



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

Country briefing note Lao PDR

# Human resource capacity assessment

## Briefing Note • Lao PDR

### KEY POINTS

- ▶ Although 33% of the population lack access to safe water and 37% have no sanitation facilities, there have been major gains in rural water supply and urban and rural sanitation coverage between 2000 and 2010. Water coverage went up from 45% to 67% between 2000 and 2010 and sanitation coverage increased from 26% to 63% during the same period.
  - The increase in rural drinking-water coverage has been significant, from 37% in 2000 to 62% in 2010.
  - Open defecation was practiced by 41% of the rural population in 2010<sup>1</sup>, down from 76% that defecated in the open in 2000
  - Increases in urban drinking-water coverage have however, been modest
  - Access by poor households is about 10% to 15% below access for non-poor households<sup>2</sup>
- ▶ Of the total deaths in Lao PDR, 13.9% is WASH-related and the overwhelming proportion of these deaths is young children<sup>3</sup>.
- ▶ Most HR demand to achieve the WASH related MDG targets or universal coverage is in urban water supply, particularly for WATSAN technical field and management and finance disciplines following high urbanisation rates, and more complex infrastructure.
- ▶ HR capacity
  - The water sector has most of the HR capacity (86%), of which approximately one third is within the technical disciplines
  - 60% of sanitation personnel is within the social development and health category
  - Rural areas have less professional capacity, and professionals are not easily attracted to work there
  - O&M in rural areas is mostly done by rural committees (unskilled), whose lack in financial and technical capacity can cause the infrastructure to fall in disrepair.
- ▶ Public sector recruitment is generally done as an annual quota of graduates, and thus not always determined by their skills and experience.
- ▶ Following the study's estimations, there is no HR shortage to achieve the MDG target 7c. It is clear, however, that unless more human resources are planned Lao risks slippage, especially in urban areas.
- ▶ In order to achieve universal coverage, approximately 20% increase of the current WATSAN engineers/ technicians and 15% increase of other engineers/ technicians will be required. Twenty-five percent more finance and administration personnel and 5% extra social development personnel will be required.

### BACKGROUND

This Briefing Note summarises the findings from an IWA-led study in Lao, officially the Lao People's Democratic Republic (Lao PDR), made possible through the generous support of the Australian Agency for International

Development (AusAID) that contributed to assessment of the human resources needs to provide water supply and sanitation services in four countries: Papua New Guinea, Sri Lanka, Philippines, and Lao PDR. These studies were coordinated by the International WaterCentre, and in Lao PDR executed by SNV (Netherlands Development Organisation).

Lao PDR is a small, landlocked and least developed country (LDC) in

Southeast Asia, bordered by Burma and China to the northwest, Vietnam to the east, Cambodia to the south and Thailand to the west. Most of the population lives in the rural areas and make their living as subsistence farmers. Nearly 75% of the population live on less than \$2 per day. The country relies heavily on the importation of its consumer goods, while its exports are dependent on hydro-electricity, mining and timber.

1 WHO / UNICEF JMP report 20122  
Safer Water, Better Health - WHO 2008

2 2012 Sanitation and Water for All (SWA) High Level Meeting

3 Safer Water, Better Health WHO 2008

The country is hilly and the population is thus concentrated in valleys, especially along the Mekong River. The hilly terrain hinders infrastructural development including water supply systems, sanitation services, education services, etc.

## ASSESSMENT APPROACH

In many least developed countries (LDCs), a key impediment to achieving the water and sanitation related MDG target<sup>4</sup> and universal coverage is a lack of human resource capacity in the WASH (water, sanitation and hygiene) sector. The objective of this study is to assess human resource (HR) requirements in the WASH sector to achieve the MDG targets relevant to water and sanitation (WATSAN). In addition, the methodology also estimates the HR requirements to achieve universal coverage of water supply and sanitation for the predicted population at 2015<sup>5</sup>.

The IWA methodology was designed to assess the human resources requirements, in terms of numbers (shortages), skills and competencies (gaps) to deliver water supply and sanitation facilities for the rural and urban populations of the country. The conceptual approach was as follows:

- (i) Determine the current coverage of water and sanitation facilities in urban and rural populations, the main technologies used, and projected urban and rural populations for 2015;
- (ii) Estimate the HR (quantity and skills sets) required to deliver these services to the existing population and to fulfil MDGs and universal coverage;
- (iii) Estimate the existing HR capacity in terms of quantity and skills sets,
- (iv) Estimate the supply of HR to 2015;

4 WHO/UNICEF JMP report 2012

5 2015 figures used for comparability (and due to lack of future target year)

