



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

Country briefing note Mozambique

Human resource capacity assessment

Briefing Note • Mozambique

KEY POINTS

- ▶ Mozambique will not achieve the Millennium Development Goals (MDG) target 7c, particularly, as sanitation remains a neglected area:
 - In Mozambique, according to government figures, approximately 56% of the population has access to water services and sanitation coverage is 43%¹. In the rural areas the sanitation 'coverage' includes simple pit latrines which are considered to be below the standard of what constitutes 'improved' sanitation. This coverage rate is thus an over-estimation
 - Mozambique will not reach its set MDG target 7c even though it was pegged at a very low level of only 50% for sanitation². According to the JMP, the coverage in 1990 was 11%, being 4% for rural areas and 36% for urban areas.
 - Only 4% of the staff from the public sector are working in the sanitation sector, while non-governmental organisations (NGOs) and community-based organisations (CBOs) have 52%, and the private sector has 23%. This indicates that NGOs/ CBOs are attempting to fill the gap created by the neglect of the sanitation sector by the public and to a lesser extent, the private sector.
- ▶ Mozambique experiences an overall shortage of adequately educated staff:
 - There is a general human resource (HR) shortage in the water supply and sanitation sector in Mozambique, which is problematic and impacts negatively on a wide range of health and well-being issues.
- Most personnel employed in the water supply and sanitation sector in Mozambique are not adequately and suitably educated to work in the sector.
- The human resources deficit, particularly in the areas where qualified professional staff, such as water engineers, is needed, is high because not many people complete graduate studies at tertiary education.
- ▶ The public sector faces challenges attracting personnel:
 - The public sector dealing with water and sanitation does not seem to employ qualified professional staff and there is a practice of hiring these professionals on an 'if' and 'when' basis. The private sector and NGOs hire qualified, professional staff on a full-time basis.
 - The public sector offers relatively low salaries and benefits
- ▶ Poor responsiveness of the education sector and poor impact of policy:
 - The poor responsiveness of the education system to the specific development needs, inter alia in the water supply and sanitation sectors, is a major obstacle to human resources capacity development.
 - The current distribution of male/female workers is 73% male workers and 27% female. Despite the explicit strategy adopted in the rural water programmes of enforcing a 50% women participation in community water groups responsible for water point operation and maintenance, the reality shows that males still dominate this labour market.

BACKGROUND

This Briefing Note summarises the findings from a study in Mozambique, 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.

country, covering 801590 km², bordered by the Indian Ocean. The country is divided in ten provinces, 129 districts, 405 administrative posts.

The climate is tropical to subtropical, and the country is endowed by rich and extensive resources.

Mozambique is a South Eastern African

Ranking 185th on the human

¹ JMP figures show 47% drinking-water access and 18% sanitation access (WHO/UNICEF 2010)

² MPD (2010) Report on Millennium Development goals Mozambique

development index (2012) the country remains one of the world's poorest. Mozambique's main economic activities are agriculture, manufacturing industry, trade and transport sectors.

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) coverage.
3. Estimate a proxy of HR demand per type of service delivery per 10,000 people.
4. Determine the existing HR capacity in the country in terms of numbers and skill sets.
5. Assess the HR supply in the years up to 2015 in terms of graduates as well as vocational training.
6. Calculate the HR shortages and assess the HR 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.

In this regard the study team has been in contact with the Mozambique National Directorate of Water (DNA) to possibly pursue the matter further and set up a permanent methodology to monitor the development of HR across the country for the different areas of its mandate.

