95%). The equivalent figures in rural areas are 46% for water coverage (versus target of 66.9%) and 41% for sanitation coverage (versus target of 95%).
 - Given the rapidly growing populations, urban systems will require expansion and on-going maintenance of existing and new infrastructure.
 - It is a matter of concern that water coverage in urban areas has declined by 15% since 1990 according to JMP. Rural coverage has also declined during this period but to a lesser extent (by 2%)
- ▶ One of the main reasons for the coverage deficit is the lack of an effective institutional framework for integrated water supply and sanitation, which has led to:
 - Overlapping roles and responsibilities between various institutions leading to inefficient use of human and financial resources, duplication of effort, and gaps in effective provision of services;
 - Inadequate coordination between various government institutions;
 - Inadequate communication and awareness building between these institutions and local organizations and water users; and
 - Responsibility for regulation and performance monitoring of the provision of water supply and sanitation services (WSS) is being vested in the same organisation responsible for service delivery and investment financing, thus creating a potential conflict of interest.
- ▶ The lack of active participation of beneficiaries in the execution of water schemes in rural areas, has led to:
 - Poor performance of the WSS schemes;
 - Lack of proper management of the schemes;
 - Lack of ownership; and
 - Poor delivery of the service.
- ▶ The Quality of training is considered insufficient to meet sector needs:
 - Engineering education and training is offered by six institutions and technical education and training is offered by more than 33 training institutions while training of artisans is overseen by the Vocational Education and Training Authority.
 - The lack of opportunities for graduates to get practical WASH-related experience is a significant problem. This is compounded by inadequate support for the transition from academia to the work environment and lack of mentors to train less experienced staff.
 - Graduates from universities and training institutions are not equipped to enter the labour market because they received inappropriate training, using outdated curricula, badly-equipped training institutions providing limited hands-on training in engineering or laboratory work.
- ▶ Significant shortage of female water professionals also acts as an impediment:
 - There is a low level of women graduates from universities especially from technically-orientated courses, specifically engineering. Women choose to enrol in the social sciences and nearly 90% of students were reported to be females while it was the opposite case for all cadres of training on the technical side.
 - WASH is a male dominated sector – 90% of all organisations sampled had male water engineers.
 - Non-governmental organisations (NGOs) and community-based organisations (CBOs) demonstrated a higher ratio of female staff particular in the social development category.
- ▶ Focus on Sanitation remains low:
 - Out of the 40 NGOs, only 15 were active in the sanitation sector and out of 70 private sector organisations only 20 indicated that they worked on sanitation service provision, the reasons being that the focus of investment has been and still is the water supply sector.
 - Even though the sanitation deficit is higher, and the sanitation sector requires significant numbers in terms of human resource (HR) capacity, the human resources shortage is far more significant in the water sector.

BACKGROUND

This Briefing Note summarises the findings from a study in Tanzania, made possible through the support of the United States Agency for International Development (USAID) under the auspices of their Capacity Building of Local/National WASH NGOs/CBOs in Africa (Cap-WASH) Program. It set out to assess the human resources needs to provide water supply and sanitation services in three countries: Mozambique, Burkina Faso, and Tanzania.

Tanzania lies in Eastern Africa, bordering the Indian Ocean, between Kenya and Mozambique, covering 947,300 square kilometres. The country is divided into 30 administrative regions: five on the semi-autonomous islands of Zanzibar and 25 on the mainland.

Tanzania's economy is mostly based on agriculture, which accounts for more than half of the gross domestic product, provides approximately 75 percent of exports, and employs approximately 75 percent of the workforce. Topography and climate, though, limit cultivated crops to only 4 percent of the land area. The nation has many natural resources including minerals, natural gas, and tourism.

ASSESSMENT APPROACH

The methodological framework, defines the following steps to assess the human resources requirements in the sector, in terms of numbers (shortages), skills and competencies (gaps).

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.

