



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

Country briefing note Sri Lanka

# Human resource capacity assessment

## Briefing Note • Sri Lanka

### KEY POINTS

- ▶ According to the JMP, Sri Lanka is on track to achieve both the water and sanitation MDG targets. However access to water supply and sanitation in the estate populations is lagging significantly.
- ▶ The public sector, in particular the National Water Supply and Drainage Board (NWSDB), have primary responsibility for development of water and sewerage facilities for urban and rural communities.
- ▶ The Rural Water Supply and Sanitation Division (RWSSD) of the NWSDB has jurisdiction over rural water supply; it is devolved to provincial governments, who lack technical capacity. More than 4,500 community-based, small-scale rural water supply schemes have been constructed over the past two decades with financial assistance from the World Bank and the Asian Development Bank.
- ▶ The biggest operator of urban water supply systems is the NWSDB with a country-wide operation of 315 major and minor water supply schemes.
- ▶ In the estate areas, the private estate companies are responsible for providing basic water and sanitation infrastructure.
- ▶ In all areas, sanitation is considered to be a private matter and exists mainly of on-site facilities constructed and maintained by householders.
- ▶ Total future demand for professional human resources to achieve and maintain universal water supply coverage (by 2020) was estimated to be approximately 1,400 water and sanitation (WATSAN) technical personnel and 2,000 other technical personnel. For universal sanitation coverage it was estimated to be approximately 10% of this professional HR complement.
- ▶ Management and finance and social development and hygiene promotion personnel typically work across water and sanitation jobs. Approximately 660 management and finance personnel and 460 social development and hygiene promotion personnel are required to achieve universal coverage.
- ▶ Estimated human resource shortages and gaps:
  - An estimated additional 25% WATSAN technical personnel and 100% other technical personnel are required to achieve universal coverage of water supply, but sufficient of these human resources appear to exist to meet sanitation targets due to the reliance upon householders. The shortages for water supply is driven by the high requirement for these personnel in both rural and urban water supply systems; the former caused by the very large rural population requiring technical backstopping of rural water supply systems, and the latter caused by the higher labour requirement to construct and operate and maintain the more complex urban water supply systems.
  - There appears to be sufficient WATSAN and other technical human resources to meet sanitation targets, due to the large reliance upon householders.
  - Significant on-the-job training is critical as the training at undergraduate level does not fully match with job demands.
  - An increase of approximately 600% of the existing HR capacity of social development and hygiene personnel is required to achieve universal water and sanitation coverage; this is driven by the high requirement for this staff type in rural water supply because of the reliance upon community-based systems.
  - Across both water and sanitation there is likely to be a shortage of management and finance personnel to achieve future targets.
  - Attracting any of these types of HR to live and work in rural areas is difficult.
  - The estate areas require urgent deployment of WATSAN engineers.
  - Poor sanitation is polluting water courses and is the cause of recent outbreaks of dysentery.
- ▶ 1,9 % of the total deaths in Sri Lanka are WASH-related and while the overwhelming proportion of these deaths are young children, the proportion of WASH-related deaths in Sri Lanka is less than in most developing countries.<sup>1</sup>

<sup>1</sup> Safer Water, Better Health WHO 2008

## BACKGROUND

This Briefing Note summarises the findings from an IWA-led study in Sri Lanka, made possible through the generous support of the AusAID that contributed to assessment of the human resources needed to provide water supply and sanitation services in four countries: Papua New Guinea, Sri Lanka, Philippines, and Lao PDR. The International WaterCentre (IWC) coordinated the four studies and provided technical support; the Sri Lankan study was executed by Ananda Jayaweera (Sri Lanka) and Regina Souter (IWC).

The Democratic Socialist Republic of Sri Lanka is an island nation with a strong institutional base. It is one of the most densely populated countries in the world and ranks 24th out of 192 countries in terms of population density. It is classified as a lower-middle income developing nation with a gross domestic product of about \$49.5 billion. This translates into a per capita income of \$2,400. Sri Lanka's 91% literacy rate in local languages and life expectancy of 72 years rank well above those of its South Asian neighbours.