DISCIPLINES TO MAP HUMAN RESOURCES CAPACITY

The study used the following disciplines to map human resources capacity in the

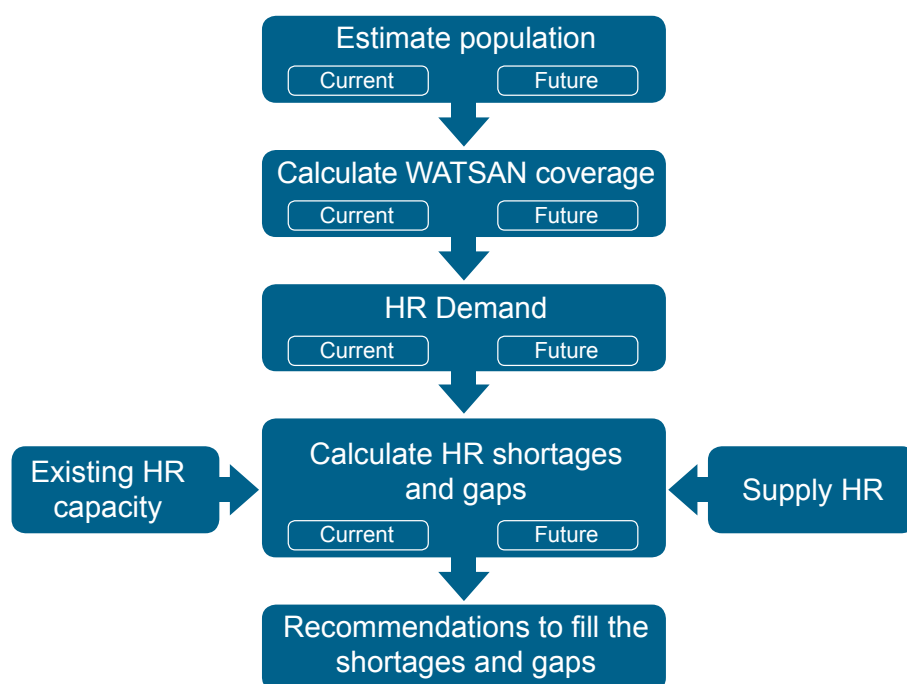


Figure 1: Methodological framework to assess human resource shortages and gaps

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

It investigated the capacity of these four disciplines, whilst distinguishing the human resource requirements for three different types of work noted below. Whilst this study reflects data from the water supply and sanitation sectors, the research considered hygiene practices as defined by the WASH sector.

- Design and construction;
- Operation and maintenance;
- Community mobilisation/sanitation and hygiene promotion.

SAMPLE AND DATA COLLECTION

In Mozambique, numerous organisations were sampled and data was received from eight public-sector, three private



organisations, and six NGOs. In addition, many key informant interviews were performed to strengthen the data validation. The study was conducted in Mozambique's ten regions.

The methodology is designed to generalise the information received and thereby estimate the national capacity on the basis of the sample.

Data was collected through a variety of sources, such as secondary sources, being population census, national demographic databases, JMP data describing existing coverage and MDG targets, primary sources such as telephone interviews and consultations, workshops, key informant interviews, semi-structured interviews and surveys, was analysed and distilled in order to derive the final estimates in order to extract the trends discussed in the country assessments on which this briefing report is based.

ASSUMPTIONS

The assessment hinged on a number of assumptions:

- Existing coverage data is sufficiently

accurate;

- The methodology uses Joint Monitoring Programme (JMP)³ coverage definition, which is 'improved' levels of water and sanitation. However, not all rates mentioned take this definition into account.;
- 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.

SECTOR CONTEXT

The adoption of a new Constitution in 1990 and subsequently the National Water Law in 1991 and the National Water Policy from 1995 (updated in 2007) drove enormous socio-economic progress, particularly in the water supply sector. A sector-wide approach (SWAp) was embraced, which significantly aided development, including the structuring of the various lines of operation and availability of some data that were beneficial for this study. Water supply

and sanitation are formally dealt with as a unit although sanitation is seen as still being in a disadvantaged position.

INSTITUTIONAL FRAMEWORK FOR SERVICE DELIVERY

The Mozambique government drives development in the sector, with other role-players, namely communities, local and municipal entities, donors, NGOs and private institutions actively contributing. The main donors have focused aid on water supply, rather than on sanitation. NGOs and CBOs cover the whole WASH spectrum which includes hygiene, with rural water supply and sanitation attracting a significant number. Private companies are mainly active in infrastructure construction and rehabilitation and only a few are found in consultancy work, including works supervision. They also cover rural and urban water supply and sanitation and tend to shift their priorities in line with the market dynamics and demand.

The various actors are distributed throughout the seven main levels in which the country is politically and administratively subdivided, namely: (i) central (national); (ii) provincial; (iii) municipal; (iv) district; (v) administrative post; (vi) locality; (vii) bairro (a neighbourhood in an urban area) and village (mainly in rural areas). For WASH in particular, the district/municipality is the lowest level in which formal government structures are present.