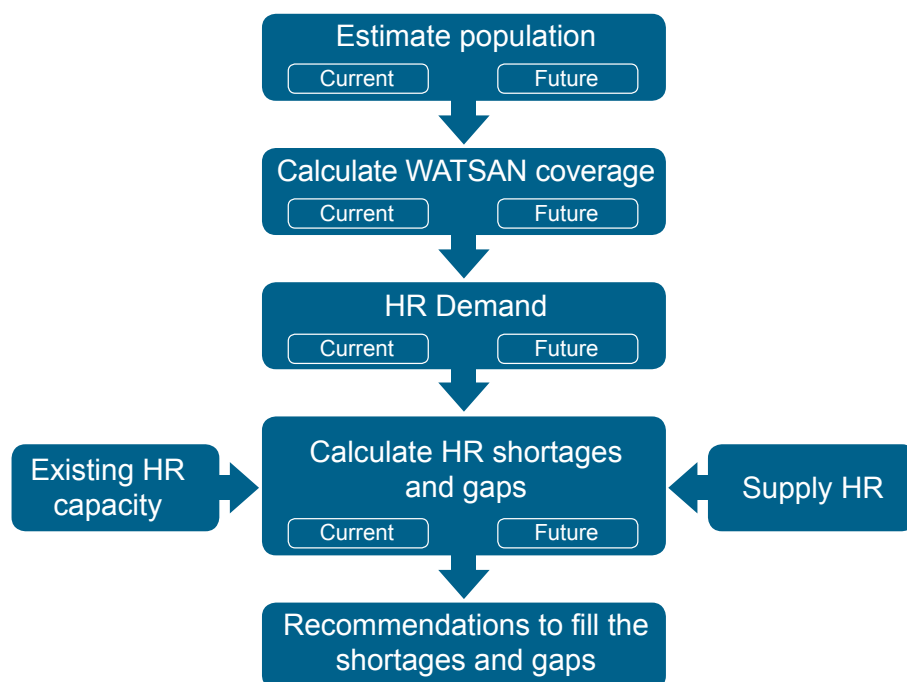


Figure 1: Methodological framework to assess human resource shortages and gaps

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.

DISCIPLINES TO MAP HUMAN RESOURCE 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 field):** 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 field):** 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 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

The methodology was designed to calculate both current and expected additional human resource requirements based on an assessment of existing service coverage and future targets, the existing availability of WASH professionals and their future supply to the market. The methodology for this study, which is phase 2, is based on the methodological framework developed in the first phase of the investigation, but with a number of adaptations and clarifications.

The methodology aimed to make a clearer distinction between human resources requirements for:

- Design and construction of new infrastructure;
- Operation and maintenance;
- Community mobilisation, sanitation and hygiene promotion.

ASSUMPTIONS

The methodological framework hinged on a number of assumptions:

- Existing coverage data is sufficiently accurate;
- The methodology uses Joint Monitoring Programme (JMP)¹ coverage definition, which is 'improved' levels of water and sanitation;
- Different settlement sizes are typically served in each country by the same water and sanitation service delivery mechanism; and



- The methodology assesses professionals, hence does not include household and community involvement.

It was important to make a distinction between the water supply and sanitation sectors. On the basis of key informant interviews the study team assumed that for water supply, the times used for design and construction is only 10% while the time for operation and maintenance is 85% and the time spent for promotional activities is 5%. For sanitation sector the study assumed that 20% of the time is used for construction, 5% of time for Operation and Maintenance (O&M) and 75% for promotion.

The methodology is designed to generalise the information received and

thereby estimate the national capacity on the basis of the sample.

SAMPLING AND DATA COLLECTION

The human resources requirement to meet the MDGs in Tanzania was assessed based on three service providers, namely NGOs, private and public sectors. The study collected data from specially designed questionnaires that were sent to the following sample organisations:

1. NGOs in the WASH sector were identified through Tanzania Water Supply and Sanitation Network (TAWASANET) where it was established that 40 NGOs deal with water supply and sanitation and 15 CBOs deal with hygiene promotion.

¹ <http://www.wssinfo.org/>

2. Random sampling was done of NGOs from both rural and urban settings. A total of 13 NGOs representing about 33% of all NGOs were sampled and contacted.

3. Private sector organisations in the water supply and sanitation sectors (including contractors, consultants, and service providers) were identified and included in the sample. The sample of private organisations comprised of (i) three consultants, (ii) three contractors and (iii) two service providers.

4. The sampling for public sector included the national line agencies responsible for the water, sanitation and hygiene sectors. Ten public sector organisations were sampled.