Two disastrous occurrences have impacted on Sri Lanka's development progress: a civil war in the northern and eastern regions that lasted 26 years and a tsunami that ravaged the island in 2004. Despite these setbacks, Sri Lanka is considered an 'early achiever' with regard to progress towards attaining the water and sanitation MDG targets<sup>2</sup>. Water and sanitation are high priority social services and supported through the creation of a separate ministry with the aim of mobilising resources to achieve universal coverage. However, the population residing in the estates, being the tea and rubber plantation

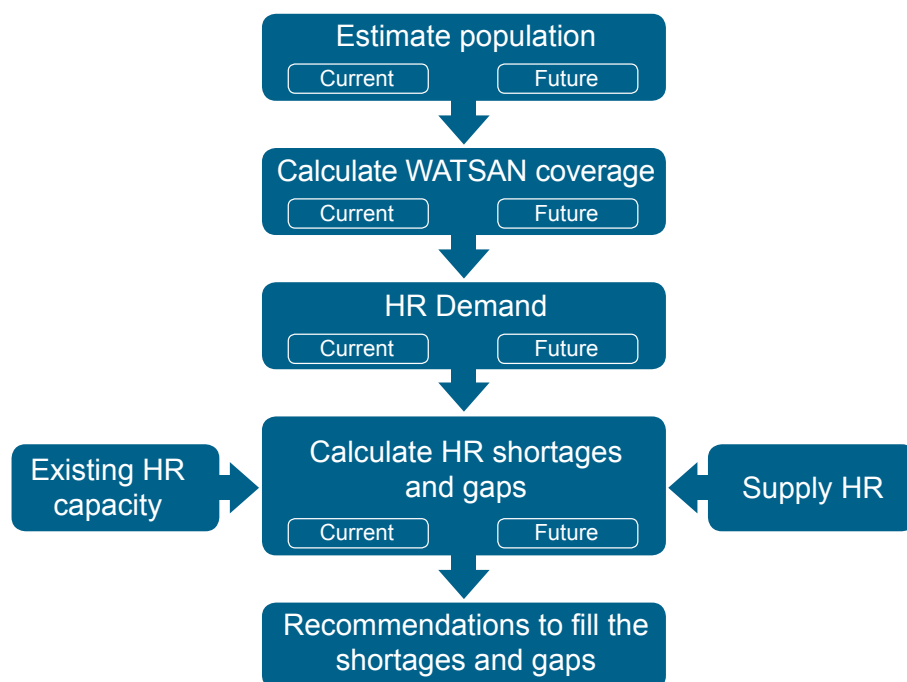


Figure 1: Methodological framework to assess human resource shortages and gaps

estates, have lower rates of access to water and sanitation services (62%, and 57% respectively). This is due to the governance arrangements of these estates, in that they primarily operate as self-governing enclaves, with the estate management being responsible for providing basic social services.

## ASSESSMENT APPROACH

The main objective of this study was to assess human resource requirements in the water supply and sanitation sectors to facilitate achieving MDG target 7c in Sri Lanka. In addition, the methodology adopted in this study also estimated the human resources requirements to achieve universal coverage of water supply and sanitation for the predicted population in 2015<sup>3</sup>.

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 current water supply and sanitation coverage and calculates increases needed to achieve a) the MDGs and b) universal coverage.
- 3 Estimate a proxy of HR demand per type of service delivery per 10,000 people.
- 4 Determine existing HR capacity in the country in terms of numbers and skill sets.
- 5 Assess HR supply in the years up to 2015 in terms of graduates as well as vocational training.
- 6 Calculate HR shortages and assess its gaps.

<sup>2</sup> Asia-Pacific Regional MDG Report 2011/12

<sup>3</sup> 2015 figures used for comparability

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

The country report separately assessed the HR requirements required to deliver the water and sanitation services as described in the government’s policies, programmes and targets, being full service coverage by 2020 for water and 2025 for sanitation as well as the provision of piped-water to 60% of the population, and piped sewerage to 7% of the population.

### DISCIPLINES TO MAP HUMAN RESOURCES CAPACITY

The study used the following categories to map human resources capacity:

- Technical specialisation specific to water and sanitation services (WATSAN technical personnel): people who are 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): people who are 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 personnel: people who are 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 / hygiene promotion personnel: people who are 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 aimed to make a clear distinction between human resources requirements for:

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

### DATA COLLECTION

Data collection methods included:

- Interviews, semi-structured meetings and surveys with key staff members from national government agencies, water boards, water utilities, provincial agencies, district and city councils, education and training institutions, community water and sanitation organisations (CBOs), NGOs, and academic institutions;
- Review of Annual Reports and other relevant literature;
- Review and analysis of statistical data from Department of Census and Statistics (DCS) and the Central Bank of Sri Lanka (CBSL); and
- A workshop with key stakeholders to review assessment procedures, data and calculations.

### ASSUMPTIONS AND LIMITATIONS

This assessment hinged on a number of methodological assumptions and country-specific modifications:

- 1 The population sectors that were assessed were modified to allow

Figure 1: Administrative Divisions of Sri Lanka



for the separation of the estate populations from the rest of the rural and urban populations, due to the different service delivery mechanisms and responsibilities for water supply and sanitation, and the different coverage rates of access to water and sanitation.