POPULATION, EXISTING COVERAGE, MDGS AND COVERAGE DEFICITS

Mozambique will have an estimated population of 25.6 million inhabitants by 2015, considering annual growth rates of 3.1% and 2.1 % in rural and urban areas respectively. Currently, approximately 56% of the population has access to water services, where rural areas are typically served by small, piped systems and point sources. Urban areas have

3 <http://www.wssinfo.org/>

Table 1 Coverage, deficits and sources

Settlements	Population (2015)	MDG deficit Water	MDG deficit Sanitation	Universal coverage water	Universal coverage deficit sanitation
Rural dispersed	3,764,124	1,019,262	589,562	2,148,499	2,471,624
Rural village	14,145,102	3,830,257	2,215,499	8,073,787	9,288,050
Small town	2,268,583	361,198	792,525	1,041,773	1,246,242
Large town	3,317,523	528,208	1,158,970	1,523,465	1,822,475
City	2,128,844	338,950	743,708	977,603	1,169,476

varying technologies, such as household connections, yard connections, shared (neighbour) taps, public standpipes, and public or private manual pumps. Sanitation coverage is reported to be 43% (MPD, 2010⁴), which includes simple pit latrines in rural areas. As this type of toilet is considered to be below the standard of what constitutes 'improved' sanitation, the coverage rate is an over-estimation of the actual coverage. In urban areas, latrines and septic tanks are the dominant form of sanitation service.

Table 1 reports on 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. Although the dispersed rural sanitation MDG coverage deficit seems low (as indicated in the table 1), we need to note that the target was set at 56% only. The full sanitation services coverage deficit therefore provides a more accurate picture.

REASONS FOR COVERAGE DEFICITS AND SOME REMEDIAL ACTIONS

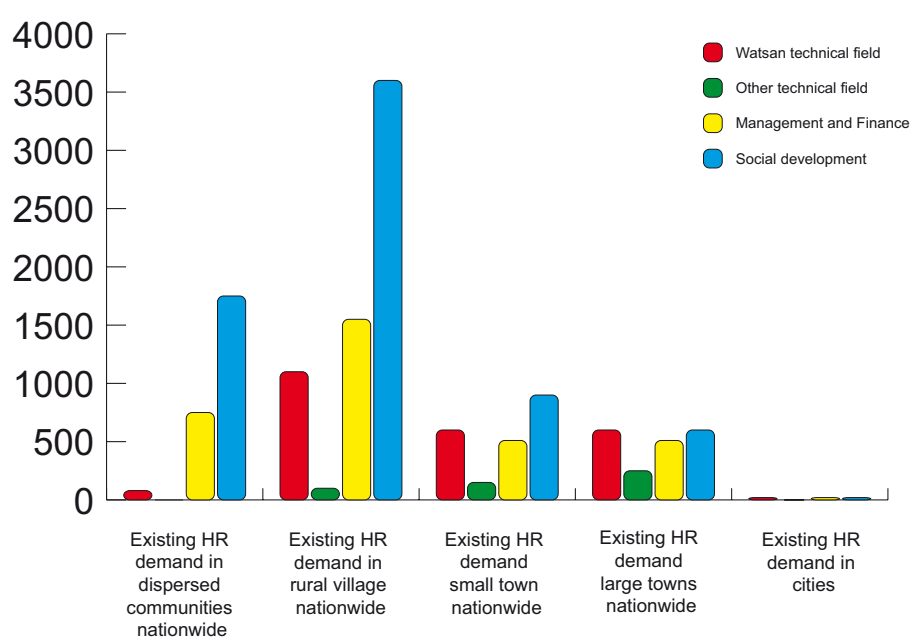
In the rural areas, the extension of the water supply network is affected by numerous factors, such as management deficiencies and the lack of local markets catering for water supply parts; faulty installations; weak sense of ownership; a lack of willingness and/or ability to pay; lack of adequately trained human resources; financial constraints, and a

lack of investment in rural development. Smaller and secondary towns have been neglected in the past when these were run by local state companies. However, recently an asset holder, the Water and Sanitation Management Administration (Administração de Infra-estruturas de Água e Saneamento – AIAS), was established to identify and implement innovative investment mechanisms suitable to the smaller towns. The attraction of private sector investment in the larger towns and cities, as a result of the establishment of the Investment and Asset Fund for Water supply has boosted an increase in coverage of water supply in these areas. The figures in Table 1 reflect this, as larger towns and cities have to bridge lower coverage deficits. Sanitation coverage is far less than water. The sector as a whole strongly

depends on donor financing which constitutes approximately 85% of all sanitation investments. This implies that a) the government faces financial constraints to cover investments and or b) the government has prioritised water over sanitation and or c) donor funding has focused on water. This message is reinforced by the new law that was implemented with a focus on water supply.

