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GLOBAL WATER STRATEGY
ACTION RESEARCH INITIATIVE

ADDRESSING THE HUMAN RESOURCE CAPACITY GAPS IN RURAL SANITATION AND HYGIENE

FINAL REPORT

OCTOBER 2023

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ACRONYMS AND ABBREVIATIONS

AfWA	African Water Association
AMCOW	African Ministers' Council on Water
AUDA-NEPAD	African Union Development Agency New Partnership for African Development
AWS	Area-Wide Sanitation
BCC	Behavior Change Communication
BHW	Barangay Health Worker (Philippines)
BORDA	Bremen Overseas Research and Development Association
CAWST	Center for Affordable Water and Sanitation Technologies
CBO	Community-Based Organization
CLTS	Community-Led Total Sanitation
CNA	Capacity Needs Assessment
COVID-19	Coronavirus Disease 2019
CSO	Civil Society Organization
CWIS	City-Wide Inclusive Sanitation
DP	Development Partner
EAWAG	Swiss Federal Institute of Aquatic Science and Technology
EHO	Environmental Health Officer
ESAWAS	Eastern and Southern Africa Water and Sanitation Regulators Association
FGD	Focus Group Discussion
FILE-IN	Entrepreneurship for Water, Sanitation, Energy and Construction
FSM	Fecal Sludge Management
FSTP	Fecal Sludge Treatment Plant
GDP	Gross Domestic Product
GESI	Gender Equality and Social Inclusion
GIZ	German Development Cooperation Agency
GLAAS	Global Analysis and Assessment of Drinking Water and Sanitation
GOG	Government of Ghana
GP	Gram Panchayat (India)
GSGS	Global Sanitation Graduate School
HEW	Health Extension Worker

HR	Human Resources
IHE	Institute for Water Education
ILO	International Labour Organization
(I)NGO	(International) Non-Governmental Organization
IT	Information Technology
ITN-BUET	Bangladesh University of Engineering and Technology-International Training Centre
IWA	International Water Association
JMP	Joint Monitoring Programme
KII	Key Informant Interview
LGA	Local Government Authority (Nigeria)
LGU	Local Government Unit (Philippines)
MBS	Market-Based Sanitation
MMDAs	Metropolitan, Municipality, and District Assemblies (Ghana)
MOH	Ministry of Health
MOOC	Massive Online Open Course
MSWR	Ministry of Sanitation and Water Resources (Ghana)
N	Sample Size
NEET	Not in Employment, Education, or Training
NGO	Nongovernmental Organization
NWASCO	National Water and Sanitation Council (Zambia)
NWASH	National Water, Sanitation, and Hygiene
NWSSTC	National Water Supply and Sanitation Training Center (Nepal)
O&M	Operation and Maintenance
ODA	Official Development Assistance
ODF	Open Defecation Free
PASA	Pan-African Sanitation Association
PRI	Panchayat Raj Institute (India)
RUWASSA	Rural Water Supply and Sanitation Agencies (Nigeria)
SAG	Skills and Advisory Group (Zambia)
SBMG	Swachh Bharat Mission (Grameen) (India)
SDG	Sustainable Development Goal

SLH	Sanitation Learning Hub
SMS	Safely Managed Sanitation
SSA	Sub-Saharan Africa
SuSanA	Sustainable Sanitation Alliance
TEVET	Technical Education, Vocational, and Entrepreneurship Training
TVET	Technical and Vocational Education and Training
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States Dollar
WALIS	Water for Africa through Leadership and Institutional Support Program
WASH	Water, Sanitation, and Hygiene
WASHCOM	Water, Sanitation, and Hygiene Committee (Nigeria)
WASHPaLS	Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability
WEDC	Water Engineering and Development Centre
WHO	World Health Organization
WSS	Water Supply and Sanitation
WSUC	Water and Sanitation User Committee (Nepal)

PREFACE

The United States Agency for International Development (USAID) Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) #2 Activity is a five-year (2021–2026) activity implemented by Tetra Tech and partners. The project aims to strengthen USAID's and partners' water, sanitation, and hygiene (WASH) programming through support for learning and adoption of the evidence-based programmatic foundations needed to achieve the Sustainable Development Goal (SDG) 6.2. The overarching theme for WASHPaLS #2 learning and research is area-wide sanitation (AWS). In addition to defining and seeking to understand effective implementation of AWS, WASHPaLS #2 implementation research also focuses on market-based sanitation (MBS) and social and behavior change to reduce pathogen transmission pathways for infants and young children.

From March to October 2022, WASHPaLS #2 conducted a sanitation and hygiene sector workforce capacity needs assessment (CNA) focused on sub-Saharan Africa (SSA) and South and Southeast Asia. The CNA on rural sanitation and hygiene and was designed to assess the human resource capacity needed to deliver safely managed area-wide sanitation and basic hygiene sustainably and at scale with emphasis on on-site sanitation. The overall assessment included six country-level CNAs to understand local dynamics and validate and complement initial findings from a global desk review and informant interviews.

This report presents the overarching findings and recommendations, incorporating findings from the global review and the individual country assessments. The report is aimed at DPs (development partners), (international) non-governmental organizations ([I]NGOs), training and education institutes, and/or knowledge networks globally, as well as national governments and their in-country partners.

EXECUTIVE SUMMARY

From March to October 2022, the United States Agency for International Development (USAID) Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) #2 Activity conducted a sanitation and hygiene sector workforce capacity needs assessment (CNA) focused on sub-Saharan Africa (SSA) and South and Southeast Asia. The CNA concentrated on rural sanitation and hygiene and was designed to assess the human resource (HR) capacity needed to deliver safely managed area-wide sanitation and basic hygiene sustainably and at scale with emphasis on on-site sanitation. The overall assessment included six country-level CNAs (in Ghana, Nigeria, Rwanda, India, Nepal, and the Philippines) to understand local dynamics and validate and complement initial findings from a global desk review and informant interviews. The assessment examined HR capacity against a predefined set of functions required to sustainably deliver sanitation and hygiene services and included an exploration of the role and capacity of volunteers and the informal workforce.

FINDINGS

The assessment found a significant shortage of human resources (HR) in the rural sanitation and hygiene workforce, requiring a doubling of the current available HR for functions such as oversight and support, construction, and community mobilization and engagement. The analysis undertaken in the six CNA countries also identified significant HR shortages for functions required to deliver sustained safely managed sanitation (SMS), such as monitoring, regulation (and enforcement), emptying and transport, and operation and maintenance (O&M). For hygiene, the shortages are highest in the areas of policy, strategy and coordination, regulation, research and design, and business development. Those in charge of rural sanitation and/or hygiene promotion (mainly engineers and health professionals, respectively) may not have the breadth of skills and understanding of the interventions that may be required, such as around fecal sludge management (FSM), social and behavior change communications (SBCC) or gender equality and social inclusion (GESI).

Countries lack sufficient data on sanitation and hygiene HR needs. HR assessments are conducted infrequently, and national HR plans for sanitation and hygiene are rare. Disaggregated data, for example on sanitation and hygiene tasks performed and on workforce indicators such as gender, age, and education level, is limited. This is especially the case for the informal workforce and volunteers and hinders informed decision-making. Standardized job descriptions and career paths are lackingw and staff-to-service/population ratios rare.