- 2 Urban areas are those areas with populations larger than 6,000.
- 3 Existing coverage data is assumed to be sufficiently accurate as coverage data was derived from census 2012 data with application of Joint Monitoring Programme (JMP)<sup>4</sup> definitions for access to ‘improved’ levels of water and sanitation, and NWSD data on split of population between urban, rural and estate sub-sectors.
- 4 It is assumed that different settlement sizes are typically served by particular water and sanitation technologies and service delivery mechanism.
- 5 Data describing existing water and sanitation HR capacity of companies operating the estates was not available, and therefore professional water and sanitation

<sup>4</sup> <http://www.wssinfo.org/>

- capacity existing within the estate areas may be underestimated, although anecdotally, the estates lack technical capacity and are unlikely to have professional water and sanitation personnel.
- 6 In Sri Lanka, the HR roles of management and finance and social development and hygiene promotion span simultaneously across water and sanitation. Stakeholders estimated the existing capacity and HR demand for water and sanitation separately as required by the methodology, however the end results for water and sanitation should be considered together.
  - 7 HR demand calculations did not include the large number of administrative and support personnel.
  - 8 The methodology assessed professionals, hence did not include household and community involvement
  - 9 Information about the HR capacity issues in the rural water supply sector is limited, as there are limited direct inputs from skilled people and professionals.

## SECTOR CONTEXT

The provision of drinking water supply and improved sanitation is a government priority. Over the past five decades, the water and sanitation sectors were transformed through important milestones in the institutional development arena. In the early 1950s, the government created a separate department to deal with water supply and drainage (Department of Water Supply and Drainage). The new department gained technical capacity through absorbing dedicated, qualified engineers to design and construct major and minor water supply schemes through direct budget allocation from Treasury. The engineers received

scholarships to go abroad and obtain postgraduate qualifications in sanitation engineering or advanced water and wastewater treatment. The institutional framework was further strengthened by transforming the Department of Water Supply to a statutory board with limited autonomy; the National Water Supply and Drainage Board (NWSDB) was established by an Act of Parliament in 1975.

The government has also established a special committee to monitor progress towards reaching the MDG targets. The committee comprises stakeholders from the Department of Census, the water supply sector, leading agencies, the Ministry of Health and other sector partners. The current government focus is to eliminate regional disparities (such as the war-affected northern and eastern regions) and achieve overall targets sets through a five-year development programme.

### INSTITUTIONAL FRAMEWORK FOR SERVICE DELIVERY

The NWSDB is the implementing arm of the government, under the Ministry of Water Supply and Drainage, and is responsible for development of water and sewerage facilities for urban and rural communities. Rural water supply is provided under the Rural Water Supply and Sanitation Division (RWSSD) of the NWSDB, although rural communities play a significant role in construction and operation and maintenance of both their water supply and sanitation facilities.

Water supply has been devolved to provincial governments; however they are not in a position to undertake major projects to serve the population due to a lack of technical capacity. Provincial councils have invested in the implementation of rural piped-water supply schemes, which are managed by community-based organisations

(CBOs) or local councils. There have been at least 4,500 community-based, small-scale rural water supply schemes in Sri Lanka, implemented over the past two decades with financial assistance from the World Bank and the Asian Development Bank.

The biggest urban water supply operator is the NWSDB with a country-wide operation of 315 major and minor water supply schemes providing treated water to over 1.3 million water connections by producing about 500 million cubic meters of treated water per annum.

Sanitation is a private matter and exists mainly of on-site facilities constructed by householders. Institutionally, it is a cross-cutting service, with several institutions having responsibility to provide regulation and maintenance of standards:

- NWSDB – Investments in sewerage maintain and technical assistance to others;
- Ministry of Health - protection of public health through regulation of sanitation;
- Ministry Local Government - maintains standards and enforces regulations in the provision of total sanitation services; and
- Sri Lanka Standards Institution (SLS) - publishes standards.

In addition to the government, organisations active in the WASH sector include UN agencies, national and international NGOs, and CBOs. Of the 25 NGOs (international and national) doing humanitarian work in Sri Lanka, less than ten are engaged in the WASH sector. CBOs are a significant human resource in WASH, undertaking much of the construction and O&M of WATSAN systems in rural areas. Private sector involvement in WASH provision is not large, and primarily limited to estate areas.