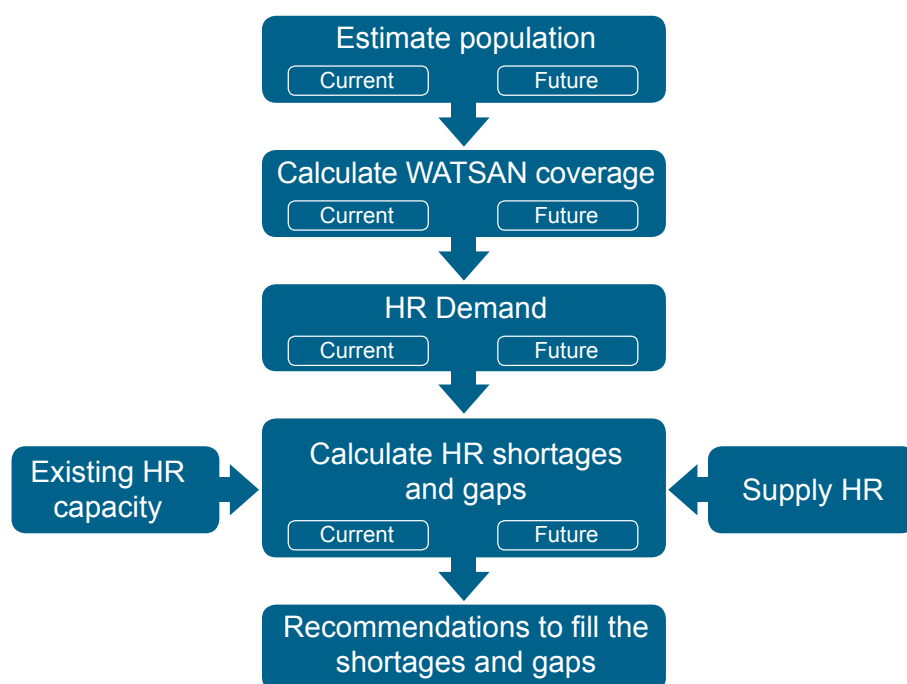


Figure 1: Methodological framework to assess human resource shortages and gaps

- and
- (v) Calculate the resultant expected HR shortages. Recommendations were then formulated to address the shortages (quantity) and gaps (quality) in HR.

## DISCIPLINES TO MAP HUMAN RESOURCES CAPACITY

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

- Technical specialisation specific to water and sanitation services (water/sanitation technical personnel): a person who is professionally engaged in a technical field, specifically related to the provision of water and sanitation facilities or infrastructure (for instance civil/environmental engineers).
- Technical specialisation, not specific to the provision of water and sanitation services (other technical personnel): a person who is professionally engaged in another

technical field that is required in the planning, design or operation of water and sanitation facilities or infrastructure (such as hydro-geologists, mechanical/electrical engineers), but is not water and sanitation sector specific.

- Management and finance: a person who is professionally engaged in management (for instance finance, human resources or strategic managers and office managers fulfilling administrative functions) as well as persons who procure goods and services or cost planners.
- Social development: a person who is professionally engaged in hygiene promotion or other relevant water, sanitation and health professions in the social sciences (for instance health promotion specialist, sociologist, community development worker).

## COMPONENTS OF THE WASH SERVICE DELIVERY PATHWAY

This study investigated the capacity

Figure 1: Lao PDR map



of these four disciplines noted above, and the methodology directs to distinguish between the human resource requirements for three different types of work noted below:

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

### MODIFICATIONS TO THE METHODOLOGICAL FRAMEWORK

In Lao PDR, the above assessment approach was followed, although the lack of existing data and the difficulties experienced by stakeholders in estimating some parameters resulted in the following approach to data calculations:

- Estimates of 'ideal' HR demand per 10,000 people (HR demand ratio) were done by identifying the existing HR demand ratio, then applying a multiplier to allow for inadequacies of current service delivery, determined by local stakeholders, to the existing HR demand ratio in the rural and urban sectors, across all HR categories;
- Existing and required HR could not be separated into the three components of service delivery (many WASH organisations and

- personnel are involved in all three roles of construction, operation and maintenance and social development/hygiene promotion);
- Apart from the state-owned enterprises, sufficiently disaggregated data that could be used in the assessment was not available from the private sector;
  - As ii) above, disaggregated organisational HR data, identifying HR levels separately for water and sanitation was not available, since organisations work on WATSAN together. Therefore stakeholders estimated the water:sanitation ratio of their staff's activities
  - Although stakeholder consultations were conducted and data collected in only two provinces, being Vientiane Capital and Savannakhet, the data were used to estimate nationwide HR capacity.

### DATA COLLECTION

A combination of approaches was used to collect both qualitative and quantitative data, and adapted for each of the informant groups as described below.

- A literature review of existing documents and information, databases and contacts identified the main stakeholders active in the Lao WASH sector and existing datasets on population, WATSAN coverage, targets and registered non-government organisations. A previous sector-mapping study undertaken by SNV in 2009 was drawn upon: 'Overview of International Organisations Active in the Rural WASH Sector in Laos'.
- A sample of national and international NGOs responded to structured questionnaires (in person, or by phone).
- A stakeholder workshop was conducted to gather and review existing and estimated data from

organisations involved in WASH, specifically regarding HR capacity and future HR demand.