The sample location map indicates the sample representing a wide geographical coverage and different work settings (both on rural and urban areas).

The main method for primary data collection used interviews using structured questions and workshops, one during the inception phase the second one was during the validation phase which aimed at validation of the findings/results.

The same methodological framework was applied to all the countries where the research took place and country-specific traits are reflected in the finer detail and statistics published in the country reports.

SECTOR CONTEXT

The current institutional framework for the provision of water supply and sanitation services in Tanzania is based on a separation between urban water supply and sewerage services, and rural water supply and sanitation services. It is a complex framework, both in law and in practice. It has a number of

overlapping responsibilities, duplications and omissions. Furthermore, the mechanisms for effective consultation and consensus building, and participation of stakeholders in the decision-making process are not adequately defined and hence a challenge to implement.

INSTITUTIONAL FRAMEWORK FOR SERVICE DELIVERY

At the national level, the Ministry of Water Resources is primarily responsible for water and sanitation sector policy and regulation. This ministry interacts with the Ministry of Health and Social Welfare, responsible for sanitation policy and hygiene promotion, as well as with the Ministry of Education and Prime Minister's Office (Local Government Authorities). A number of different central and local government departments or organisations have a mandate and/or the legal obligation to be involved in various aspects of the provision of these services. In particular, local government, at all administrative levels such as the city, municipal, town, district, or township authority, has varying levels of responsibility to provide water supply and sanitation services to the population in their areas, and the Ministry of Health has an overall responsibility to protect public health through ensuring the provision of adequate sanitation and hygiene education by the local authorities.

In rural areas, the government, external support agencies, and NGOs plan

and construct water supply schemes at village level, with little involvement or participation of the benefiting communities. The government has also been the owner and operator of a number of these schemes. These approaches have led to a lack of commitment by the beneficiaries to safeguard the facilities, and an unwillingness to contribute to the cost of operation and maintenance.

POPULATION, EXISTING COVERAGE, MDGS AND COVERAGE DEFICITS

By 2015, the population of Tanzania will have grown by 12.6% compared to 2010, to almost 50 million inhabitants with the expected to grow at an annual rate of 4.5% while in rural areas the expected growth rate is 2.2%. The urban:rural population split is currently 22%:78% with the rural population living in dispersed communities. Considering the urban growth rate, this percentage will change the general face of rural development over the next years.

In Tanzania, people who currently have access to water are supplied through protected spring or shallow wells (hand pumps); piped schemes distributing water from borehole or spring into villages and small towns; and piped schemes that distribute surface-source water to towns through a reticulated pipe scheme. In terms of sanitation services, the population relies on improved pit latrines; septic tanks and soak away pits. Sewerage systems in urban areas are present, but still cover a

Table 1 of MDG and universal coverage deficit (absolute population numbers)

Settlements	Population (2015)	MDG deficit	MDG deficit Sanitation	Universal coverage	Universal coverage deficit
Rural dispersed	35,112,021	9,003,585	20,444,667	20,625,664	22,200,268
Rural village	3,901,336	1,000,398	2,271,630	2,291,740	2,466,696
Small town	1,090,135	312,885	484,517	381,563	539,024
Large town	4,360,540	1,251,539	1,938,068	1,526,253	2,156,095
City	5,450,675	1,564,424	2,422,584	1,907,816	2,695,118
Total	49,914,707	13,132,831	27,561,466	26,733,036	30,057,201

very limited proportion of the population at an estimated 17%². The percentage of households with water connection is approximately 2%³.

Table 1 summarises the number of people that will still need to gain access to water and sanitation in order to achieve the MDG Target 7c and/or universal coverage. In the urban areas the coverage percentage for water services at 81% and urban sanitation provision 63%. These are still lower than the MDG targets set out by Tanzania (93.7% for urban water services and 95% for urban sanitation). In rural areas 46 % and 41% have access to rural water and sanitation services (compared with MDG targets of 66.9% for rural water services and 95% for both rural sanitation provision)⁴. Given the rapidly-growing populations, urban systems will require expansion and on-going maintenance of existing and new infrastructure. The current investment patterns supports this as the bulk of the money is being invested in urban infrastructure, even though the bulk of the population currently live in rural areas.