**Table 1: Actual and projected populations and population growth rate**

Population subsector	2012 population	Percentage of the total population	Average annual growth rate (derived from census 2012)	Projected 2015 population	Projected 2020 population
Urban areas	4,359,683	6%	0.7%	4,451,879	4,609,891
Rural areas	14,640,425	72%	0.8%	14,994,614	15,604,072
Estate areas	1,277,489	21%	0.2%	1,285,169	1,298,072
Sri Lanka (total)	20,277,597	100%	0.7%	20,731,662	21,512,036

**Table 2: Population coverage for water and sanitation services, the main technologies used and the service providers**

Population sub-sectors	Water Coverage (2012) %	Sanitation Coverage (2012) %	Types of water supply technologies	Types of sanitation technologies	Service Providers
Urban	100	100	Piped, treated or tube wells	On-site with septic tanks Piped Sewerage	NWSDB, urban municipal councils, and Housing Developers
Rural	82	82	Stand posts, rain-water harvesting, dug wells and small piped supply	Pit Latrines and, septic tanks (some shared)	NWSDB, Provincial Councils and Community based orgs. (CBOs)
Estate	62	55	Small gravity piped systems, wells, rain-water harvesting	Shared toilets with Pit latrines or septic tanks	NWSDB, Plantation Human Development Trust, CBOs Estate Management Companies, rural municipal councils

## POPULATION, COVERAGE OF WATER AND SANITATION, AND FUTURE COVERAGE TARGETS

Sri Lanka's population has increased steadily from ten million in 1960 to 20 million in 2010. However, the population growth rate has fallen from 1.4% to 0.7% during the period (table 1).

Water and sanitation service provision is universal in urban areas (table 2). Water and sanitation service provision is high in rural areas, with the exception of the estate areas. Access to safe water is much lower in rural and estate areas than in urban areas, due to the different governance arrangements and responsibilities as well as the hilly terrain and limited land availability which do not favour large scale development

of common amenities in these areas. In addition, the poor financial standing of many estates (Regional Plantation Companies, state and private sector) and the inadequate technical and institutional capacity of estate management to effectively deliver social services, have also led to poor human development indicators in the plantation sector. Coverage is also generally lower in the north-east regions that were affected by war and the tsunami, where infrastructure was destroyed.

The census 2012 included these regions for the first time in 30 years. The coverage data used in this assessment is based upon the census 2012 data, which explains why the national coverage used here is lower

than previously reported (when the NE regions were not included).

## WATER

Nationwide in 2012, the principal supply of water for 50% of the population was protected or tube well; 30% rely on piped water supply (mostly provided by NWSDB); the remainder relied upon rain water, springs, rivers, unprotected wells, bowsers and bottled water<sup>5</sup>.

The provision of safe water to the 16% of the population who still derive their daily water from sources which are vulnerable to contamination, to depletion or are unreliable, is the biggest challenge when considering the ever-increasing cost of development and non-availability of cost effective water sources in term of quality and quantity. However, if safety of naturally occurring water is ensured, then the requirement to invest huge sums of money to develop complex water treatment systems would not arise. Extension of Water Safety Plans to the smallest possible unit of water supply would enable this protection.

In rural areas the policy is that the scheme is developed for small communities with basic facilities and depends on naturally available water sources which are safe so that expensive treatment is not necessary. The schemes are developed and handed over to communities. Over 4,000 such schemes in Sri Lanka implemented in the past two decades. Changing environments, such as climate change and changed land uses, are threatening water quantity and quality of these rural schemes.

## SANITATION

Sri Lanka has the lowest rate of open defecation rate among South Asian nations; as of the 2012 census, only 1.7% was reportedly not using a toilet.

<sup>5</sup> Census 2012 provisional Water report

**Table 3: MDG (and National Development Plan) targets (% coverage)**

Population subsectors	Water targets	Sanitation targets
Estate	80%	75%
Rural	90%	85%
Urban	100%	95%

Access to toilets varies from toilets located on premises, to sharing with neighbours, and public toilets. Eighty-six percent of the population have toilets exclusive to their household. Typically, people build their own toilets and disposal systems and only a small percentage of householders receive subsidies to build their toilets. Only the non-shared toilet access counts towards MDG targets, explaining the lower coverage data in table 2.

In densely populated townships where on-site sanitation is not feasible, conventional piped sewerage systems are used. At present only 3% of the population is connected to piped sewerage including people in the city of Colombo. Piped sewerage is not affordable to the majority of the urban population although a tariff system has been established. In the absence of a piped sewerage system, septic tanks are used. In densely populated areas there are a large number of poorly designed septic tanks and direct pit latrines, which require periodic emptying and disposing of faecal sludge. Local authorities are hard-pressed with resources to carry out this expensive operation. It has been agreed by the Local Government Agencies and Central Environmental Authority that this problem should be resolved with properly designed septage treatment systems, preferably with a constructed wetland, as well as phasing out pit latrines and poorly designed septic tanks.