- The knowledge of SNV advisors and contacts in the WASH sector was drawn upon to review overall findings and develop recommendations.

### ASSUMPTIONS AND LIMITATIONS

Lack of clarity on country MDG targets for WASH:

- There is lack of clarity on the accepted MDG sanitation target. This report uses the national owned 2015 targets, as indicated by 2012 NPAWSSH, being 60% for rural and urban sanitation.
- For water no official documentation of urban water target was located and the target was derived from rural (75%) and national targets (80%) and projected rural and urban populations in 2015, leading to 93% urban water target.
- The WATSAN coverage figures used in this assessment are those reported by the Government of Lao PDR to the JMP in 2012. The access figures using Lao government definitions are considered likely to be lower than those reported by the JMP. If the coverage has been overestimated, this will result in an underestimation of the HR requirements throughout this assessment.
- The Lao government defines urban settlements differently to the IWA definitions, since the national definitions are those used for JMP reporting and UNDP population data, the national definitions were also used in this study. There are several criteria used to identify urban settlements, including their vicinity to the location of the district or provincial authority, and that there must be more than 600 residents or more than 100 households, the majority of which have tap water supply.

- In practice, the professional background of staff relates to their allocation to a HR category. However, recruitment processes and civil service rules limit the chances that suitably-qualified staff is allocated to specific WASH roles. Similarly, many NGOs employ staff without specific WASH qualifications and both government and NGOs use on-the-job training to develop WASH-specific skills. In addition, many personnel undertake mixed water, sanitation, engineering, social mobilisation and administration tasks during the course of their work. Consequently, existing staff employed in the WASH sector may not have a relevant professional background. For the purpose of this study, they were assigned to one of the four HR categories based on their job title, notwithstanding any lack of professional qualifications.
- The training opportunities and the educational capacity assessed were limited to those that were easily identified as WASH-related. Consequently, some institutions that produce management, finance and social science graduates that may in fact enter the WASH sector may not have been identified and thus the expected supply of graduates may be underestimated.
- Data describing the number of personnel (and their remuneration benefits) was available, but the allocation of those staff to water versus sanitation provision, and for NGOs', urban versus rural service provision, was estimated by organisation representatives.
- Individuals and communities provide significant capacity, and are typically involved in, or responsible for, construction and operation and maintenance (O&M) of WATSAN facilities, particularly in rural areas. These non-professional community

HR capacities are not considered in these estimates of HR demand.

- The small, informal private sector which services many of Lao's rural populations with WATSAN infrastructure was not accounted for due to data collection difficulties.

## SECTOR CONTEXT

### INSTITUTIONAL FRAMEWORK FOR SERVICE DELIVERY

The Water Supply Law (2009) and the Water and Water Resources Law (1996) provide the policy frameworks for overall sector oversight, including infrastructure, private sector participation, funding and tariff policies, rights and obligations of parties and dispute resolution.

#### Public sector

The Government of Lao advocates an approach for increased decentralisation of responsibilities to local government, particularly on provincial level. The 2012 NPAWSSH intends to clarify roles and responsibilities in relation to rural WASH. Rural water services are the responsibility of the Ministry of Public Health (MoH) through its National Centre for Environmental Health (Nam Saat). Nam Saat is also responsible for sanitation and hygiene in rural areas, as well as the delivery of water. Sanitation and hygiene promotion are typically integrated rather than addressed separately. The urban water services sector is the responsibility of the Ministry of Public Works and Transportation (MPWT), although delivery is devolved to state-owned enterprises, the Nam Papas.

The MPWT's Water Supply Division's (WSD) mandate is to manage the construction, improvement and development of water supply systems throughout the country; to check and approve the design and bill of quantities with estimated cost of water supply

system projects invested by different economic sectors; and to encourage and promote the water supply services and to effectively manage sanitation in urban areas. The WSD also provides planning and development support to the state-owned water enterprises (Nam Papas). The MPWT's Urban Development Division (UDD) is responsible for large-scale urban wastewater management.

#### State-owned enterprises (Nam Papas)

There are 17 parastatal provincial water utilities, known as Nam Papa State-owned Enterprises (NPSEs) or Provincial Nam Papas (PNPs), which oversee the development, operation and regulation of 'commercial' piped water supply systems in the provinces and districts. Nam Papas are required to operate as autonomous state-owned enterprises and to be financially self-sustaining, but in practice are not yet experienced to do so.

There are 34 District Nam Papas within the NPSEs estimated to operate almost 150,000 urban water supply connections, using a range of service delivery modalities. The O&M of urban water supply systems by the NPSEs is supplemented by private companies, though the number of licensed private operators is still small (~8).