Reasons for coverage deficits and some remedial actions

One of the reasons for the coverage deficit is the lack of an effective institutional framework for integrated water supply and sanitation, which has led to:

- Overlapping roles and responsibilities between various institutions leading to inefficient use of human and financial resources, duplication of effort, and gaps in effective provision of services;

- Inadequate coordination between various government institutions;
- Inadequate communication and awareness building between these institutions and local organizations and water users; and
- Responsibility for regulation and performance monitoring of the provision of WSS services is being vested in the same organization responsible for service delivery and investment financing, thus creating a potential conflict of interest.

The lack of active participation of beneficiaries in the execution of water schemes in rural areas, has led to:

- Poor performance of the WSS schemes;
- Lack of proper management of the schemes;
- Lack of ownership; and
- Poor delivery of the service.

A significant percentage of the workforce, in many cases up to 70%, are casual workers engaged on a temporary basis supporting the technical department staff. The geographical spread of most of the districts necessitate having this arrangement where casual labour would attend to the need of the system within their locations (a village tap, intake or an isolated tank) which would normally be very far from the district headquarters. This casual workforce develops hands-on skills to work in the water supply and sanitation over time.

HUMAN RESOURCES IN THE WASH SECTOR

HUMAN RESOURCE DEMAND

In this instance 'demand' refers to what is considered 'ideal' to serve the population under the current coverage figures and hence does not necessarily correspond with what is currently in

place, which includes areas where the coverage is below recommended standards.

In Tanzania it is important to identify the key competences that are needed to operationalise water supply and sanitation services. The two categories of competencies are:

1. The ones that construct the infrastructure for water supply and sanitation; and
2. Those necessary to maintain the infrastructure.

The existing human resources demand for achieving the MDGs and universal coverage was calculated based on the existing water supply and sanitation coverage in both rural and urban setup in design/construction, operating and maintenance and community mobilisation. The analysis was based on data obtained from interviews, focusing on what could be the ideal number of personnel to deliver the services. In the computation process, an assumption was made on the distribution of the human resource in the different categories in both water supply and sanitation.

Tables 2 and 3 show, in the first instance, the human resources demand to achieve universal coverage and Tables 4 and 5 show what human resources are needed to reach the MDGs.

In order to overcome the service provision deficit and provide water services to both currently covered rural population and an additional ten million people, it is estimated that over 10.000 professionals and sector specialists will be required. This is particularly important in the technical field where there is a high demand for specialist engineers to design and construct the necessary

2 http://www.wsscc.org/sites/default/files/gsf_tanzania_sector_review.pdf

3 Government of Tanzania, 2008

4 WHO/UNICEF (2010) JMP report reports that 79% and 63% urban water and sanitation; 44% and 7 % rural water and sanitation

infrastructure. This number is a lot higher than the other technical fields, and could potentially be explained by the fact that water engineers typically perform multiple jobs simultaneously, taking up, for example, mechanical engineering and hydrology.

The other discipline that is in high demand is within management and finance – it was noted before that fiscal regulations demand that a qualified person handles financial accounting matters to support project implementation and management of operations.

The human resources demand needed for sanitation, as depicted in Table 5, represents the high service provision deficit to achieve the MDGs in dispersed rural communities. The increased demand on human resources and the resultant drain on productivity are as a result of numerous factors typical to rural areas in Africa, being *inter alia*, the geographical spread and the concomitant distances between areas of work, the endemic lack of resources, poor communication, the lack of equipment such as spare parts, etc.

The demand reflected in the ‘technical field’ in Table 5 is specifically as a result of the need for engineers, technicians and artisans required for rural sanitation implementation.

The demand reflected in the ‘technical field’ is influenced by the low technology level requirements as well as the level of community management of sanitation services. Community members normally assume the responsibility to manage and maintain the systems, which reciprocally lowers the demand for technical support. However, and partly as a result of the community-managed systems, the human resources demand within the category of ‘social development’ is

Table 2: Human resource demand for universal coverage in water supply sector

Future HR DEMAND for water to achieve universal coverage	WATSAN technical field	Other technical field	Management & Finance	Social development
Water delivery: dispersed rural community	7,323	732	4,394	1,098
Water delivery: rural village	814	81	488	122
Water delivery: small towns	227	23	136	34
Water delivery: large towns	909	91	546	136
Water delivery: city	1,137	114	682	171
Total HR Demand for Water Supply Sector	10,410	1,041	6,246	1,562