Sanitation and hygiene are not adequately prioritized among the sectors and institutions in which they fall, resulting in a lack of jobs and job opportunities. The sectors' crosscutting nature and integration with broader services such as waste management, health, nutrition, and education correlates with fragmented oversight and decision-making, lack of champions to advocate for increased funding, a lack of priority and focus, and ultimately, fewer HR and fewer jobs. Decentralization without appropriate mandates, resources, and incentives further hinder job creation and HR capacity development at the local level. Recruitment freezes, quotas, and low absorption capacity in organizations exacerbate the challenge of hiring the required workforce.

Rural sanitation and hygiene sectors' workforce conditions are poor, hindering the attraction of highly skilled professionals. Public sector jobs offer unattractive remuneration and working conditions, particularly in rural areas. The sectors' projectized and contract-driven nature leads to a loss of knowledge and skills due to staff turnover. The workforce also lacks gender and age diversity, with men dominating paid positions and women often taking up unpaid volunteer roles. Additionally, the heavy reliance on low-level skilled workers, volunteers, and the informal sector without sufficient skills-building opportunities affects program quality and sustainability. The lack of formal job opportunities and low remuneration result in brain drain, leading trained professionals to

seek better opportunities in other sectors or with development partners (DPs), exacerbating the workforce quality challenge in rural sanitation and hygiene.

The (rural) sanitation and hygiene sectors are negatively affected by persistent stigma and discrimination associated with sanitation jobs, especially in South and Southeast Asia. Furthermore, the lack of an enabling business environment and effective, deliberate efforts to include or formalize the informal sector result in persistent barriers for private sector engagement and job creation. Stable employment opportunities in the private sector remain limited.

Lastly, **the assessment found that HR needs, supply, and training opportunities in sanitation and hygiene are mismatched, leading to insufficient supply of graduates in on-site sanitation and hygiene, competency gaps, and limited skills diversity.** Capacity development efforts by the public sector fall short, with inadequate lower-level education and limited coordination between sector needs and training providers. Continuous professional development and on-the-job learning are lacking, hindering skill accumulation or career shifts for existing professionals.

RECOMMENDATIONS

The CNA resulted in five overarching recommendations, disaggregated further into a set of 20 actions. These recommendations are based on consultations with global and national stakeholders and take into account the recommendations stemming from each of the six country assessments. Below they are grouped by the entities under whose mandate they should be carried out.

INSTITUTIONS RESPONSIBLE FOR POLICY AND OVERSIGHT

1. **Undertake routine (sub)national HR sector assessments and monitoring and develop coordinated HR plans and standards**

Specific proposed actions include conducting water, sanitation, and health (WASH) sector-wide or sanitation and hygiene-specific HR assessments; developing costed HR strategies linked to national plans; standardizing job positions, descriptions, and qualifications; and ensuring transparent and disaggregated collection of HR data.

INSTITUTIONS RESPONISBLE FOR POLICY AND OVERSIGHT IN CONJUNCTION WITH SERVICE PROVIDERS

2. **Advocate and coordinate to prioritize sanitation and hygiene job creation and fulfillment of the required functions**

Proposed actions include advocating for investment in rural sanitation and hygiene sectors and the importance of job creation in rural areas based on evidence linked to Recommendation 1; local governments to apply cross-sectoral planning of programs and tasks, staffing, workload, and capacity development; and central governments to strengthen local job creation by developing incentive schemes and rewards for local government achievement of key performance indicators in sanitation and hygiene.

3. **Improve sanitation and hygiene sector workforce conditions**

Actions include working toward comparable working conditions and remuneration for rural sanitation and hygiene sector staff; developing appropriate recruitment policies, acts, guidance and local government allocations; formalizing volunteers or volunteer schemes by increasing access to capacity development opportunities, ensuring clear and fair incentive schemes, and establishing schemes to enable (talented) volunteers to transition into formal local government positions; and developing and using GESI policies and national HR strategies/plans to build diversified (multidisciplinary, gender, and age-diverse) local government teams across the sanitation and hygiene functions.

4. **Dignify sanitation and hygiene sector roles and break down stigma and barriers**

Proposed actions involve campaigns to eliminate barriers and stigma around sanitation and hygiene roles and curb discrimination and biases against sanitation workers; breaking down barriers for female and youth engagement in the sanitation and hygiene workforce; facilitating private sector engagement in sanitation and hygiene by improving the business environment and working conditions; and examining the channels, implications, and (unintended) consequences of formalization of informal service providers.

TRAINING INSTITUTIONS IN CONJUNCTION WITH SERVICE PROVIDERS

5. **Strengthen coordination and supply of sanitation and hygiene capacity development**

Actions include the development of national government-led and/or DP coordination mechanism of capacity development providers (i.e., universities, technical and vocational education and training [TVET] organizations, DPs, others); strengthening national formal education structures such as TVETs; strengthening diversified ways of practical, continued, or on-the-job learning; reviewing and collaborating on curricula and open-source materials to ensure an up-to-date, appropriate, and interdisciplinary offering of courses and subjects; undertaking impact monitoring of capacity development initiatives to inform and continuously strengthen the offerings, and developing specific competencies that were identified as HR capacity gaps.

A CALL TO ACTION

The findings in this report confirm that the lack of a sufficiently skilled sanitation and hygiene workforce contributes to gaps in sanitation and hygiene service delivery and hampers the achievement of universal sanitation and hygiene goals and outcomes. The study has also demonstrated that the barriers to ensuring full HR capacity are multiple and complex. Yet, across the key sector actors, actions can and are being undertaken to address barriers, understand and develop the types of jobs, skills, and knowledge required to deliver the range of sanitation and hygiene functions, and strengthen the supply of appropriately skilled sanitation and hygiene professionals. In this, coordination is key.

The recommendations and proposed actions in this report serve as a call to action. This report is thus the first step in a longer-term process to engage multiple partners at global, regional, and local levels in the development of concerted, coordinated actions to address the HR capacity gaps in the rural sanitation and hygiene sectors. To this end, development of the report has been accompanied by a roadmap that incorporates a global action plan and guiding tools for the development of country action roadmaps, outlining proposed actions and examples by countries' sanitation progress and HR context. These will be published under separate cover.

1.0 INTRODUCTION

1.1 BACKGROUND

With just over five years to go, the world is not on track to reach Sustainable Development Goal (SDG) Target 6.2: *by 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*. While the global population using safely managed sanitation (SMS) services increased from 47 percent in 2015 to 54 percent in 2020, the rate of progress would need to increase four-fold to reach universal coverage by 2030 (UNSD 2022), and a 20-fold increase in Africa (UNICEF and WHO 2022). Many of the barriers and challenges that hamper progress toward universal access to sanitation and hygiene are systemic and interconnected. One such challenge is the lack of a sufficiently large, appropriately skilled, and diverse workforce in the sanitation and hygiene sectors. However, the human resource (HR) requirements and barriers to deliver on adequate and equitable sanitation and hygiene for all are not widely understood.

The need for an increased focus on HR capacity development in the water, sanitation, and hygiene (WASH) sub-sectors has been highlighted going back to the Mar del Plata United Nations (UN) Water Conference in 1977, numerous Institute for Water Education (IHE) Delft Capacity Development symposia, and various Decades (International Water Supply and Sanitation Decade 1981–1990, the International Decade for Action "Water for Life" 2005–2015), and under the auspices of the latter, the UN-Water Decade Program on Capacity Development (2007–2015).