#### NGOs and Non-Profit Associations (NPAs)

International NGOs contribute significantly to WASH in Lao PDR. In a 2009 SNV sector mapping study of NGOs in WASH, 35 of 162 international organisations registered with the government undertook WASH activities. The scale of their operations and impacts vary considerably. All of the organisations consulted during this study used some expatriate advisors within their teams to strengthen the limited WASH capacity available nationally. At the time of the 2009 study, most of the

organisations worked on rural WASH, with only two working in urban and peri-urban areas.

NPAs refer to local NGOs, the number of which has been slowly increasing since being allowed to operate. At present 56 NGOs have been informally recognised, however few identified themselves as focusing on WASH and none of the NPAs contacted had fulltime staff assigned to WASH activities.

### Micro, small and medium sized enterprises (MSME)

Most provinces and districts have micro, small and medium-sized enterprises (MSME) that are involved in construction of small-scale WASH projects at community or household level. In 2005, the Department of Housing and Urban Planning identified 447 private enterprises across the country capable of delivering water or sanitation

interventions. Key informants of this study indicated that maybe a tenth of these are currently active in water supply delivery usually at a household scale, and an estimated third provide household sanitation. While a great number of MSMEs may have capacity to provide onsite domestic or small community sanitation facilities, it appears that many are so small so as not to be registered and therefore essentially invisible to this study. Many MSMEs employ family members on a full-or part-time basis; formal or informal basis and they may have no relevant WASH-sector qualifications.

**Other private sector participation** in the WASH sector remains unquantified and difficult to ascertain. There are a growing number of local consultancies willing to address sector needs but there is no information on their internal capacities.

### POPULATION, EXISTING COVERAGE, MDGS AND COVERAGE DEFICITS

In 2010, Lao had an estimated total population of 6.2 million people, two-thirds of which resided in rural areas. The national population growth rate is reported as 1.6% per annum, but the urban population is increasing considerably faster than rural areas at ≈4.9%, mainly due to increasing number of formally-recognised settlements and urban migration.

The existing coverage of access to WATSAN facilities and the MDG targets used in this assessment are summarised in table 2. The data suggests that excellent progress has been made towards meeting the sanitation MDG target in both urban and rural areas. There are, however, public health and environmental concerns caused by poor wastewater and sludge management. Progress on meeting the urban drinking-water target has been slow with only a 2% increase in coverage although there has been a large increase in piped water to premises (from 37% to 55% between 2000 and 2010) that can be expected to have delivered significant health gains to the urban population with house connections. The increase in rural drinking-water coverage has been significant, from 37% in 2000 to 62% in 2010<sup>6</sup>.

Table 3 summarises the existing population coverage and deficit in coverage if MDG targets and universal coverage are to be achieved (deficit is calculated as target coverage population in 2015 minus existing coverage population). The figures indicate that there will be no deficit in achieving urban sanitation, and rurally the sanitation deficit is relatively small. For sanitation, Lao is on track to meet the MDGs. In light of little progress made in urban drinking water, the MDG deficits will

**Table 1: Population figures and growth**

	Population (2010)	% of total	Growth rate	Population (2015)
Total	6,201,000		1.6%†	6,755,455
RURAL	4,143,000	67%	-0.02%*	4,138,859
URBAN	2,058,000	33%	4.9%*	2,616,597

† CIA 2012 \*UN ESA 2009 for 2010-2015

**Table 2: Coverage of water and sanitation (% population, 2010) and MDG targets**

		Coverage (%), 2010			MDG Targets (2015)		
		Rural	Urban	Overall	Rural	Urban	Overall
Water supply coverage	2010	62‡	77‡	67‡	75*†	88**	80*
Sanitation coverage	2010	50‡	89‡	63‡	60†	60***	60*

† MoH (2012) National Plan of Action for Rural Water Supply Sanitation and Hygiene

\* MoPI (2011) 7th National Socio-Economic Development Plan (NSEDIP)

\*\* no official documentation of urban water target was located; target was derived from rural and national targets and projected rural and urban populations in 2015 (ref calculations file for details)

\*\*\* no official documentation of urban sanitation target was located, but assume is 60% given both rural and national targets are 60%

**Table 3: Coverage of water and sanitation (population, 2010) and deficit (population) in achieving MDG targets and universal coverage (negative means MDG target has been achieved)**

	Water (population)			Sanitation (population)		
	Existing coverage	Deficit (MDG)	Deficit (universal coverage)	Existing coverage	Deficit (MDG)	Deficit (universal coverage)
Rural	2,568,660	535,484	1,570,199	2,071,500	411,815	2,067,359
Urban	1,584,660	377,787	1,031,937	1,831,620	- 261,662	784,977

be harder to fill, particularly in urban informal settlements.