Table 3: Human resource demand for universal coverage in sanitation sector

Future HR DEMAND for sanitation to achieve universal coverage	WATSAN technical field	Other technical field	Management & Finance	Social development
Sanitation delivery: dispersed rural communities	549	366	366	2,014
Sanitation delivery rural villages	61	0	0	0
Sanitation delivery: small towns	17	11	11	63
sanitation delivery: large towns	68	45	45	250
Sanitation delivery: city	85	57	57	313
Total HR Demand for Sanitation Sector	781	480	480	2,639

Table 4: HR demand for water sector to achieve MDGs

Future HR DEMAND for water to achieve the MDGs	WATSAN technical field	Other technical field	Management & Finance	Social development
Water delivery: dispersed rural communities	4,899	490	2,939	735
Water delivery: rural villages	544	54	327	82
Water delivery: small towns	213	21	128	32
Water delivery: large towns	852	85	511	128
Water delivery: city	1,065	107	639	160
Total HR Demand for Water Supply Sector	7,574	757	4,544	1,136

Table 5: HR demand for sanitation sector to achieve MDGs

Future HR DEMAND for sanitation to achieve the MDGs	WATSAN technical field	Other technical field	Management & Finance	Social development
Sanitation delivery: dispersed rural communities	522	348	348	1,913
Sanitation delivery: rural villages	58	39	39	213
Sanitation delivery: small towns	16	11	11	59
Sanitation delivery: large towns	65	43	43	238
Sanitation delivery: city	81	54	54	297
Total HR Demand for Sanitation Sector	742	494	494	2,720



particularly high as a large percentage of Tanzania's population still lacks awareness regarding the relation between sanitation, hygiene practices and health issues and many people still practice open defecation. In order to change this, there is a need to promote sanitation and hygiene practices, to mobilise communities and assist them to organise themselves into user associations to enhance sound management practices. All of these activities require personnel in the category of social development where community mobilisers, hygiene promoters, sociologist and trainers are required.

EXISTING HUMAN RESOURCE CAPACITY

The case study investigated what human resources capacity currently exists and can already offset some of the human resources demands in the sector.

Notwithstanding the high human resources deficits in the sector, the research found that in the entire sample, being the public, private and NGOs, at least one qualified water engineer was involved, normally as an overall manager. In almost all cases the engineer had the necessary skills and experience to manage the activities. In

all the urban samples, the Managing Directors were qualified engineers who, besides leading the management, were also responsible for the technical matters in the water and sewerage utility.

Table 6 is a compilation of the existing human resources in the water and sanitation sector in Tanzania, and illustrates the unequal distribution of existing staff between the water and sanitation. The qualitative data collection revealed that there is no sanitation-specific education in the country, which seriously impacts on the quality of the people working in this sector. In addition, organisations do not seem to have departments specifically focusing on sanitation. This was particularly clear in the public sector, where no indication was given of any staff working exclusively on sanitation. Out of the 40 NGOs, only 15 were active in the sanitation sector and out of 70 private sector organisations only 20 indicated that they worked on sanitation service provision, the reasons being that the focus of investment has been and still is the water supply sector and the general malaise regarding sanitation. When staff works in both areas, the general tendency is that they are primarily assigned to the water sector rather than the sanitation sector.

Occupational sector focus

Private sector organisations primarily focus on design and construction activities, indicating the relatively higher capacity within the technical fields. NGOs focus on capacity building, hygiene promotion and community mobilisation, which is why capacity leans towards the social discipline and management and finance. Most existing human resources capacity in Tanzania exists in the public sector, even though government wages are significantly lower both in the water and sanitation technical as well as management and finance fields. The government still manages to attract the personnel through job security and potential for professional development. The comparatively lower number of other (non water and sanitation) technical field discipline could be attributed to the fact that, for example, water engineers often do jobs and assignments which would normally be undertaken by a mechanical engineer, a hydrologist or an electrical engineer.

Further analysis of the existing human resource capacity indicated that rural areas and small towns have less professionally-qualified people because graduate professionals in all categories are more attracted to work in the cities and large towns. The same trend was also observed for companies and NGOs where most of the programmes and activities are centred in major towns and cities. This is particularly the case for financial personnel, engineers and administrators.