To overcome the low levels of coverage – for both water and sanitation – it is crucial that the remedial interventions include:

1. The introduction of vocational and technical training in water supply and sanitation-related subjects;
2. Improved recruitment methods for the public sector specifically to the new recently created lower levels of operations;
3. Incentives and employee retention strategies in place at all levels and
4. The introduction of funding mechanisms that support a fast growth in investments in rural areas in both water and sanitation.

Graph 1: Graphic representation of HR demand to meet MDG by settlements

4 Ministério da Planificação e Desenvolvimento (2010). Report on the Millennium Development Goals. Mozambique 2010



water supply and sanitation systems, where sensitisation, hygiene promotion and training are required.

Because of the existing coverage deficits, there is an obvious need for more water and sanitation systems to be implemented with the concomitant requirement for personnel to manage and coordinate the processes which include planning, budgeting, education, training, monitoring, infrastructure maintenance, etc. which determines the high demand for suitable human resources.

EXISTING AVAILABLE HUMAN RESOURCES

Table 2 highlights the existing human resources available in the water supply and sanitation sectors and shows that the public and private sector are the dominant players in the water supply sector, whilst the private sector is dominant in sanitation field. This division is in line Mozambique's institutional framework, where the government establishes the policies and strategies as well as being directly involved in a number of implementation areas. The government is responsible for determining the size of operations of the other institutions. It should be noted that the numerical superiority is less compelling when considering that NGOs and private organisations are only active

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.

Graph 1 is consistent with the MDG deficit per agglomeration size listed in Table 1. Rural areas, which have lagged behind in water supply and sanitation coverage as a result of diminished effort and available resources, are the areas where the HR demand is the

highest and where trained and informed personnel are critically needed. There is a high demand for social development disciplines, which is a result of the implementation of community-managed

Table 2: Existing human resource capacity per type of organisation and water versus sanitation

Institutions-Subsector/HR Categories		WATSAN technical field	Other technical field	Management & Finance	Social Development	Total
NGO/CBO	Water	163	6	94	157	420
	Sanitation	120	6	13	173	312
Private	Water	329	19	155	580	1,083
	Sanitation	107	0	13	173	293
Government/ Public	Water	522	0	277	296	1,095
	Sanitation	43	0	22	11	76
Total	Water	1,014	25	526	1,033	2,598
	Sanitation	270	6	48	357	681
Grand Total	W&S	1,284	31	574	1,390	3,279

in a selected number of areas, whilst public organisations are active in all areas.

General observations

- Considering professionally qualified staff working in the water supply and sanitation sectors, there is a reasonable balance in the technical and social development fields where NGOs/CBOs are involved.
- The private and public sectors clearly have less professionals working on sanitation and the public sector has an appalling imbalance when it comes to social development workers.
- The public sector has only approximately 4% of their staff working in the sector, working in sanitation, while the NGOs/CBOs have 52%, and the private sector has 23%. It is a clear indication that the NGOs/CBOs sectors are attempting to fill the gap created by the neglect of the sanitation sector by the public and to a lesser extent, the private sector.
- For management and finance, there are glaring shortages of staff working in the sanitation sector, which is almost the same across the three main actors. This would appear to be a clear gap within all types of institutions involved with sanitation.
- Regarding the other technical fields the research has shown that NGOs/CBOs and the private sector have full-time personnel working in this category. The public sector seems to focus mainly on hiring these professionals on an 'if' and

'when' basis, without having large contingents of them as full-time staff members. The private sector seems to be using this public sector gap as an opportunity to provide technical and professional services offered by these professionals by having a significant stock of them.

- A final general observation is that the contingent qualified professionals in the water supply and sanitation sectors is low and the conclusion that can be drawn is that the absorption of this personnel category is equally low.

Human resource characteristics

The full scope of human resources that work in the water supply and sanitation sectors – both rural and urban – seem to be relatively equal if all levels of involvement (both public and private sectors and NGOs) are considered.