In recent years, there have been several global, regional, and national efforts to map the HR gaps in the WASH sector. The biennial UN–Water Global Analysis and Assessment of Drinking Water and Sanitation (GLAAS) report published by WHO has, since 2012, captured high-level metrics on numbers of sector HR, proficiency of training, and the practice of undertaking and developing WASH sector HR assessments and capacity development plans, with some disaggregation between water, sanitation, and hygiene. The GLAAS reports have shown some progress in the availability of HR data, but overall limited progress in HR itself. Similarly, the African Ministers' Council on Water (AMCOW) under its monitoring of the Ngor Declaration Commitment 5 on "bridging sanitation and hygiene HR capacity gaps at all levels" revealed limited investment in sector HR assessment, planning, and capacity development (AMCOW 2019). (Detailed findings from the latest AMCOW and GLAAS reports are discussed in later sections.)

Another landmark study, undertaken by the International Water Association (IWA), looked at WASH HR capacity gaps in 15 developing countries. This 2014 study highlighted an overall lack of a sanitation labor market and noted that 62 to 98 percent of the HR shortages to reach universal coverage were in sanitation. At that time, causes for these shortages were reported to include a lack of sanitation education, outdated curricula and course materials focusing on sewered systems, as well as the lack of investment to create jobs (IWA 2014).

Several studies also were undertaken to increase understanding of training needs and preferences in the sector, but these did not paint a unified picture. Work published in 2017 by the the United States Agency for International Development (USAID) Water for Africa through Leadership and Institutional Support (WALIS) Activity—which set out to better understand training needs and preferences of sector professionals, in particular women and young professionals—pointed to a lack of management and leadership skills,[1] rather than technical skills. A 2022 study by the United Nations Educational, Scientific,

[1] Management and leadership skills in the WALIS report seem to equate with the definition of transferrable skills used herein (see Box 1), but no definition of management and leadership skills were found in the WALIS reports.

and Cultural Organization (UNESCO; unpublished) focused more on the operational levels, highlighting instead a higher need for technical staff and identifying particular shortages of trained mid-level professionals (i.e., junior and senior technicians).

In all efforts to map sector HR capacity, the focus has been largely on those professionals that are educated and skilled to deliver the job at hand. However, the important role of volunteers, informal workers, and unskilled (or trained-on-the-job) workers, particularly in rural areas where the reliance on community-based services and on-site sanitation systems is prevalent, was largely overlooked in the earlier assessments.

In this context, USAID Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) #2 project conducted a sanitation and hygiene sector workforce capacity needs assessment (CNA), focused on sub-Saharan Africa and South and Southeast Asia. The objectives of the assessment were twofold:

1. Understand the current and future HR capacity needs and gaps across the sanitation and hygiene sectors and the dynamics at play in trying to address these needs; and
2. Identify priority actions and pathways for sector partners to address the identified needs and barriers, and capture these in a roadmap of actions and commitments.

1.2 FOCUS AND METHODOLOGY

Informed by the above-mentioned studies and building on consultations with USAID and with stakeholders during the November 2021 AfricaSan conference, the assessment team structured the sanitation and hygiene workforce CNA around the following four key questions:

1. What are the HR capacity gaps impeding sanitation and hygiene sectors' achievement of universal access to sustainable services?
2. What are the different modalities for sanitation and hygiene sectors' capacity development and to what extent have they contributed to achieving and sustaining needed human capital?
3. What are the barriers and incentives to access, recruit, promote, and retain existing workforce capacity?
4. What are the recommended priority actions to address HR capacity gaps in the sanitation and hygiene sectors?

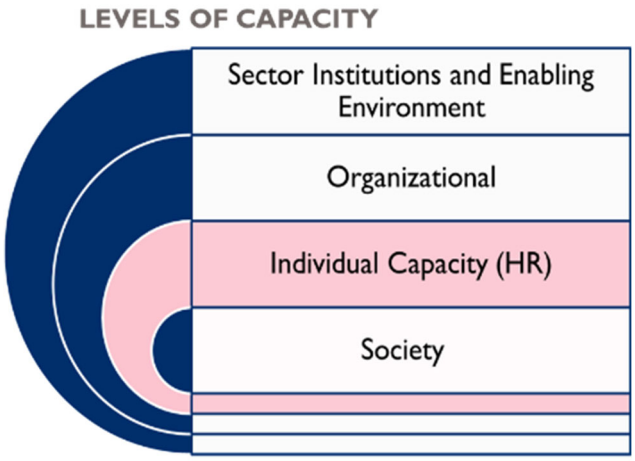
Moreover, in light of the identified lack of information and the overall focus of WASHPaLS #2, the CNA concentrated efforts on rural sanitation and hygiene. Specifically, the CNA methodology was designed to assess the HR capacity needed to deliver safely managed area-wide sanitation and basic hygiene sustainably and at scale, with emphasis on on-site sanitation. The assessment team recognizes that sanitation and hygiene functions are often strongly interlinked and performed by the same actors, particularly in rural areas. But sanitation and hygiene can also be in quite distinct sub-sectors, requiring individual attention. In this report they are referred to as "the sanitation and hygiene sectors."

To distinguish between different rural and peri-urban contexts, the assessment adopted the rural typologies presented in the "Guidance on Programming for Rural Sanitation" (WaterAid 2019), recognizing rural remote (far from urban), rural-on-road (close to urban), and rural mixed (peri-urban) contexts. For the purposes of understanding roles and responsibilities of actors across the rural-urban spectrum, the assessment added an urban category. Difficult contexts, the fourth typology in the Guidance, were not distinguished as a separate geographical zone in this assessment but are reflected in the discussions on specific skills and competencies required to achieve sector goals.

Box 1 highlights a few important definitions used for the CNA. Annex 1 provides a complete listing of the definitions and typologies used, as well as the overall methodological framework for the assessment.

BOX 1. IMPORTANT DEFINITIONS	
Capacity	The ability of individuals, organizations, and societies to perform functions, solve problems, and set and achieve objectives (Fukuda-Parr et al. in Willems and Baumert 2003)
Competency	Knowledge, skills, and abilities needed for an employee to perform their job in an effective manner
HR capacity (individual capacity)	The number of HR (personnel or self-employed individuals) and their competencies available to perform functions, solve problems, and set and achieve objectives
HR shortages	Refers to a deficit in numbers of HR needed versus those available
HR gaps	Refers to a deficit in competencies needed versus those available
Technical knowledge and skills	Knowledge and skills (competencies) that a person has in a specific field (e.g., Behavioral Scientist with behavior change communication [BCC] skills; Environmental Engineer with design skills to develop a fecal sludge treatment plant [FSTP])
Transferrable knowledge and skills	Knowledge and skills (competencies) that a person may need for their job but that are not specific to that field. These knowledge areas or skillsets are applicable across multiple jobs (e.g., computer skills, relationship management, project management, communication skills)

Assessing and addressing HR shortages (numbers) and/or HR gaps (competencies) requires an understanding of four interconnected levels of capacity: individual, organization, enabling environment, and society (Lincklaen Arriëns and Wehn de Montalvo 2013). Figure 1 demonstrates that individuals' (HR) ability to perform functions, solve problems, and set and achieve objectives is dependent on the organizations and broader society in which they work (including the enabling environment and the society they aim to impact). This framework was applied to analyze the barriers throughout this assessment.