Table 6: Existing HR capacity⁵

HR CAPACITY	WATSAN technical field	Other technical field	Management & Finance	Social development
NGOs				
Existing HR capacity in water	80	40	120	120
Existing HR capacity in NGO sanitation	11	11	15	15
PRIVATE SECTOR				
Existing HR capacity in private sector organisations in water	175	50	50	25
Existing HR capacity in private sector organisations in sanitation	10	5	5	10
PUBLIC SECTOR				
Existing HR capacity in public sector organisations in water	525	38	300	75
Existing HR capacity in public sector organisations in sanitation	0	0	0	0
TOTAL NUMBER WORKING IN WATER	780	128	470	220
TOTAL NUMBER WORKING IN SANITATION	21	16	20	25

Difficulties for professional staff in rural areas

Despite the human resources deficits, fiscal regulations demand that organisations employ qualified personnel to perform financial tasks. In rural areas, this presents problems as the work is limited and qualified financial staff members generally tend to do manual routine work as well, far below their capacity and education. In addition, these staff members work with accounting systems, and the unavailability of a suitable financial accounting system can be particularly demotivating for finance personnel who work in these areas. Some organisations try to cope with these detractions by providing allowances to staff that work in rural areas, either for short or longer periods of time. Even with difficulties in retaining finance personnel in rural areas, no human resource gap was identified and reported in the course of

study survey under the management and finance job category.

Regarding human resources deficits, specific reference is made in the technical fields to the need for project design, planning, analytical, and project monitoring and evaluation skills. In addition, operational personnel were indicated to lack communication, writing skills and software knowledge. Organisations that started to adopt Integrated Water Resource Management (IWRM), mentioned that the technical staff were still uninformed about the concept and the approach.

Within the social development discipline,

the study indicated that the following skills could be further developed: advocacy, lobbying, good governance and community mobilisation. This was indicated by the NGOs, who also noted that there are very few professional social development workers with a tertiary qualification and who could specifically deal with sanitation and sanitation-related issues.

Gender inequalities

WASH is a male dominated sector – 90% of the sample (organisations) only had male water engineers – and the research has demonstrated clear gendered occupational boundaries, with men and women tending to do different jobs in the sector: men working more on water supply and women more on hygiene promotion. The Department of Commercial and Administration had a fair representation of males and females with nearly 40% of the sampled organisations having a 50-50% distribution of men and women among their staff. NGOs and CBOs demonstrated a higher ratio of female staff particular in the social development category.

SUPPLY OF HUMAN RESOURCES TO THE WASH SECTOR

Universities and technical Institutions

In Tanzania, engineering education and training is offered by six institutions and technical education and training is offered by more than 33 training institutions while training of artisans is overseen by the Vocational Education and Training Authority (VETA). Currently,

Table 7: Graduate supply to the sector

	WATSAN technical field	Other technical field	Management & Finance	Social development
Total estimate of HR supply in WATER sector to 2015	2,930	34	276	248
Total estimate of HR supply in SANITATION up to 2015	84	34	55	25

⁵ For full details on what is included in existing capacity a reference is made to the full report.

VETA has 22 designated model centres including 11 Regional Vocational Training and Services Centres (RTSCs), ten Vocational Training Centres (VTC) and one Vocational Instructors Training College (VITC). In addition, there are about 900 vocational training centres owned by religious institutions, NGOs, CBOs and other private organisations/institutions.

Table 7 indicates the potential supply of graduates until 2015, considering only those who have tertiary education. One third of the supply comes from training institutes.

Table 7 shows the estimated number of graduates until 2015 and involves the estimated human resources supply in engineering, management and finance and social development. The numbers clearly show that the water sector is favoured with few entrants into the sanitation sector.

The upward trend for human resources supply in Tanzania has, to a large extent, been attributed to the country's higher learning education policy that directs all institutions in the country to increase the number of students graduating in different disciplines, engineering being one of them. A number of economic development frameworks such as Vision 2025, MKUKUTA and to achieve the MDGs by 2015 also call for an increase in graduates.