This does not mean that the different categories are proportionately distributed across rural and urban areas, or across job types. Both NGOs/CBOs and the private sector showed more people in rural areas (76% and 72%). The overwhelming majority of the personnel from the interviewed institutions are active in 'project implementation' (57%), which primarily means construction. Whilst operation and maintenance should be the only continuous function of providing services, this type of work is only performed by 13% of all personnel.

Age

Table 3 shows the distribution of personnel by age groups and highlights the fact that most of the people are in

the age groups of 30 years and above. These represent 72% of the workforce. Most of these are in the 40-50 year age group. At first this might suggest that the sector is serviced by experienced and qualified people but an analysis of the data and supporting factors revealed that this is simply an indication of the sector's inability to replace its ageing stock of professionals – all nearing retirement – trained in the period before the civil war (WB, 2002⁵).

A small portion of this 72% senior staff is well qualified but a significant part has lower educational qualifications but good work experience. After many years of work in the sector most of these people are well skilled to carry out specific tasks but have limitations when it comes to developing and managing complex systems and processes.

Education levels

During the research, the following percentages emerged from analysing the sample:

- 29% of the personnel included in the survey have only completed elementary level training (primary education);
- 22% of the personnel completed basic level training (secondary education),
- 30% of the personnel completed middle level training (pre-university)
- 3% of the personnel hold a bachelor's degree,
- 12% of personnel hold a licentiate/honours degree; and
- 3% of personnel hold a master's degree.

Data collected from the sampled organisations did not reveal any holders of doctorate's degrees although it is known that there are people with doctorates working in the private and public sectors, mainly within the

Table 3: Age distribution of existing HR capacity (percentages)

	Age Groups					Subtotal
	> 50 anos %	40-50 anos %	30-40 anos %	20-30 anos %	< 20 anos %	
NGOs	26	41	32	1	0	100
Private	6	8	21	61	4	100
Public	10	40	30	20	0	100
Total	14	30	28	27	2	100

5 World Bank, 2002

Table 4: Existing human resource capacity only considering those with tertiary education

HR capacity	WATSAN technical field	Other technical field	Management and Finance	Social development
Total number working in water	240	25	526	1,033
Total number working in sanitation	162	0	49	357

educational and research institutions.

Table 4 indicates the existing capacity, considering only those who have a tertiary qualification.

The low levels of education affect every aspect of the water supply and sanitation sectors including organisations across the board: from public to private to NGOs. Because of the general prevalence of this low level of education, this study broadened its scope and included all levels of personnel working in the sector, and not only focusing on professionals as originally planned.

Gender inequality

The current distribution of male/female workers is 73% male workers and 27% female. Despite the explicit strategy adopted in the rural water programmes of enforcing a 50% women participation in community water groups responsible for water point operation and maintenance, the reality shows that males still dominate this labour market.

Salaries

There are considerable differences between the three categories of institutions with the private sector offering the best salaries and other benefits followed by the NGOs and then the public sector, with the exception of the autonomous public institutions that tend to offer the same or even better conditions than the private sector. This explains why staff retention in the public sector is problematic as people leave it to join private, autonomous

(public) institutions and NGOs, looking for greener pastures. The creation of public autonomous institutions in the water supply and sanitation sectors is perceived to be to the detriment of government, as personnel is attracted by better salaries and working conditions exacerbating the human resources gaps in the public sector.

SUPPLY OF HUMAN RESOURCES TO THE WASH SECTOR

The poor responsiveness of the education system to the specific human resources needs of the water and sanitation sectors is a major obstacle in the sector. This is a problem across all education levels, from basic to tertiary and creates a myriad of concomitant problems in the country, not only the water and sanitation sectors, *inter alia*, a disproportionate percentage of unemployed graduates in urban areas, and a sector serviced by an unskilled and untrained labour force at rural level.

Universities and technical Institutions

The higher education sector has seen an unprecedented increase in students since 2000, particularly in areas requiring least investment, such as social sciences, management and law. While there is a general surplus of social development workers in the country, there is a shortage in the water supply and sanitation sectors. Natural science and engineering/technology courses are still very limited.

On average, tertiary education institutions graduate approximately 41 students per year (from 2007 to 2011) each, per technical area, such as civil engineering/environment, mechanics/electricity. For the five institutions it translates into about 205 graduates (barely 0.20%) of the total number of graduates. Of this, close to 75% of the graduates do not find employment at all and of the remaining 25% that manages to get employment, 5% go for education including lecturing, 10% join government institutions, 5% public companies and 5% private. Those being channeled to the water and sanitation sectors are estimated to be approximately 2% of the total graduates from civil engineering/environment.