Source: WaterAid 2021a

Figure 1. Framework for the Assessment

There are many functions in the sanitation and hygiene sectors that need to be fulfilled to achieve SMS and basic hygiene. Although the 2014 GLAAS country survey recognized some of the expanded functions, including policy development and planning, monitoring and evaluation, regulation, and management of the design and construction of facilities and/or networks, many previous assessments focused narrowly on sanitation and hygiene *professionals* involved in mobilizing/engaging the communities, and constructing, operating, and maintaining sanitation facilities. The functions required to successfully deliver safely managed (rural) sanitation and hygiene are, however, much broader. Based on their system thinking and building block approach, WaterAid's methodological framework (WaterAid 2021a) further adapted this wider set of functions and added others related to oversight and management, the sanitation service chain (i.e., emptying and transport), and community engagement.

For this CNA, the assessment team initially intended to use the WaterAid set of functions to analyze HR capacity and shortages, and the required knowledge, skills, and competencies for each of the functions. However, following consultations with sector stakeholders to assess the functions developed by WaterAid, with an eye on identifying others thought to be pertinent to the assessment's focus on delivering area-wide (predominantly on-site) sanitation, the assessment team settled on the expanded

set of functions presented in the middle column of Table 1.These included functions linked to MBS, as well as a rewording of the Oversight and (Adaptive) Management functions to Oversight and Support, as it was meant to represent a particular role played by (local) public sector in providing oversight and support to those conducting service delivery, including ensuring an enabling environment for service providers.

In the early stages of the assessment, it became clear that while this set of functions provided a useful tool to guide future sanitation and hygiene CNAs, it required additional refinements to better capture the rural sanitation sector. These refinements are highlighted in the third column in Table 1, with changes highlighted in red. A further explanation of the proposed revisions and the definitions of these functions are provided in Annex 1. Importantly, given that refinements to the set of functions were proposed at different stages of the assessment, some of the country-level CNAs applied some of these changes, while others did not. For the purposes of this global assessment and the synthesis undertaken, **the assessment team applied the functions presented in the middle column for all analyses presented in the remainder of this report.**

TABLE 1. FUNCTIONS TO DELIVER SANITATION AND HYGIENE

FUNCTIONS DETERMINED BY WATERAID	FUNCTIONS USED IN THIS ASSESSMENT	PROPOSED REVISED FUNCTIONS FOR FUTURE ASSESSMENTS
Policy, strategy, and coordination	Policy, strategy, and coordination	(National) policy, strategy and coordination
Regulation	Regulation	(National) regulation and enforcement
Monitoring	Monitoring	(National) monitoring
		(National) finance
Oversight and (Adaptive) Management	Oversight and support	(Subnational/local) oversight and support (including monitoring)
Community mobilization and engagement	Community mobilization and engagement	Community mobilization and engagement
		(Subnational/local) advocacy and holding to account
Design and construction	Construction	(Subnational/local) construction
Operation and Maintenance (O&M) (including treatment, disposal, and reuse)	O&M (including treatment, disposal, and reuse)	(Subnational/local) O&M
		(Subnational/local) treatment and disposal/safe reuse (sanitation specific)
Emptying and Transport	Emptying and transport	(Subnational/local) emptying and conveyance (sanitation specific)
	Research and design	Research and design
	Business development	Business development support

Multiple data collection methods were employed in this assessment. These methods enabled data collection from a broad range of sources and informants, but also facilitated data triangulation, both between the global and country-level assessments, and within each country. Figure 2 presents the multiple data collection methods employed.

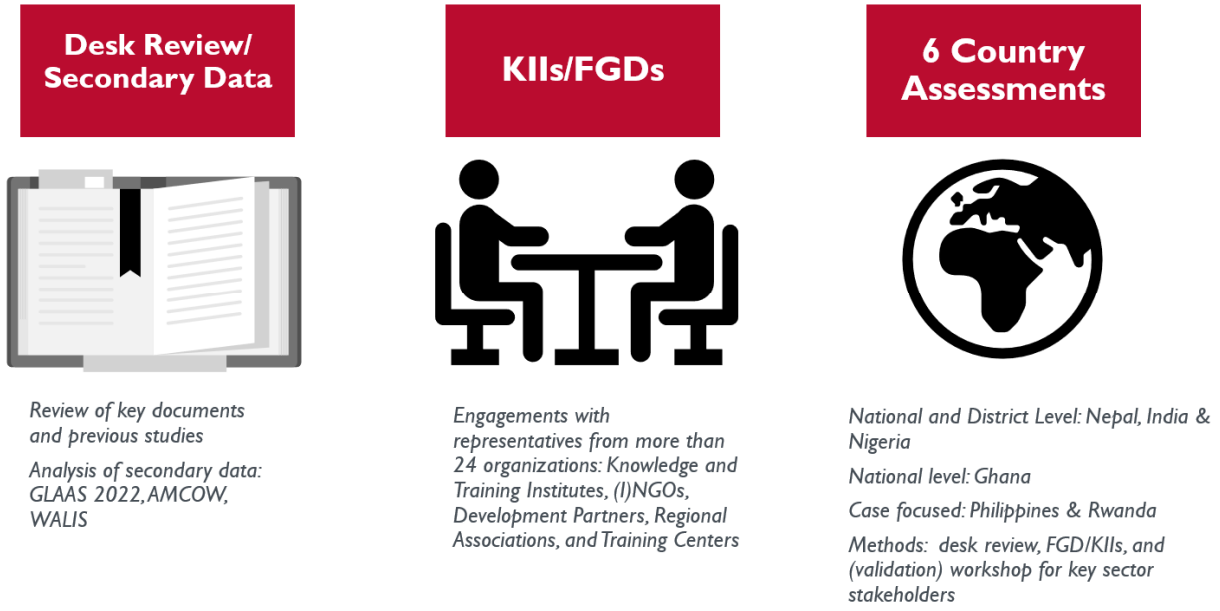


Figure 2. Data Collection Methods

For the global study, the assessment team reviewed a broad set of documents, analyzed three datasets (AMCOW [e.g., AMCOW 2019, 2022], GLAAS 2021/2022 [WHO 2022a], and WALIS Survey [USAID 2017a, 2017b, 2017c, 2017d]), and engaged 42 participants at the international/regional level in informal conversations, focus group discussions (FGDs), or key informant interviews (KIIs) (Annex 3). Six country CNAs were conducted, including engagement with over 400 national and local-level informants, desk reviews, KIIs, FGDs, and/or validation workshops. The six countries were Ghana, India, Nepal, Nigeria, the Philippines, and Rwanda.

Country selection was based on regional diversity (three countries in sub-Saharan Africa (SSA) and three in South/Southeast Asia); a low *Sufficiency of HR* rating as reported in the GLAAS 2019 report (WHO 2019); varying levels of progress toward achieving SDG 6.2 as determined by the UNICEF-WHO Joint Monitoring Programme (JMP) (UNICEF and WHO JMP n.d.b.); and on USAID's list of high-priority countries for safe and resilient WASH assistance.

The global study helped the assessment team form preliminary insights and guided the formulation of the country assessment framework (Annex 2). The country assessments were used to validate global-level findings and provided more detailed insights into local HR situations, barriers, and opportunities.