Before the water supply and sanitation sectors were reorganised to align to the National Water Policy, and when the central government was responsible for service provision, the norm was that staff qualifications and promotions were based on length of service rather than merit which led to non-qualified or under-qualified staff holding senior management position in the technical and financial departments. This situation

has changed and the norm is that education and experience are taken into account with promotion and in determining remuneration.

Inappropriate training and ill equipped training institutions

Currently, graduates from universities and training institutions are not equipped to enter the labour market because they received inappropriate training. Curricula are outdated, training institutions are poorly equipped and limited hands-on training in engineering or laboratory work is provided. For instance, sanitation engineering has not been an education qualification that is part of a structured curriculum and is not offered by any institution in the country and hence in the entire sampled organisations there were no trained sanitation engineering professionals.

As well as outdated curricula, standards of teaching can be linked to poor incentives due to low salaries and a general lack of resources.

Gender inequalities in universities

In general, there is a low level of women graduates from universities especially from technically-orientated courses, specifically engineering. Women choose to enrol in the social sciences and nearly 90% of students were reported to be females while it was the opposite case for all cadres of training on the technical side. The low representation of women in technical and managerial positions can be linked to a failure to promote careers in the sector to young women and a lack of policy incentives to recruit more women.

Lack of opportunities for practical WASH related work experience

The lack of opportunities for graduates to get practical WASH-related experience is a significant problem. This is compounded by inadequate support

for the transition from academia to the work environment and lack of mentors to train less experienced staff. For WASH courses and engineering in general, students have to be exposed to the practical problems in the field.

ADDITIONAL HUMAN RESOURCES DEVELOPMENT

There are two big projects in Tanzania with the objective to provide training for different human resources categories. The projects are Education in Sub-Saharan Africa, under the auspices of the World Bank and the Water Sector Development Programme (WSDP) run by the government and funded, *inter alia*, by the French Development Agency. The main objective with this programme is to reduce poverty through community access to clean water.

Despite the fact that there are two main projects on providing/supplying the human resources required for achieving the objectives of different developmental frameworks including MDGs, the respective projects have not specified the number of targeted people to be trained as an output.

HUMAN RESOURCE SHORTAGES

Comparing the estimated human resources demand with the existing capacity indicates that Tanzania is facing a shortage in human resources capacity. Table 8 below summarises the shortages per sector and according to the four disciplines, incorporating the supply to the sector.

BROAD CATEGORIES

Even though the sanitation deficit is higher, and the sanitation sector requires significant numbers in terms of human resource capacity, the human resources shortage is far more significant in the water sector. This could be explained

by the larger use of community managed technologies in sanitation than water supply. This argument is strengthened by the shortage of human resources in social development for the sanitation sector (approximately 2700), in comparison with the water supply (approximately 670). Specifically, sanitation marketing personnel and community empowerment officers are in short supply. These skills are rarely taught in the formal tertiary education system.

In the water sector, the human resources shortages in technical fields directly related to water provision are far more prominent. The sector indicated a specific shortage of water engineers, technical officers, and environmental engineers. The lack of environmental engineers is indicated to be caused by difficulty to attract these professionals into the sector.

TYPES OF ORGANISATIONS

NGOs face the largest human resources shortage in the sanitation sector, probably because of the larger role they play, for example in service provision for rural sanitation, community mobilisation, hygiene promotion and capacity building.

One of the objectives of the National Water Policy (2002) was to promote participation of the private sector in the delivery of goods and services. In

order for them to assume this role in the water sector, with a particular focus on construction and other technical fields, the private sector has a significant human resources shortage. There is a high shortage within the private sector's social development disciplines, specifically in sanitation.

O&M VERSUS CONSTRUCTION VERSUS COMMUNITY MOBILISATION

Human resources shortages for water supply are the highest for operations and maintenance (O&M) and the lowest for mobilisation, probably attributable to the need for more infrastructure maintenance to sustain services. Conversely, the sanitation sector has the highest shortage of people working on mobilisation and it is the lowest for O&M. The high shortage for O&M in water supply sector could be attributed to the fact that in the classical/traditional service delivery, not much emphasis is placed on O&M. Conversely, the high shortage for social development workers for sanitation sector is attributed to the low level of trained people in this discipline; a lack of incentives to work in the sanitation sector and because sanitation is not economically competitive when compared to other sectors.