## HUMAN RESOURCES IN THE WASH SECTOR

### ESTIMATED FUTURE HR DEMAND

For this study 'demand' refers to the ideal HR required to service the current and future populations for universal coverage or MDG target coverage. The basis of this approach estimating future HR demand is to use an estimate of HR employed to serve 10,000 people (HR demand ratio). These ratios were first adjusted to account for inadequacy of existing service delivery, then used to calculate the required demand to sustain the future populations (of MDG coverage by 2015; and universal coverage by 2015). Future HR demand to achieve the MDGs and universal coverage (see tables 4 and 5) respectively were calculated by applying the HR demand ratio to the projected 2015 unserved population. This calculation indicates that, of the total WASH HR demand to serve both rural and urban populations with both water and sanitation, approximately a third need to be WATSAN engineers and another third social development personnel. The higher level of professional qualification requirements presumed for delivering urban water systems skewed the HR demand in favour of urban populations. The real demand is clearly for urban water supply staff, given the limited progress made within this sub-sector in recent years.

Water systems in rural areas, and sanitation facilities in both rural and urban areas, require fewer engineers, technicians and finance and administration personnel. This correlates with the reliance on community capacity for construction and O&M of these facilities. This current policy approach is already the subject of debate and

**Table 4: Estimated HR demand to achieve MDG target for water and sanitation facilities, across urban and rural populations**

Estimated HR demand to meet MDG target (no.)		WATSAN engineers/ technician	Other technicians/ engineers	Finance & Administration	Social Development
Rural	Water	22	12	7	171
	Sanitation	18	10	6	164
	Water + sanitation	39	21	14	334
Urban	Water	807	308	405	377
	Sanitation	8	14	7	7
	Water + sanitation	815	322	412	384
Rural and Urban	Water + sanitation	854	343	425	718
	% of total HR requirement	36%	15%	18%	31%

**Table 5: Estimated HR demand to achieve universal coverage of water and sanitation facilities, across urban and rural populations**

Estimated HR demand to meet Universal Coverage target (no.)		WATSAN engineers/ technician	Other technicians/ engineers	Finance & Administration	Social Development
Rural	Water	29	16	10	228
	Sanitation	29	16	10	273
	Water + sanitation	58	32	20	500
Urban	Water	1,076	411	540	502
	Sanitation	13	23	11	12
	Water + sanitation	1,089	434	552	514
Rural + Urban	Water + sanitation	1,147	465	572	1,015

recognition that 100% community-based O&M is unsustainable is increasing. Thus, the multiplier that was applied may be conservative since it does not account for comprehensive follow-up and post-construction support to communities.

Table 5 summarises the HR demand if universal coverage is to be achieved. Since this calculation is based on the same 'personnel:served population' ratio, then the HR proportions for the four professions and between urban and rural demand is the same as for meeting MDG coverage. If universal coverage is to be achieved, an additional 300 water and sanitation engineers/technicians are required on top of the requirements of the MDG targets (1,147 in total).

### EXISTING HUMAN RESOURCE CAPACITY

Approximately 2,500 personnel are currently active in the WASH sector, with an estimated 75% working in the water sector. The government comprises 25% of the total WASH human resources with the government-owned water utilities (Nam Papas) accounting for 50% and NGO's the remaining 25%. Both private sector and government capacity is skewed towards water service delivery, causing the overall bias towards water HR capacity.

Notwithstanding the assumptions and limitations of the data, table 6 outlines the estimate of existing HR capacity by the different skills groups.

Overall, approximately one third of the WASH sector workforce is qualified as WATSAN engineers or technician,

**Table 6: Assessment of current WASH HR capacity by discipline**

	WATSAN engineers/ technician	Other technicians/ engineers	Finance & Administration	Social Development	TOTAL (% of total HR)
<b>NGOS</b>					
Water	103	55	34	151	Water and sanitation (685)
Sanitation	103	55	34	151	(23%)
<b>GOVERNMENT-OWNED ENTERPRISE (Nam Papas)</b>					
Water	754	200	354	327	Water and sanitation (1636)
Sanitation	0	0	0	0	(55%)
<b>PUBLIC SECTOR</b>					
Water	61	111	55	217	Water and sanitation (662)
Sanitation	12	20	10	175	(22%)
<b>SECTOR-WIDE TOTALS</b>					
<b>Total Water HR</b>	918	367	443	696	2225
(% of total water HR)	38%	15%	18%	29%	86%
<b>Total Sanitation HR</b>	115	76	44	326	361
(% of total sanitation HR)	20%	13%	8%	58%	14%
<b>Total water &amp; sanitation HR</b>	1033	442	487	1022	2586
(% of total HR)	35%	15%	16%	34%	

and one third is social development personnel. Looking at the sanitation sector nearly 60% of the existing HR is social development and health personnel, reflecting the focus on community-based programmes for sanitation provision. Community contributions to construction and O&M are significant with completed water supply systems being handed over to local WATSAN committees, who are then responsible for the O&M of village rural water supply. The limited technical and financial capacity of community committees, who may lack skills, tools and access to funds, knowledge or spare parts, results in some constructed systems having fallen into disrepair.