Throughout the assessment, one-on-one meetings with numerous sector partners as well as formal consultations guided the study and helped the team formulate the recommendations. The following formal consultations took place:

- Preliminary Insights Consultation meeting (June 6, 2022 – 17 participants) to validate the preliminary insights from the global study and to guide the direction of the research in the countries;
- Africa All Systems Go conference, Workshop Consultation (October 19, 2022 – 20 participants), which provided an opportunity to gain feedback on findings and preliminary recommendations (particularly from the Ghana and Nigeria country assessments), indicate priorities, and identify key actors to address recommendations; and
- University of North Carolina Water and Health Conference, Findings, and Recommendations Presentation and Roadmap Consultation (October 24, 2022 – 75 participants), which provided

an opportunity to gain feedback on findings, reformulate the recommendations, and identify potential partners to engage on the roadmap.

1.3 STUDY LIMITATIONS

Overall, the assessment was qualitative rather than quantitative in nature and was designed to identify trends in HR shortages (i.e., numbers) and understand barriers in HR gaps (i.e., competencies), rather than calculate exact numerical HR shortages in the sanitation and hygiene sectors. Furthermore, there was a noted lack of data on professionals and unskilled labor involved in sanitation and hygiene, and the lack of standardization of HR and labor market terminology in these sectors made it difficult to compare between countries. For example, there are different definitions on formal and informal workforce, with some countries including household (physical) contributions in the informal workforce, while the International Labour Organization (ILO) indicates that "households producing unpaid domestic or personal services (e.g., housework, caring for family members) for their own final consumption are excluded as this is not considered employment" (Hussmanns n.d.).

The country-level CNAs were limited in both time and resources, with data collection for all taking place within a two-month window (August and September 2022). For Rwanda and the Philippines, this resulted in a lighter touch exercise, focusing on a more limited set of guiding questions rather than undertaking a full HR assessment as was conducted in the other four countries. Similarly, only three of the six countries included multi-level exercises with detailed assessments in selected states/provinces, districts, and local governments. Findings from these state and local-level assessments are not representative of the entire country but were undertaken to validate and complement information gathered at the national level.

1.4 REPORT STRUCTURE

Section 2 provides some background and context for the assessment, discussing sanitation coverage trends and broader rural development and labor workforce considerations. Sections 3 to 6 present the overarching findings of the assessment. Each section starts with some key takeaway messages, which are further elaborated in the text. Section 7 provides a summary of key findings, after which a set of general recommendations is presented in Section 8. In addition, country-specific recommendations were developed for the six assessment countries, (included in the separate country reports). These country recommendations are referenced in Section 8 to provide examples of how the general recommendations can be translated into concrete, country-level recommendations and actions.

2.0 BACKGROUND AND CONTEXT

As background to the CNA, this section provides an overview of progress toward the SDG 6.2 target (Section 2.1), discusses broader rural development dynamics (Section 2.2), and provides an insight into general labor market and workforce dynamics in the focus regions (Section 2.3).

2.1 PROGRESS ON SDG 6.2

Progress on rural sanitation and hygiene coverage varies across the three regions of interest. Figure 3 displays the progress from 2015-2020, demonstrating more progress in rural sanitation coverage in Asia than in sub-Saharan Africa, and a rather stable situation for hygiene.[2] However, these regional averages mask substantial variation in service levels between countries in a region.

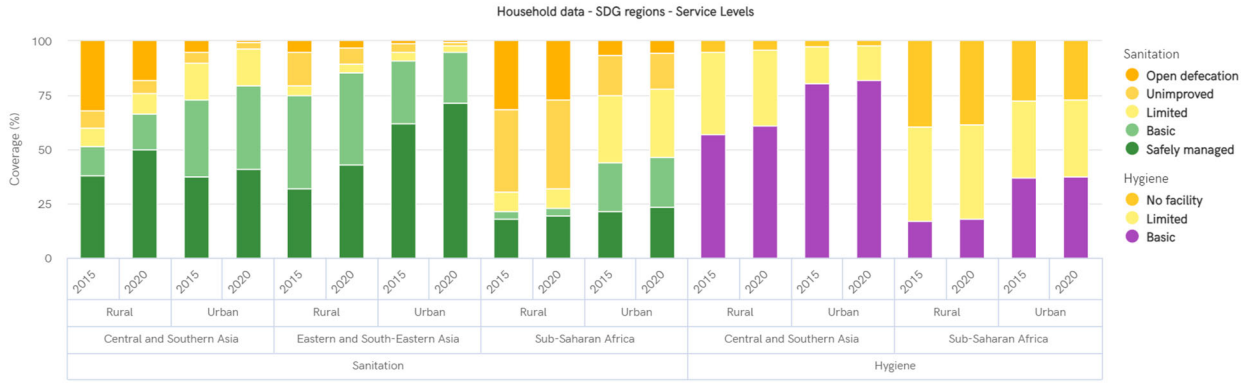


Figure 3. Progress between 2015 and 20223 (UNICEF and WHO JMP n.d.b.).

The vast majority of South Asian countries have made significant progress to achieve Open Defecation Free (ODF) status, using large campaigns, missions, or programs, including the Swachh Bharat Mission (SBMG) in India, the ODF Campaign in Nepal, and the Seventh Five Year Plan[4] (2016-2020) in Bangladesh (General Economics Division 2015). In all these cases, strong political commitment has been a key driver of success.

> *A growing economic force like India—the 5th largest economy in the world—could no longer stay behind in basic services. – KII*

Yet when looking at individual countries, progress toward SMS is advancing slowly and is not without challenges. In South Asia, sustaining access to newly obtained services, improving the sanitation technologies at household level, and addressing the post-containment stages of the sanitation service chain all still require substantial effort and a shift in focus, particularly in rural areas.

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2 While the data for Southeast Asian region on hygiene is missing in Figure 3, it is in line with the findings of the other regions.

3 The regions used by JMP do not correspond directly to the regions of this study; this figure includes Central Asia, which is not part of this assessment.

4 Many different policies and strategies were implemented in Bangladesh to extend services and the benefits of improved sanitation to all strata of the society encompassing women, children, differently abled person, under-privileged, floating population, and very poor people. Through the Seventh Five Year Plan (2016–20), Bangladesh sought to raise the proportion of urban and rural population with access to sanitary latrines to 100 percent and 90 percent, respectively.

In Nepal for example, UNICEF, the Department of Water Supply and Sewerage Management, and municipal authorities interviewed for the CNA noted that several studies they conducted revealed significant slippage in sanitation coverage (estimated between 20–44 percent). Our assessment further identified a limited focus on system sustainability and fecal sludge management (FSM), as well as delays in approval of relevant plans and policies. In India, the SBMG Phase II has an explicit focus on "ODF+"[5] and introduced solid and liquid waste management measures. However, KIIs and FGDs in Bihar reported that the focus of efforts currently is with solid and plastic waste management, with less importance being accorded to FSM and sustainability efforts at the district level.

Southeast Asia shows relative higher rates of access to basic and SMS, but there are large variations in progress across countries. The Philippines, Lao PDR, Myanmar, Cambodia, and Timor-Leste lag behind other countries in this region.

The **SSA region shows a lack of progress overall.** For 14 out of the 46 countries in SSA, access to basic sanitation is still below 20 percent. Most of the better-performing countries in the region are island nations or relatively small countries, including Rwanda with reported access to basic sanitation of 75 percent (Ministry of Infrastructure 2021).