Currently, almost all foreign funded projects implemented by NWSDB, include a major sanitation component

**Table 4: Estimated coverage (population) for those with existing access to water and sanitation (as defined by JMP), and those that should have access if MDG target and universal coverage is achieved.**

Population subsectors	2012 coverage population		MDG target coverage population (2015)		Universal coverage water/sanitation population (2020)
	Water	Sanitation	Water	Sanitation	
Urban	4,359,683	4,359,683	4,451,879	4,229,285	4,609,891
Rural	11,946,587	12,034,429	13,495,152	12,745,422	15,604,072
Estate	792,043	728,169	1,046,716	981,296	1,361,575

with hygiene education.

### MDG GOALS AND TARGETS

The Sri Lankan National Campaign for Achieving the MDGs is spearheaded and administered by the Ministry of Finance and Planning, with the support of the UN Country Team and with direct implementation assistance by the United Nations Development Programme (UNDP). The National Council for Economic Development (NCED) brings together stakeholders from the private and state sectors to develop economic policies and action plans. The Ministry of Planning has received assistance from UNDP to implement a project to introduce results-based planning and management for achieving the MDGs. At national level, a secretariat for monitoring MDGs was established, with policy advice given by National Planning Department and Department of Census and Statistics.

Sri Lanka has set targets in reaching universal access to water and sanitation by 2020 with a vision statement – Safe Drinking Water and Sanitation for All. The interim target (the MDG target) is set in the National Development Plan for 2016 (table 3). This report assesses achievements of the MDG targets by the internationally-agreed deadline of 2015, rather than the nationally agreed deadline of 2016, however this discrepancy is considered in the final conclusions.

In addition to these high-level water and sanitation goals, the NWSDB has determined targets relating to piped water and sewerage; these have been incorporated in to the government's Ten Year Development Horizon (2010). By 2020, 60% of the population will have access to piped water supply (through three million connections), and 7% will have access to piped sewerage. NWSDB also intends to implement Water Safety Plans (WSPs) to cover 65% of the schemes.

### MDG AND UNIVERSAL TARGET COVERAGE

The 2012 coverage rates indicate that universal coverage has been achieved in urban water supply and sanitation. In rural areas and to a greater extent in estate areas, a larger proportion of current population still has to gain access to water and sanitation to achieve the MDG targets by 2015 and universal coverage by 2020 (table 4).

## HUMAN RESOURCES IN THE WASH SECTOR

### HUMAN RESOURCE DEMAND

In this instance 'demand' refers to what is considered 'ideal' to serve the population under current coverage figures and hence does not necessarily correspond to what is currently in place, which could include areas where coverage is below recommended standards. The basis of this approach of estimating future HR demand is

**Table 5 Future HR demand according to target and separated for water and sanitation access**

Target		WATSAN technical personnel	Other technical personnel	Management & Finance personnel	Social Development/hygiene promotion personnel
Water	To achieve MDG targets by 2015	1,263	1,849	377	350
	To achieve universal coverage by 2020	1,400	2,067	425	399
Sanitation	To achieve MDG targets by 2015	122	234	218	59
	To achieve universal coverage by 2020	141	256	239	69
Total of water and sanitation	To achieve MDG targets by 2015	1,385	2,083	596	409
	To achieve universal coverage by 2020	1,541	2,323	663	468
	% spread of HR (universal access, water and sanitation)	31%	47%	13%	9%

to use an estimate of HR required to serve 10,000 people (the HR demand ratio). Stakeholders were involved in determining these HR demand ratios, by assessing current standards as well as adequacy of current service provision, the HR demand ratios provide an estimate of the ideal HR utilised to serve 10,000 people. These ratios were then used to calculate the required demand to sustain the future populations with services if MDG targets are achieved (in 2015), and if universal coverage is achieved (in 2020). HR requirements are estimated for construction relating to expanding the coverage of services, to operate and maintain existing and new infrastructure, mobilise communities and deliver hygiene promotion.

The estimates of HR required, summarised in table 5, indicate a much higher requirement for professional staff for water than for sanitation, which can be explained by the very high reliance upon householders to manage their own sanitation. In some cases householders or communities may hire a worker that would be classified unskilled and therefore be outside of the range that this methodology investigates.

Approximately 31% of the HR demand across water and sanitation is for WATSAN technical personnel, although an additional 46% of technical personnel (not with specific water and sanitation skills) are required. This high requirement for technical personnel

(WATSAN and other) is driven by the high requirement for HR to deliver water services.

The roles of management and finance and social development hygiene promotion typically function across water and sanitation services simultaneously and so the combined results are more meaningful (refer to assumptions and modifications for explanation). Approximately 13% of the total HR involved in delivering water and sanitation are management and finance personnel; approximately 9% of the required professional workforce is social development and hygiene promotion personnel. The requirement for community mobilisers appears to be relatively low given the high reliance upon communities and householders in access to sanitation and O&M of rural water supplies.