These percentages reflect the failure of education institutions and by default, the



Table 5: Number of graduates on an annual basis

Type of training institutions	WATSAN technical field	Other technical field	Management and Finance	Social development
University graduates	300	681	11,854	2,554
Other higher education	0	0	0	0
Training institutes	1,711	4,881	7,953	369
Vocational training	451	0	267	20

Table 6: Total HR supply until 2015

Type of training institutions	WATSAN technical field	Other technical field	Management and Finance	Social development
Total estimate of HR supply in water supply sector to 2015	369	556	2,007	882
Total estimate of HR supply in sanitation up to 2015	123	139	5,018	367

water and sanitation sectors to attract suitable staff, both graduates and less qualified persons.

Table 5 shows us the numbers of graduates per year in Mozambique as a whole (2010 university and training institution records). Taking this data for the five years to 2015, the totals are high. Table 6 depicts the absorption of human resources into the water supply and sanitation sectors for the same five-year period and it is very low.

The disparity between the number of potential employees available to the water supply and sanitation sectors and the actual absorption rate of graduates into the sector is glaringly low and the reality is that a very small percentage of graduates actually enter the sector. This has a compounding effect on the development of the sector as a whole.

Technicians and higher education

Water and sanitation technicians and other staff active in the sector are in one way or the other the product of the National System of Education which divides the system into general education, adult education, technical and

vocation training, teacher education and higher education.

Currently, only four of the existing tertiary institutions offer civil engineering courses with an option for specialisation in water and sanitation. One tertiary institution offers environmental engineering courses. One of the reasons why Mozambique's higher institutions do not embrace engineering and environmental management courses is as a result of the costly nature of the courses which remains unaffordable, despite government subsidies. This means that the country is well positioned to meet its training needs to provide managerial and social development capacity but has limitations in core water technical areas.

A relevant statistic is that engineering courses contribute to less than 5% of the total number of graduates with the number of those related to the water and sanitation sectors or WASH being even lower. Data collected in the course of this study uncovered that there is approximately 9% of all civil engineers and related courses attending to water and sanitation.

Masters and Doctorate's degrees are usually obtained outside the country or in cooperation with local and foreign higher education institutions. The faculty of engineering has been running its first edition of Master Programme in Hydraulics and Water Resources Management since 2010 and the first graduates are expected by the end of 2012.

Other Levels of Education

There are 97 technical and vocational institutions offering education and training in a wide variety of technical areas covering middle, basic and elementary levels had approximately 32,000 enrolled students in 2011. The predominance of traditional courses such as agriculture and livestock, commerce, construction, mechanics including auto-mechanics, etc. are first choices with a few new areas gaining space such as IT, roads and bridges and hospitality and tourism. There is no obvious focus on the water and sanitation sectors.

Input from other educational sectors

At the basic and middle levels, if civil construction is not considered, only four institutions offer typical water and sanitation-focused courses: two at the basic level (plumbing courses) and two at the middle level (geology and hydraulics).

Eight institutions offer civil construction courses and anecdotal evidence shows that graduates from these courses enter the water and sanitation sectors. The formal component of Training Centre for Water and sanitation (CFPAS) training includes a wide range of technical, managerial and social water and sanitation-related courses, such as: O&M and management of manual pumps; plumbing; leadership; human resources management;



training of community agents in water and sanitation; training of standpipe operators and members of water groups and committees; O&M of hydro-mechanic equipment; water supply management and wastewater treatment; etc.

While three institutions provide training in construction, this training is not specific to water and sanitation. This may have to do with the fact that the sector is not perceived as being attractive enough in terms of employment.

Elementary technical and vocational training, commonplace before 1983, was discontinued and not replaced with similar training sets. This explains why a large percentage of the human resources with a vocational training background specific to water and sanitation are at retirement age and not being replaced by young entrants into the market.

HUMAN RESOURCE SHORTAGES

There is a general human resources deficit in the water supply and sanitation

sectors in Mozambique, which is obviously problematic and impacts negatively on a wide range of health and wellbeing issues. This general deficit is compounded by the fact that many workers who already work in the sector are not adequately and suitably educated to work in the sector, the main reason given is the developmental and educational stagnation flowing from the long duration of internal conflicts in the country.