Overall, as shown in Figure 4, SSA, Central and Southern Asia, and Eastern and South-Eastern Asia are mostly off track to achieve universal basic sanitation services by 2030, with six countries in SSA showing negative progress, i.e., a decline in population with access to at least basic sanitation services (UNICEF and WHO JMP n.d.a.).

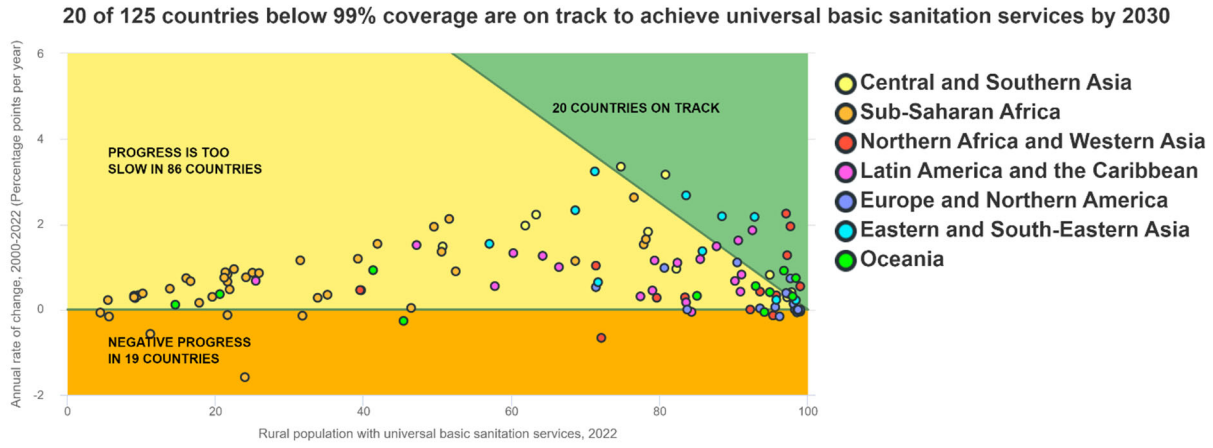

Figure 4. Countries on Track to Achieve Basic Sanitation Coverage (UNICEF and WHO JMP n.d.a.)

The six countries included in the country CNAs have varying rates of progress and sanitation coverage. While all countries made visible progress between 2015 and 2022, Ghana (29 percent) and Nigeria (47 percent) lag most behind in access to basic sanitation services, and only Nepal and India are on track to achieve universal basic sanitation services by 2030 (UNICEF and WHO JMP n.d.a.).

The majority of the countries in the three regions have not prioritized hand hygiene, nor established strategies or guidelines to improve hand hygiene practices and behaviors. While the Coronavirus Disease 2019 (COVID-19) pandemic increased attention to the importance of hand hygiene both nationally and globally, this attention was fleeting. International initiatives such as the

5 The Ministry of Drinking Water and Sanitation in India considers ODF+ to be a state where there are no feces in the environment and everybody is using safe technology option for disposing feces, AND solid and liquid resources are managed along with menstrual hygiene.

Global Hand Hygiene for All initiative (WHO n.d.) have focused on providing increased support to countries and vulnerable communities on handwashing. As part of this global initiative, 30 countries have made a public commitment to develop costed national roadmaps setting out how government and partners plan to achieve Hand Hygiene for All.

In South Asia, only Pakistan has fully developed and started the implementation of this hygiene roadmap; Nepal's roadmap is in draft. In Southeast Asia, none of the countries have yet taken on such efforts. In SSA, Nigeria, Ethiopia, and Lesotho launched roadmaps in 2022, while Ghana put in place a new hand hygiene policy in 2021. With UNICEF and WaterAid support, a Southern African Development Community Hygiene Strategy is under development for its 16 member states.

The increased attention for handwashing and the related national policies and roadmaps will have implications for HR, both for hygiene promotion as well as the private sector producing handwashing technologies and soap. The draft Nepal Roadmap, for example, indicates a required increase in the number of master trainers in hygiene and hygiene inspectors. However, exactly who owns or finances the positions and associated capacity development is still unclear.

Overall, there is still low prioritization of SMS and hand hygiene. The assessment found that for the purposes of assessing HR status and needs, countries fall into one of three stages:

1. **Working toward basic access:** Facing high levels of rural open defecation and/or access to unimproved services, working toward basic access and reduction of open defecation;
2. **Sustaining access and improving toward SMS:** Working toward sustaining universal access to basic sanitation, improving basic facilities to meet standards of safely managed containment; and
3. **Sustaining SMS:** Having largely achieved ODF status and progressing toward safely managed systems, in which the post-containment stages of the sanitation service chain are addressed (including emptying, transport, treatment, safe disposal, and reuse).

The majority of countries in the focus regions for this assessment are in one of the first two stages, particularly as pertains to the rural areas.

2.2 RURAL DEVELOPMENT

The proportion of the population living in rural areas is substantial and exceeds urban populations in many countries. The World Bank (n.d.a.) reports that rural populations make up 58 percent of the population in SSA, 66 percent in South Asia, and 54 percent in Southeast Asia,[6] notwithstanding rapid urbanization in many countries across these regions. The percentage of rural population in the assessment countries varies substantially, as noted in Table 2.

[6] World Bank does not have a Southeast Asia region, and therefore the team compiled the rural rates from the countries as per SDG region and divided this for the average.

TABLE 2. PERCENTAGE OF RURAL POPULATIONS IN ASSESSMENT COUNTRIES					
INDIA[7]	NEPAL[8]	PHILIPPINES[9]	GHANA[10]	NIGERIA[11]	RWANDA[12]
65	34	46	43	46	82

Overall aid investment in the sanitation and hygiene sectors has decreased in recent years, affecting available financing for rural sanitation. The GLAAS report (WHO 2022a) notes reduced official development assistance (ODA) investment in the water supply and sanitation sector overall as compared to other aid sectors (e.g., health), but highlighting an increase in water supply and sanitation ODA in the Asian regions, but a reduction in SSA. While between 2018 and 2020 there was a slight increase in the portion of funds allocated to sanitation versus water supply, the report notes that "from 2017-2020 overall aid commitments for water supply and sanitation fell by more than 5%, while total aid commitments increased by nearly 20%," and overall ODA commitments to water and sanitation dropped from 4.5 percent in 2017 to 3.6 percent in 2020.

This reduction in ODA was also observed by selected key informants and their organizations. Some of these experts specifically highlighted an increase of their activities in urban areas (e.g., WaterAid, World Bank, UNICEF) and an observed decrease in investment in rural areas.

2.3 EMPLOYMENT, WORKFORCE, AND EDUCATION

The available workforce in all regions of interest is large, but there generally are not sufficient formal work opportunities to absorb this workforce population. In addition to unemployment[13] (see Table 3), poorly paid jobs, bad working conditions (AUDA-NEPAD 2016), and/or underemployment[14] (ILO Infostories 2016) are key challenges in most of these regions. A discussion paper for the Social Protection and Labor Strategy of the World Bank (Cho et al. 2012) also identifies the high share of self-employment (informal), exposure to income shocks and limited risk management, low female participation, high youth unemployment, and the need to manage migration flows as challenges to the labor market.