Despite the much smaller urban population (6% of the total Sri Lankan population), this sector of the population

requires approximately 40% of all the WATSAN and other technical HR, more than half of the management and finance personnel, and a quarter of the social development/hygiene promotion personnel (summarised table 6). This is due to the types of technologies, especially water, but also sanitation, that are more labour intensive, such as piped water, treated/tube wells and onsite septic tanks with septage management or piped sewerage.

The demand in the rural sector is high relative to the estate and urban sectors, which can be explained by the high populations in this sub-sector, as well as the increased coverage of access to water and sanitation that is required.

The estate population is approximately one-tenth that of the rural sector, the HR required to deliver services to estate populations is ten to thirty times less. The estate populations are not typically provided with piped water schemes, and are reliant upon access to water via

**Table 6: Future HR demand according to target (water and sanitation combined) and disaggregated for urban, rural and estate subsectors**

		WATSAN technical personnel	Other technical personnel	Management & Finance personnel	Social Development/hygiene promotion personnel
MDG targets achieved, water and sanitation (2015)	Estate	33	39	13	35
	Rural	759	1,196	260	275
	Urban	593	847	323	99
Universal coverage achieved, water and sanitation (2020)	Estate	41	49	16	44
	Rural	882	1,384	301	320
	Urban	618	890	346	104



much lower-technology systems, which do not utilise professional personnel to either construct or operate and maintain.

## EXISTING HUMAN RESOURCE CAPACITY

More than 80% of the existing professional capacity is in the technical personnel categories (WATSAN technical and other technical personnel) (table 7). Social development professionals make up only 6% of the human resources in the WASH sector, and management and finance 12%.

Currently, the dominant organisation type for professional capacity is the public sector, and within that the WATSAN technical field category. Overall, in both WATSAN and other technical personnel categories, most of the existing engineering human resources (including WATSAN engineers) are in the public sector, which is expected given the large role government plays in delivering water and sanitation services. This existing capacity of WATSAN technical personnel was developed in large part through the scholarships that were granted in the early stages of Sri Lanka's strategic attention to WASH, in which engineers were sent abroad to be trained in water and wastewater treatment. Apart from private sector engineers, more engineers work in the water sector than in the sanitation sector.

Operation and maintenance is mainly undertaken by government agencies (NWSDB and local authorities). The Greater Colombo Water Supply system, which has the highest consumer base in the country, has an O&M staff of 1,360 to manage 355,000 water connections, however only 42 are engineers and 180 are technical officers (the remainder of the O&M staff are non-professional personnel).

In the estate sector, the operation

**Table 7: Estimates of existing capacity in the WASH sector (based on IWA methodology)**

Organisation type	WASH sector	WATSAN Technical personnel	Other technical personnel	Management & Finance personnel	Social Development personnel
NGOs	Water	28	11	2	13
	Sanitation	18	7	23	14
Private sector	Water	24	16	8	8
	Sanitation	30	60	15	15
Public sector	Water	360	300	88	20
	Sanitation	96	128	20	5
Total	Water	412	327	98	41
	Sanitation	144	195	58	34
	Water & sanitation	556	521	156	75

of small-scale, piped schemes are managed by the users while the project implementation officers under the PHDT oversee the maintenance. There is no dedicated professional staff employed for water and sanitation in plantation companies.

### Construction

The construction industry of Sri Lanka employs a little over 7% of the total labour force of the country, contributing to about 6.5% of GDP. Direct government involvement in construction has reduced compared with forty years ago. All construction activities in the WASH sector are implemented through a procurement process followed by the NWSDB. The supply of labour is entirely the responsibility of the contractor. The implementing agencies have in their cadre a group of dedicated professionals for management and supervision of these construction projects.

Eighty-two percent of the 2,450 construction contractors in Sri Lanka are registered for engagement in the water and sanitation sector. Large contracts are handled by well-organised contractors who are qualified to form joint ventures with foreign contractors. Sri Lanka's construction industry continues to grapple with high labour turnover and a minor share of the on-going major infrastructure projects in the country, putting the

sector's sustainability at stake. Since most of the small-scale constructions require labour-intensive contracts, stakeholders report that a lack of trained and skilled people is causing problems in the rural sector, in particular, for water supply rehabilitation and minor repairs.

Rural sanitation provision is mostly constructed and community-managed systems. Independent private constructors may be used but generally fall under unskilled staff rather than professionals.

The construction sector (primarily private) is not assumed to be very attractive to school leavers, who prefer more steady employment (rather than seasonal) and less labour intensive work.

### Operation and maintenance

In the urban areas, the NWSDB and local authorities undertake the O&M and collect revenue from the users to pay for it. Since NWSDB enjoys autonomy in the sector in terms of technical competencies and as the national budget holder, it has been able to develop its capacity for O&M. Professional staff of the NWSDB are well-trained to implement technical tasks and compared to other organisations, NWSDB staff are well remunerated. There is a systematic career upgrading

system according to the number of years of experience.