Nam Saat is an MoH agency, and almost 98% of the staff working in WASH has a health education background. They are often involved in identifying target communities and in the establishment of WATSAN committees. These health personnel are essentially performing the responsibilities of 'community mobilisers', whether they perceive themselves as social science professionals or not. There is 45 central Nam Saat staff distributed across five

sections for water supply, sanitation, environmental health and hygiene, administration and management. Their level of water and sanitation-specific skills is uncertain.

Current data indicates that the provincial Nam Saat offices have on average ten staff assigned to them (~177 for the whole country). The 143 district Nam Saat offices have a total of 208 staff assigned to WATSAN activities of which just 37 are female. This is an average of 1.4 staff assigned to water supply and environmental health activities to cover an average of 61 villages including urban villages per district.

In the 17 provincial units, 129 staff is assigned to a range of duties including WATSAN and these support the 173 personnel in the 143 district offices. According to the Ministry, most of the work undertaken relates to water supply activities (85% of the workload on water and 15% on sanitation).

It is more difficult to ascertain what is happening in the private sector as employment is often short-term or seasonal.

For the international NGOs and local NPAs, WASH personnel levels are determined by programme activities and therefore usually limited-term contracts (two to three years). The NGOs surveyed struggle to find local graduates with the desired skills, and they consequently rely on on-the-job and in-house training to develop capacity and skills.

#### **Recruitment process and rotation**

Government recruitment is typically not based on assessments of capacity gaps for particular disciplines and selection of candidates is not always determined by their skills and experience to suit the required WASH tasks. The actual assignment of staff to roles suited to their professional training is uncertain. Public sector recruitment is generally done as an annual quota of graduates who are then spread across all ministries and departments. Each ministry makes a quota request to the Department of Public Administration (PA), which is then adjusted and approved in liaison with the Ministry of Finance. The PA is responsible for quota and capacity building of Lao government staff and the Civil Service Office of the Ministry of



Home Affairs is responsible for NGO and NPA registrations.

Once their quota is approved each ministry advertises for applicants but the number of vacancies by discipline is not publicised. No evidence of targets for recruitment by discipline could be sourced from government interviews or documents. For instance MPWT's quota for 2012 was at 300 personnel nationwide, of whom five were likely to be assigned to the DHUP and two to WSD.

The MoH reported a few staff increases, mainly replacing retiring staff. Nam Saat staff is typically recruited via annual graduate recruitment drives, although they advised that they had no current annual quota for new staff to join their national centre or provincial offices.

The lack of proactive HR management (HRM) is demonstrated by weak and out-of-date organisational structures, job profiles and other HRM tools.

### Difficulties for professional staff in rural areas

Engineering/technician and social development roles which require extensive travel to remote areas, away from family are not desired by employees. The international NGOs identified difficulties attracting personnel particularly to remote areas and often compromise by hiring local individuals with limited experience and skills, intending to build-up their capacity over time. It was noted that nearly all the NGOs consulted utilise expatriate personnel to support WATSAN programmes, typically in senior roles, and for short term assignments.

### Education levels

Data describing education levels of existing staff was difficult to obtain.

Although the Nam Saat records from 2009-2010 (table 7) note high numbers

of personnel with formal qualifications (94% of the 441 personnel), it is unclear whether these staff are assigned to positions relevant to their education or if their qualifications provide them with the necessary skills required to fulfil their tasks. The most common qualification was a certificate level, though diplomas were also common.

NGO/NPAs reported a greater range of qualifications amongst their personnel, ranging from high school to Ph.D. level; the most common were Bachelor degrees (approximately half of their personnel) and Masters degrees (a third of their personnel). With greater discretion exercised by NGOs during recruitment and assignment, it is more likely the qualifications of these staff suit their WASH roles.

### Gender balance

Male staff outnumbered female staff, with a ratio of 9:1 reported in the Nam Papas, 8:1 at Nam Saat and 2:1 in the NGOs/ NPAs. It was previously noted that in the 143 district Nam Saat offices, with a total WASH staff complement of 208, only 37 are female.

Engineering is still a male dominated profession in Lao, though there appears to be equal interest in social science subjects by men and women students. Anecdotally, the gender bias in engineering professions may be related to the issue of travelling to remote areas, often with all-male teams and working in basic conditions, which is culturally less acceptable for women, in addition to affecting their traditional responsibilities as wife and mother.

In the NGO sector, male employees generally fall into two distinct categories: the highly educated or the relatively uneducated. Female employees, in contrast, tend to have reached lower levels of tertiary education, that is, more men hold Doctorate or Masters degrees than women, but also more men were employed with only high school education. Women are more likely to hold Bachelors degrees or diplomas.

### Salaries

**NGOs:** Within the WASH sector, salaries varied significantly between the public sector, NGOs and the private sector, with NGO salaries and benefits often ranging to five or more times the levels of public sector salaries, even adjusting for government allowances. This might account for the higher education levels and relevant skills and experience demanded by NGOs.