Until now, the primary focus of Tanzanian's water supply and sanitation sector was infrastructure

implementation. However, the sector has realised the need for improved maintenance of infrastructure to ensure sustainability and the focus is shifting towards operations and maintenance.

RECOMMENDATIONS FOR MEETING HUMAN RESOURCE NEEDS

Tanzania's country assessment revealed an enormous shortage in human resources in the water sector, particularly in the technical fields and also an urgent need for more attention to the sanitation sector, specifically on social development. In rural areas, the need is more profound, although in urban areas the sanitation coverage deficits indicate the need for attention. Overall, the country will need to focus on O&M of infrastructure so that they can maintain the momentum and not fall back and also to ensure sustainability, and educate socio-workers to mobilise the communities.

The main measures to increase the human resources capacity in water supply and sanitation to meet the MDGs in 2015 are:

1. Institutional support to strengthen a unified sector to provide water and sanitation services. Clarity is needed between national level agencies about their institutional roles, and there is a need for a single agency with a clear mandate to coordinate human resource development within the sector. In support of this, more work is needed to better understand the relationship between the number of organisations working in the national water supply and sanitation sectors, the levels of capacity available and how this aligns with national human resources priorities, policies and strategies.

Table 8: HR shortages to achieve the MDGs / universal coverage

Quantifying the shortages	WATSAN technical field	Other technical field	Management & Finance	Social development
WATER SECTOR				
HR shortage to achieve MDG	3,864	596	3,799	669
HR shortage to achieve universal coverage	6,701	879	5,500	1,094
SANITATION SECTOR				
HR shortage to achieve MDGs	637	444	419	2,670
HR shortage to achieve universal coverage	676	470	445	2,813

2. Focus on skills required for asset management and O&M: the MDGs have provided the political incentive to invest in new facilities, but more attention is needed to improve skills for operation and maintenance as indicated by the results of the assessment.
3. Capacity building is required at both community level to enable community management (and small maintenance works), and in urban areas the operators will require a more comprehensive approach to understand the problems underlying the failures and break downs. For example, training in asset management will provide a better understanding of how the system operates as a whole, and will provide an understanding of preventive maintenance in comparison with emergency or reactive maintenance.
4. This research should enable advocacy measures to be used to raise attention for a more balanced approach to external funding: the current funding split is 70:30 in favour of urban areas. It is clear that an urban funding focus could be seen as an investment in the future because of the faster urban population growth rate and investing in urban centres could be seen as an insurance policy for this anticipated urban growth. However, a balanced apportionment is required, even though reasons can be found to support urban investment over rural investment.
5. A specific focus on capacity development in small towns and rural areas is recommended coupled to incentives so that institutions have a goal to work towards to ensure that most of the country's qualified individuals are not all pulled towards the urban centres. Specific attention is required to deploy and retain the workforce to ensure access to and provision of services across the country on an equitable basis. For example incentivise through compensation and improvement of local facilities, for instance allowances for staff to work in the rural areas. To support this, ways need be found to speed up the decentralisation process, with transfer of additional functions – and funds – to local authorities.
6. The mismatch between what the education sector provides and what the market needs should be addressed and better coordination of sector organisations with educational institutions is critical. This cross-sector coordination should look at all facets of water and sanitation, for instance, the NGO sector should be consulted about the need for higher education institutions to streamline the curriculum for social development workers to work in the sanitation and hygiene sectors. This coordination can be strengthened by compiling a database and to collate information on the human resources available in the sector, as it can be a very useful tool to analyse trends and plan sector development in the long term.
7. Increased support for training institutions is an important component to supplying quality education. There is a pressing need to improve standards of teaching as part of continuing education of water supply and sanitation professionals. Additional funding is needed for universities, colleges and other training institutions to enable them to upgrade the quality of their educational activities. Long-term planning is needed to address how the education institutions should collaborate with the marketplace to fill the current human resources gaps that exists in the water supply and sanitation sectors.
8. Developing sanitation-specific education means that sanitation-focused subjects should be included in the education curricula. Considering the deficit in both MDG and full service coverage in both the water and sanitation sectors, there is an urgent need to develop skills and knowledge in this particular area.

Full references are noted in the full country assessment report available at www.iwahq.org/hrcapacity