7 Census of India 2021.

8 Census 2021 Nepal – note that census data indicates a 49% growth in urban population in 10 years' time. This data is contested based on Nepal's demarcation of urban and rural area, whereby many rural areas known previously as Village Development Committees have been annexed to an established municipality. At present, Nepal's municipalities are defined as de facto urban areas and so are populations in it.

9 Census 2020 Philippines.

10 Census 2021 Ghana.

11 Census 2019 Nigeria.

12 World Bank staff estimates based on the United Nations Population Division's World Urbanization Prospects.

13 Unemployed – a person aged 15 or over without a job during a given week; available to start a job within the next two weeks; actively having sought employment at some time during the last four weeks or having already found a job that starts within the next three months (ILO 2015).

14 Underemployment is a broad concept reflecting underutilization of the productive capacity of the employed population, including those that arise from a deficient national or local economic system. It relates to an alternative employment situation in which persons are willing and available to engage (Sengenberger 2011).

TABLE 3. WORKFORCE AND UNEMPLOYMENT IN THE REGIONS			
	SOUTH ASIA (2021)	SOUTHEAST ASIA (2021)	SUB-SAHARAN AFRICA (2021)
Workforce (millions)	650.4 (World Bank n.d.b.)	330.7 (World Bank n.d.c.) (East Asia and Pacific, excluding high income countries = 1.14 billion. 1.14 billion minus China, and Pacific Islands = 330.7 million.)	447.4 (World Bank n.d.d.)
Unemployment (%)	5.8 (World Bank n.d.e.)	4.3 (World Bank n.d.f.) (East Asia and Pacific, excluding high income countries)	7.7 (World Bank n.d.g.)

The international community has identified employment as a key part of development, captured in SDG 8 to promote "economic growth and decent work for all." Specifically, this goal targets "productive work for women and men in conditions of freedom, equity, security and human dignity." In general, work is considered as decent when:

- It pays a fair income,
- It guarantees a secure form of employment and safe working conditions,
- It ensures equal opportunities and treatment for all,
- It includes social protection for the workers and their families,
- It offers prospects for personal development and encourages social integration, and
- Workers are free to express their concerns and to organize (European Commission n.d.).

In reality, a high proportion of the workforce in the assessment countries works in the informal sector (Table 4). "**People living in rural areas are almost twice as likely to be in informal employment as those in urban areas.** The poor are more likely to be in the informal economy and poverty is higher for those working in the informal economy. People who have completed secondary and tertiary education (likely residing more closely to urban areas where this education is provided) are less likely to be in informal employment compared to workers who have either no education or completed only primary education. Most people enter the informal economy not by choice, but as a consequence of a lack of opportunities in the formal economy and in the absence of other means of livelihood" (ILO 2018). As such, the informal workforce represents a more complex group of people to track and measure, as they tend to follow job opportunities instead of sticking to a specific sector.

TABLE 4. INFORMAL WORKFORCE IN ASSESSMENT COUNTRIES	
Ghana (Ghana Statistical Service [GSS] 2022)	77%
India (Oxfam 2022)	87%
Nepal (NPC/CBS/ILO 2018)	61%
Nigeria (ILO 2018)	80%
Philippines (ILO n.d.c.)	56%
Rwanda (NISR 2022)	44%

With regard to age, the World Bank reports that "Africa has twice as many 15-year-olds as 35-year-olds and South Asia's demographic situation is close to that of Africa. In other regions of the world, the structure is more evenly distributed across age groups. In East Asia and the Pacific, the pyramid is inverted, with a greater number of older than younger people" (Filmer and Fox 2014). Unsurprisingly, the regions with the largest youth populations face the most problems with youth unemployment (Table 5). The ILO reported that from 1997 to 2017 the youth population (aged 15–24 years) overall grew by 139 million, while the labor force overall shrank by almost 59 million. With more young people in school, fewer youth are reported to be working or looking for work. Regardless of these increases in school enrollment, millions of young people find themselves with neither a job nor an educational opportunity (ILO Infostories 2016).

In 2020, almost one in four youth were not in employment, education, or training (NEET). According to ILO, the COVID-19 crisis erased 15 years of progress in reducing NEET (ILO 2022). South Asia faces by far the largest youth unemployment in its labor market. This region has the

highest population in the 15–24 age range (Southeast Asia having much more evenly distributed age ranges) and more than half of its youth are not on track to have the education and skills necessary for employment in 2030 (UNICEF 2019). Gender inequity status in the labor market is high (ILO 2022) and the South Asian labor market is less formalized than, for example, Southeast Asia, offering fewer formal job opportunities.

In general, three out of four young workers are employed in the informal economy, and this often means being underpaid and/or underemployed and facing poor working conditions (ILO Infostories 2016). One of the reasons behind the higher incidence of informality among young workers in health and social work,[15] for example, is their more limited access to public sector employment, which typically offers formal working conditions (ILO 2022). Many of the young workers are hired informally in the private sector or by households.

TABLE 5. YOUTH WORKFORCE IN THE REGIONS

	SOUTH ASIA	SOUTHEAST ASIA	SUB-SAHARAN AFRICA
Labor force participation rate[16] for ages 15–24	28% (World Bank n.d.h.)	47% (World Bank n.d.i.) (East Asia and Pacific, excluding high income countries)	45% (World Bank n.d.j.)
Youth unemployment	24% (Macrotrends 2023)	11% (Asia and Pacific)	15% (Macrotrends 2023)
NEET Youth	53% of female youth 6% of male youth	23% of female youth 13% of male youth (Southeast Asia and Pacific)	19% of female youth 11% of male youth (ILO n.d.d.)

The country CNAs report high youth unemployment, and in particular high underemployment in the SSA countries (Table 6). Additional challenges linked to youth under or unemployment include long delays in findings jobs (i.e., most youth take an average of 13.8 months to find a stable or satisfactory job [ILO Infostories 2016]), a lack of formal job opportunities to manage the large proportion of youth coming into the workforce, and low income (i.e., almost two out of five young workers in emerging and developing economies live on less than 3.10 United States dollars (USD) a day [ILO Infostories 2016]).

15 In ILO 2022: Health and Social Work means all Health and Health Associated professionals (excluding veterinarians).

16 The labor force participation rates are calculated as the labor force divided by the total working-age population. The working age population refers to people aged 15 to 64.

TABLE 6. YOUTH UNEMPLOYMENT IN ASSESSMENT COUNTRIES	
Ghana	The largest proportion of the population is now transitioning from children (0–14) into the youth category (15–24). Youth unemployment in Ghana is 12 percent, but underemployment is 50 percent.
India	Overall unemployment in rural areas was reported at 6 percent and youth unemployment was reported at 23 percent.
Nepal	More than a third (38 percent) of the unemployed workforce is aged 15–24, and 63 percent of those unemployed are below 35. Yearly, 450,000 graduates enter the job market and are unable to find positions. A large proportion seek employment in India, Malaysia, or Middle Eastern countries, mostly in low-skilled jobs.
Nigeria	There is 30 percent youth unemployment versus 10 percent unemployment overall. Underemployment is set for those working less than 20 hours a week and accounts for 17 percent on top of unemployment for youth.
The Philippines	Youth unemployment and underemployment were reported at 13 percent and 11 percent in December 2021.
Rwanda	Youth unemployment in 2021 is 17.73 percent. (Statistica n.d.)

Source: Capacity Needs Assessment country reports.