**Public sector:** The overall compensation framework for the public sector was established by Decree 82 on Civil Service of the Lao PDR outlining wages, pensions, bonuses, single lump sum payments and other allowances and benefits paid by either the government budget or the social security fund.

**Private sector:** In terms of salary and benefits, the registered construction enterprises comply with the labour law requirements in terms of leave, allowances and taxation requirements and larger private sector organisations are able to provide higher salaries than NGOs. This is not necessarily the case with smaller enterprises which may not be formally registered with the government.

**Table 7: Nam Saat HR qualifications**

Total number personnel	MSc	Bachelor/ H Dip	Diploma	Certificate
441	9	36	171	199
100%	2%	8%	39%	45%

## SUPPLY OF NEW HR TO THE WASH SECTOR

Due to the proliferation of institutions offering business-related courses producing various qualification levels, it was not possible to assess the supply of finance and administration professionals with any accuracy. Similarly, since many of the staff active in social development roles in the WASH sector, for instance Nam Saat staff who do not hold social science or social development qualifications, it was not appropriate to consider only social science graduates when estimating the level of supply.

Although a large numbers of engineering students graduate each year, the quality and relevance of their education to WASH is uncertain. Even though there are ample engineering graduates, an insignificant proportion appears to be recruited into the WASH sector. While most academic institutions could not provide data on the rate of employment or in which sector graduates are employed upon completion of their studies, the Health Science University claims that approximately 35% of their graduates enter the public health sector.

Education institutions identified that job opportunities are very limited and few graduates are able to find employment. The government is the main employer and thus the annual job 'quota' defines the available vacancies. This is clearly a disincentive to prospective students.

Of the graduates that do emerge from the existing education and training institutions, it appears that only a small proportion are recruited to the WASH sector but may not have actually undertaken a relevant WASH course of study. Finally, there are few institutions providing in-depth, WASH-focussed training at tertiary level. Courses identified often included only a few modules on WASH related subjects.

## Universities and technical Institutions

The National University of Laos (NUoL) is the lead academic institute in the country and offers 77 undergraduate courses distributed across a total of 12 faculties. None of these faculties offer a full programme relating to water supply or sanitation. The Health Science University (HSU) is linked to the MoH and its Faculty of Medicine does not have any specific units on water and sanitation in its seven-year bachelor of medicine degrees, except for WASH-related topics in some of the units on hygiene, health promotion and parasitology as well as a unit on the MDGs.

The Vientiane Institute of Technology (VIoT) is a private college and a leading institute for technical vocational education and training in Lao. In 2011 it commenced a Bachelors course in Water and Waste Water Engineering in its Department of Engineering and this is intended to be the first comprehensive tertiary course in the country aimed at water and wastewater management.

The Waterworks Technical Training Centre (WTTC), established in 2005 to build up the HR capacity of the 17 Nam Papas and piped water companies, provides 39 weeks of training. In 2011 it provided training to 895 participants on a range of short-terms courses. The

question remains whether short-term training courses can provide aspirant technicians with the capacity to fulfil their tasks efficiently, considering that the biggest HR shortage is within this sector.

## Vocational training (VT) centres

Numerous short courses on construction, surveying, plumbing, building as well as financial and administration subjects are available at regional VT centres located around the country.

The Participatory Development Training Centre (PADETC) is a privately-funded training institution that provides a broad range of training and capacity building activities with a focus on social mobilisation, particularly in schools. Partnerships with NGOs provide further skills transfer and experience to young professionals.

Project-based WASH capacity building: A number of agencies either offer or arrange training, typically as part of a project or programme and thus only for the duration of the programme. A good example is the JICA programme that provided training to Nam Papas between 2003 and 2006.

## Graduate numbers and entry to the WASH sector

Rough estimates of the proportion of

**Table 8: Graduates and estimates that enter the WASH sector**

TYPE OF TRAINING INSTITUTION	WSE	E	F&A	S
National University of Laos (NUoL)	920	1247	397	91
Health Science University (HSU)				2084
Training institutes (VIoT)	17	74		
Vocational training (WTTC)	627	0		
	1,564	1,321	397	2,175
Total estimate of HR supply to WATER sector per year	1.6	1.3	0.1	0.4
Total estimate of HR supply in WATER sector to 2015 from 2011 (4 years)	6.3	5.4	0.3	1.8
Trend up or down	increasing	increasing	increasing	increasing
<b>Total estimate of HR supply to SANITATION sector per year</b>	0.4	0.4	0.0	0.1
<b>Total estimate of HR supply in SANITATION up to 2015 from 2011</b>	1.7	1.4	0.1	0.5
Trend up or down	static	static	increasing	increasing

graduates entering the WASH sector were determined through consultations with major employers about typical recruitment rates, such as government departments. For example, MPWT's recruitment quota for 2012 was 300 personnel nationwide, of whom only two were to be assigned to the Water Supply Division (WSD).