The capacity of the private sector in O&M is lacking and in the regional set-up, rural water supply service delivery agencies are not in a position to mobilize the private sector for urgent repairs.

Rural water supply facilities number over 4,500. They have been developed and constructed by projects then typically handed over to the community for operation and maintenance. In approximately 75% of the rural schemes, O&M is done by three to four unskilled people. These user-managed services face three critical issues: 1) Lack of trained personnel to run the facilities, 2) Lack of technical backstopping through formal institutional arrangements and 3) Water quality and quantity issues. Many of the schemes implemented over the past 20 years are facing sustainability issues; water resources depletion, water quality degradation and poor finances are seriously affecting the supply in number of cases.

Augmentation or upgrading of other sources that require full treatment technologies at a high cost, is beyond the capacity of community-operated systems. Strengthening these rural areas with additional trained and skilled staff will be necessary if higher-technology systems are to be used. Staff deployment to rural areas will need to be considered as more attention is required for the rural water supply operated by CBOs. The exact number of personnel associated with the management of rural water supplies is unknown as there are no formal surveys or inventories available. On average each facility is managed by three persons to deal with O&M, meter reading, billing and collections and accounting. Since these people do not pursue their formal training after the commissioning of

**Table 8 Summary of HR supply to the WASH sector**

Estimated annual supply of graduates	WATSAN Technical personnel	Other Technical personnel	Management & Finance personnel	Social Development/hygiene promotion personnel
To water	19	43	10	7
To sanitation	13	43	10	5

schemes, it is essential to employ WATSAN engineers for periodical review.

However, the rural and estate sectors are not attractive to well-qualified professionals; therefore the capacity shortage is increasing. Horizontal integration of qualified professionals needs to be promoted to ensure sustainability of the water and sanitation services in rural areas.

#### **Gender**

In 2012, Sri Lanka was ranked 39th in the global gender equality ranking among 134 countries in the world. The number of female engineers in the WASH sector has grown steadily over the past three decades, except for mechanical engineers.

International agencies prefer female candidates for WASH activities and in the rural water supply sector, there are numerous rural schemes run by women-led CBOs. Stakeholders consider that women are capable of performing more effectively in rural settings compared to males, especially in situations where there is a lack of strong institutional mechanisms.

#### **SUPPLY OF HR FROM EDUCATION AND TRAINING INSTITUTIONS**

Sri Lanka is at the forefront of human resources development in the South Asia region as its education system has a very high standard and the government's free education policy (15 universities offer free education) has contributed to high literacy rates (95%). This has resulted in high availability of human

resources from the education and training sectors generally. Generally, the graduates are considered to be of very high standards.

Major professional and technical roles in the WASH sector are filled by the graduates qualifying through the university system and other recognised institutions such as institute of Chartered Accountants of Sri Lanka, Institute of Cost and Management Accountants of Sri Lanka, technical colleges and the law college. The four universities produce over 1,200 engineers; the majority of them are civil engineers so supply of civil engineers is high, with around 10% having WATSAN skills (table 8). Water and environment postgraduate courses are conducted by leading engineering faculties with an average intake about 50 students for postgraduate degrees. More than 100 sociologists are produced each year and adequate to meet the demand.

The Tertiary and Vocational Education Commission assess vocational training institutions for registration and accreditation of vocational training courses. The National Apprentice and Industrial Training Authority (NAITA) is responsible for apprenticeship training nationwide. The Vocational Training Authority (VTA) offers skills training through a network of training centres across the country (National Vocational Training Institutes, District Vocational Training Centres, Special Vocational Training Centres, and Rural Vocational Training Centres).

Apart from these formal institutions for degree awards, engineers qualify

through field experience and ranking through internal tests and performance evaluation by their respective institutions. These engineers are categorised as Non Professionally Qualified (NPQ). The NPQs are best employed to do O&M rather than in the planning and designs of the water supply projects.

The number of graduates produced may be adequate for the water supply and sanitation sector however on-the-job training is critical as the training at undergraduate levels does not fully match with the job requirement. The NWSDB, being the implementing arm of the government, is responsible for further development of 80% of the of water and sanitation professionals currently in the field. The NWSDB has a Manpower Development and Training Division (MD&T) that prepares annual capacity building plan and budgeting for in-country and overseas training.

#### Other capacity development

During the past four years capacity building in the sanitation field shifted from conventional approaches to more practical and human approaches. UNICEF supported a comprehensive capacity development programme to develop a national plan of action to build HR capacity for household-centred environmental sanitation according to job functions, including to introduce environmentally sound technologies and practices for sustainable sanitation services; to build capacity of the environmental professionals in public and private sector on the design construction and operation of constructed wetlands; to explore opportunities for research and field based trials on appropriate sanitation technologies; and to develop a national plan of action for household centred environmental sanitation in line with national policies.