Currently, the deficit, particularly in the areas where qualified professional staff is needed, is high because graduates from tertiary education institutions are scarce. There are indications that at

central level (national) professionally qualified staff is present. However, at levels below that, being provincial and municipal, the deficit is extensive. Research has further shown that this level of qualified staff is not present at the remaining lower levels and, the majority of technical people from provincial level downwards have the following levels of education and training:

- Middle level training which is equivalent to pre-university;
- Basic level training which is equivalent to secondary education; and
- Elementary level training which is equivalent to primary education.

Table 7 shows an estimate of the HR shortages, incorporating HR supply, and shows that the shortages in the management and finance disciplines does not apply when considering achieving the MDGs or sanitation targets in general. It was previously stated that the set target levels for the MDGs were set low at 50% coverage.

MDGs and universal coverage

In terms of knowledge gaps, and attitudes and skills, it is mainly in the area of mobilisation of communities in rural areas that the needs are most pronounced. For various reasons a winning formula to make rural water

Table 7: HR shortages to achieve to achieve MDGs and universal coverage

	WATSAN technical field	Other technical field	Management and Finance	Social development
WATER SECTOR				
HR shortage to achieve MDG	1,589	235	715	2,486
HR shortage to achieve universal coverage	2,392	376	1,755	4,322
SANITATION SECTOR				
HR shortage to achieve MDGs	2,283	146	2,604	449
HR shortage to achieve universal coverage	3,983	187	2,367	1,253



supply and sanitation workable has not yet been devised. The same applies to the development of solid and sustainable sanitation systems in both urban and rural areas. Research (technical and social), education and employment would need to go hand in hand to tackle complex issues involved in these processes.

RECOMMENDATIONS FOR MEETING HUMAN RESOURCE NEEDS

Placing water supply and sanitation at the centre of an education system that is not responsive to the sector needs, coupled with high graduate unemployment figures of people who

have obviously qualified in sectors where their skills are not needed or is irrelevant, the demise of the vocational education sector and Mozambique's history, it explains the employment spread in the water and sanitation sectors. Much of the sector's human resources are represented by a significant number of people who have not completed any tertiary education, or who had no sector-focused education.

The employment spread is further hampered by the fact that graduates are concentrated at the national level and seldom work in rural areas. Thus, the levels in which there are serious challenges are at district, locality, bairro and village levels, where they are

normally served by people with lower qualifications. This is more pronounced within the public sector and NGOs/CBOs.

Solutions to most of these problems should be a combination of the sector's efforts to tackle problems and addressing complex issues affecting the country's development as a whole. Certain solutions cannot be achieved in isolation as they are a reflection of the country's needs in a series of development areas such as:

EDUCATION

Education should be geared towards higher quality and more responsive and relevant water and sanitation-focused



training and curricula need to change to suit the needs of the labour market. Training needs to be diversified to meet regional and geographical needs and emerging activities⁶, innovative skills (more focus on learning by doing) need to be developed and teaching/learning opportunities increased. It is crucial that investment in higher, technical and vocational education is focused on technical areas, mainly engineering, to sustain and increment existing growth in the economy and society.

INCREASED INVESTMENTS AND EMPLOYMENT

More financial resources are needed to expand the sector and to hire more staff particularly by the public sector as a way of setting the tone to be followed by the private sector and NGOs. The water supply and sanitation sector needs to make itself more attractive in order to

⁶ Including increased opportunities for education in Natural Sciences and Engineering including WASH.



attract and retain qualified personnel.

BALANCING FUNCTIONS

The sector should reverse the trend of focusing mainly on construction to the detriment of technical aspects such as O&M as well as non-technical, social development aspects encompassing WASH functions.

MORE GENDER EQUALITY

The water supply and sanitation sectors will benefit greatly from increased gender equality translated into more women being active in service provision in order to improve communication with women and foster the identification and adoption of best practices.

DECENTRALISATION

The creation of human and institutional

capacity at the lower levels (districts, municipalities, localities, bairros, villages, etc.) to ensure that they competently undertake their roles of maintaining regular contacts with the communities; supervise, the various operations and use lessons learned to continuously improve the sector. This should go hand in hand with the creation of the necessary conditions to attract highly qualified personnel to the local levels. The district level should be given increased attention in this regard.

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