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

### WATER

The HR shortages and gaps, as estimated following the methodology, suggests that no additional human resources are required to meet the WASH MDG targets by 2015. However, it is clear that unless more human resources are planned for urban drinking-water organisations, Lao risks severe slippage, especially given the relatively rapid urbanisation rate.

Additional HR capacity is needed if universal coverage is to be achieved by 2015. Given the potential underestimation of HR capacity described above, the shortages summarised in table 9 should be considered as minimum shortages. In order to achieve universal coverage, approximately 20% increase of the current WATSAN engineers/technicians and 15% increase of other engineers/technicians will be required. Twenty-five percent more finance and administration personnel and 5% extra social development personnel will be required.

### SANITATION

For sanitation, achieving the national MDG target appears to require no additional HR capacity, given the high coverage rates in both urban and rural areas. Achieving universal coverage

**Table 9: Estimated shortages of human resources required for delivery of water services to meet future targets (MDG and universal coverage by 2015)** negative number indicates surplus

	engineers/ technician	technicians/ engineers	Administration	& hygiene
HR existing	918	367	443	696
HR supply to 2015	6.3	5.4	0.3	1.8
HR demand to achieve MDGs	829	320	413	547
HR shortage (- is surplus) for MDGs	-95	-52	-31	-150
% increase required (- surplus, no increase required)	-10%	-14%	-7%	-22%
HR demand to achieve universal coverage	1,105	427	550	730
HR shortage to achieve universal coverage	181	55	107	32
% increase required	20%	15%	24%	5%

for both urban and rural areas appears feasible within a timeframe such as 2030, based on the progress achieved between 2000 and 2010. However, the existing demand estimates are based on household or community-built toilets that currently use very little technical or finance/administration HR and primarily social development for hygiene advocacy. A shift to other sanitation systems, such as piped sewerage, will require significantly greater technical HR capacity, particularly for sustained maintenance and faecal sludge management. In this study sludge management HR was not taken into account.

Apart from social development, almost all of the existing sanitation capacity lies within NGOs, which rely on expatriate personnel, particularly in management and team-leader roles. This masks the real need for capacity increases sourced from within the country.

## RECOMMENDATIONS

These recommendations are drawn from the general trends in data generated through this study (with caution) as well as information and views expressed by interviewees and workshop participants.

### FOR INCREASING WASH HR LEVELS IN THE SHORT TERM

Given the limited data on WASH human resources currently available, the priority is for more detailed and reliable data to be made available. In this dataset, the human resources needs for future WATSAN technologies should be considered, as well as the requirements to deliver WATSAN outside the definitions of the MDG targets, for instance sludge management for on-site sanitation systems.

The government remains an important employer and is preferred by graduates due to perceptions of job security. This benefit should be taken full advantage of by encouraging a shift from the current HR recruitment practices to a needs-based and capacity-development approach, based on strategic assessment of required human resources to suit WATSAN service delivery.

Because of the limited number of local specialist WATSAN education and training providers, the sector may benefit from the introduction of international training providers who can work in partnership with local training organisations, supplying technical and

other levels of expertise.

Training institutions should be encouraged and supported to follow up their graduates to identify employment destinations and identify barriers to employment appropriate to academic discipline.

### FOR INCREASING WASH HR LEVELS IN THE LONGER TERM

The government's long-term prioritisation of WASH amongst its development activities is an important requirement, and will encourage growth in the WASH labour market, including a knock-on effect in the NGO and private sectors.

- 1 Development of detailed HR management strategies within government and WASH development organisations is critical to meeting the MDGs and universal coverage after 2015. Strategies should contribute to a sector-wide approach (SWAp) to build capacity in WASH, developed through sector-wide consultation but led by government champions. The focus of any such an HR plan should be to address the challenge of increasing urban drinking water coverage.
- 2 NGO employers are unable to find local personnel with appropriate

academic qualifications, and rely on a combination of expatriates and in-house training of national staff. Even though the graduate numbers from education and training institutions are not insignificant, the absorption rate into the WASH sector appears to be very low. A quality assurance, accreditation system, or co-curriculum development may strengthen the education and training sectors.

- 3 Organisations that provide technical in-house WASH training should be encouraged to collaborate on delivery of in-house training schemes, to generate economies-of-scale and allowing participation by smaller organisations who cannot afford in-house training of their own. WASH organisations should be encouraged to investigate the potential of distance learning courses available from foreign institutions to meet their human resource needs.
- 4 Tertiary education supply should be improved if training institutions and employers have a better understanding of each other's needs and limitations. There is a mismatch between demand and supply and a number of government agencies

recommended the need to improve the quality of trainers and training materials.

- 5 Informal vocational training options are essential in the light of the number of personnel currently employed in the WASH sector, but who lack formal WASH training. This is particularly relevant to non-technical subjects such as social development and community mobilisation. Formal recognition of vocational training may be beneficial to provide credibility to institutions and graduates and provide employers with a degree of assurance about the quality of graduates.

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