#### Factors affecting recruitment

There is an export of skilled workers due to demand in other countries mainly in the Middle East and particularly in construction. It is estimated that the total foreign demand for construction industry occupations will be in the region of 30,000 per year.

In addition, public sector HR planning and recruitment process do not enable matching of suitably qualified professional graduates to functional demand (roles and areas).

### HUMAN RESOURCE SHORTAGES: COMPARING HR DEMAND WITH CAPACITY AND SUPPLY

This section estimates the Human Resource shortages and describes the capacity gaps, resulting from the analysis of demand, capacity and supply. The analysis indicates there is a shortage of both WATSAN and other technical personnel and social development and hygiene promotion personnel to meet both the future targets for water, but sufficient of these human resources to meet sanitation targets. Across both water and sanitation there is likely to be a shortage of management and finance personnel to achieve future targets.

The provision of water supply has a higher per capita requirement for professional personnel than does sanitation, because the former is labour

intensive particularly in urban settings where more complex water systems exist, whereas the latter is dealt with primarily by householders (refer to demand discussion).

The largest shortage appears to be in social development and hygiene personnel, where an increase of approximately 600% of existing capacity is required to achieve universal coverage; this is driven by the high requirement for these personnel in rural water supply because of the reliance upon community-based systems. The shortage of professional WATSAN technical personnel is driven by the high requirement for these personnel in both rural and urban water supply systems.

In summary, although the education sector is highly valued and supplies a large number of professionals into the workforce, the WASH sectors do not attract a high enough number to achieve and sustain the future requirements. This could potentially show a failure of the WASH sectors to adequately attract the required professionals. The large number of professionals that are exported to work in the Middle East may be one factor affecting recruitment to the WASH sector, possibly implying that remuneration and other benefits received abroad are more attractive than the Sri Lankan WASH sector.

**Table 9 Estimates of the quantity of human resources shortages in the water and sanitation sectors, if MDGs and full coverage of WASH services are to be achieved (refer to calculations file for methodology (negative numbers indicate a surplus))**

WASH sector	Target	WATSAN technical personnel	Other technical personnel	Management & Finance personnel	Social Development personnel
Water	MDG by 2015	776	1350	240	283
	Universal coverage by 2020	819	1353	237	299
Sanitation	MDG by 2015	-72	-133	120	4
	Universal coverage by 2020	-116	-326	91	-12

## GAPS (QUALITY OF HUMAN RESOURCES)

- Orientation and exposure of 'new' graduates to relevant competencies and skills are lacking. In the past there were very high caliber professional engineers who were capable of guiding junior personnel through leadership and technical competencies. However, there is a lack of supervisory capacity of senior engineers, which is affecting this development among engineers.
- In-house competencies are required to be developed for advocacy for institutional sustainability, elimination of redundancies, autonomy for hire and fire and for sound public utility practice.

## RECOMMENDATIONS FOR MEETING HUMAN RESOURCE NEEDS

- 1 The deficiencies in the rural water supply sector are serious enough to hasten intervention with an action plan focused on safeguarding the investment made during the past two decades.
- 2 In order to be effective in the rural water supply and sanitation sector, incentives to decentralised units

to be given to attract competent professionals.

- 3 The estate areas require urgent deployment of WATSAN engineers. Poor sanitation is polluting water courses and is the cause of recent outbreaks of dysentery.
- 4 NWSDB as the leading agency in the sector is required to have a strong human resources policy including a well-structured capacity building plan to align with the core functions and changing external environment. A shift is required from personnel management/ administration to HR management as practiced by leading international companies.
- 5 NWSDB should also develop a coherent HR policy to ensure development of technical and leadership skills of new engineers.
- 6 The local government sector, which is the most important institution for all aspects of sanitation in urban and rural areas, needs to be strengthened to ensure staff have the competencies to face the challenge of a changing environment and to meet the aspirations of rapid social development.
- 7 In addition, local governments together with the Ministry of Health require an increase in the number

of Public Health Inspectors with capacity to undertake water quality surveillance.

- 8 In response to the reported shortage in the construction sector of trained craftsman, output from vocational training institutions need to be increased with effective policies and salary structures to ensure job security and career development. The Construction Association of Sri Lanka should take effective measures to recognise current shortages and work with the Institution of Engineers and the Ministry of Vocational Training and Development to remedy the situation.
- 9 Expand the scope of Water Safety Plans to cover the population that depends on informal water supply to ensure safe drinking water.

Full references are noted in the full country assessment reports available at [www.iwahq.org/hrcapacity](http://www.iwahq.org/hrcapacity)