There is a marked difference in female and male youth unemployment, with the most striking inequality in South Asia, where 53 percent of young females versus six percent of young males are NEET (Table 5). This is mirrored by regional statistics on the percentage of female participation in the workforce, which is lowest in South Asia (22 percent) (World Bank n.d.l.), followed by Southeast Asia (42 percent) (Sharma 2022), and SSA (46 percent) (World Bank n.d.m.). The barriers to employment in South Asia are much higher for females (e.g., females often not having a bank account in their names).

Factors contributing to lower female participation in the workforce include lower levels of education or literacy, socio-cultural norms, unequal sharing of domestic responsibilities, informal engagement, and many more (ILO 2022). It was also inferred by in-country key informants and observed in data that there may still be a bias toward men in public sector roles. For example, in Nigeria only 13 percent of federal civil service staff is female (Sasu 2023), while in Nepal only 12 percent is female (World Bank and United Nations Development Programme 2019). Table 7 presents female participation in the workforce in the six assessment countries.

TABLE 7. FEMALE WORKFORCE AND GENDERED UNEMPLOYMENT IN ASSESSMENT COUNTRIES

	FEMALE WORKFORCE (% OF TOTAL WORKFORCE)	FEMALE UNEMPLOYMENT	MALE UNEMPLOYMENT
Ghana (GSS 2022)	53%	15.5%	11.3%
India	23.5% (World Bank n.d.	4.5% (2021) (World Bank n.d.n.)	6.3% (2021) (World Bank n.d.n.)
Nepal (NPC/CBS/ILO 2018)	55.5%	13.1%	11.4%
Nigeria	52.14% (National Bureau of Statistics [NBS] 2018)	8.8% (2021) (World Bank n.d.o.)	10.6% (2021) (World Bank n.d.o.)
Philippines (PSA December 2022)	54%	2.7% (2021) (World Bank n.d.p.)	2.2% (2021) (World Bank n.d.p.)
Rwanda (National Institute of Statistics of Rwanda 2022)	46%	24.1%	18.5%

Many of the countries in the three target regions are still highly dependent on industries that are rural based. Agriculture and textiles are large employers across all regions. In Southeast Asia, services and manufacturing are also large employers (ARC Group 2022), and in South Asia, food and tea processing are as well. In SSA, financial services present another major sector (Roelofsen and Sheng 2010). Asian countries feature a larger group of migrant workers, which is noticeable in the contribution of remittances to countries' overall gross domestic product (GDP). Remittances account for 23 percent of GDP in Nepal (Asian Development Bank 2015) and about nine percent in the Philippines (World Bank n.d.r.). In SSA, the countries with the highest remittances are Senegal (10.5 percent) (World Bank n.d.s.) and Zimbabwe (8.5 percent) (World Bank n.d.q.).

There is generally a limited focus on technical and vocational education and training (TVET) by government and industry. In Africa especially, "TVET systems in many countries are characterized by under-resourced, obsolete or damaged infrastructure; inadequate inter-sectoral linkages; lack of Labor Management Information Systems; limited curricula and inadequate human resources" (African Union n.d.). While there is now a continental strategy and initiatives to strengthen technical and vocational training, such as the (sector agnostic) Skills Initiative for Africa, there is much to be done.

KIIs in the six assessment countries indicated that private universities outperform those in the public sector, likely due to their need to respond to market demands and thus adapt curricula more quickly, as well as their better funding/access to financing and ability to attract industry professionals to contribute to courses.

The general labor market trends and characteristics in the regions discussed above are reflected in the sanitation and hygiene specific labor market characteristics. These are discussed in Section 3.

3.0 THE SANITATION AND HYGIENE LABOR MARKET

In most efforts to map HR capacity, the focus has been on those professionals that are educated and have the skills to deliver the job at hand. The IWA study (2014), for example, did not address semi/unskilled workers but did highlight that rural sanitation was mainly performed by such workers who learned through apprenticeships (e.g., masons, artisans) or learning-by-doing (e.g., community mobilizers, community health workers, pit emptiers). These workers were either hired by the households directly or the nongovernmental organizations (NGOs) supporting program activities. **As a main objective of this CNA is to understand the HR needs specifically for the rural (on-site) sanitation and hygiene workforce, the findings in this report include reflections on all HR—from volunteers to unskilled workers (trained on the job) to the trained and educated professionals.** First, Section 3.1 provides an overview of the sanitation and hygiene labor market, particularly for rural, on-site sanitation. Section 3.2 then introduces the actors that comprise this sanitation and hygiene labor market, and the types of jobs and positions they have to carry out to complete the sanitation and hygiene functions outlined in Section 1.2 (Table 1).

3.1 THE RURAL SANITATION AND HYGIENE LABOR MARKET

There is lack of a dedicated sanitation and hygiene labor force, little standardization, and limited data.
• There are limited career paths in sanitation and hygiene specifically and a strong dependence on HR from other sectors. • HR assessments and HR strategy development are not yet commonplace. • Lack of standardization means different jobs are used interchangeably for similar roles, and remuneration and promotion opportunities vary widely. • There is limited HR data tracking to inform planning and HR assessments.

The sanitation and hygiene labor market is in its infancy, characterized by a lack of demand (by society) and limited regulation (by government) (IWA 2014), a lack of potential employers, and a lack of standardization and formalization of jobs. Development partners (DPs) and (international) non-governmental organizations ([I]NGOs) invest in and actively encourage the development of the sanitation and hygiene sectors and are important employers next to (limited numbers of) formal service providers, the technical services sector, and government.

In rural areas, sanitation professionals are largely employed by (I)NGOs and the informal private sector. Local governments also are important employers for sanitation and hygiene personnel, but the numbers of staff are often far below what is required to service the entire population, and functions often are combined with solid waste management, health, or education functions, further diluting what is available for the sanitation and hygiene sectors.

For hygiene, specifically, it is difficult to identify a standalone labor market. Hygiene workers often are in the health sector but have a wide array of duties (such as curative, nutrition, safe management of public spaces/hygienic conditions in markets and/or food industry). Or they are in the private sector, producing soap or handwashing technologies. Specialists in hand hygiene often are consultants or working with (I)NGOs. As Box 2 illustrates, for both sanitation and hygiene, the workforce is so cross-sectoral that it is hard to establish a separate "identity" or labor market.

As such, compared to other sectors such as health, agriculture, and education, the sanitation and hygiene sectors are lagging in terms of formalizing jobs, standardizing position descriptions and functions, and collecting data on them. This can be observed by exploring the standard categories of employment tracked by governments. Health, agriculture, and education are separate industries and workers are categorized and tracked according to these. The

health sector, for example, has vast amounts of data on its labor force, which entities such as the WHO use to track health workers and delivery, and to report on shortages. Neither WASH nor any of its sub-sectors (water supply, sanitation, hygiene) is recognized as a separate industry category. As such, employment is not categorized and tracking not formalized.

BOX 2. CROSS-SECTORAL NATURE OF THE SANITATION AND HYGIENE WORKFORCE

Multiple sectors have touchpoints with or deliver sanitation and hygiene services:

- *Health*: Preventing diseases is a key task of extension workers of the health system. This includes preventing water-borne diseases and addressing malnutrition and stunting through hygiene promotion, and encouraging use and implementation of household sanitation.
- *Maternal and child health*: Post-delivery maternal and infant health checkups are important opportunities for healthcare providers to inform mothers on safe child feces management, handwashing after changing diapers, etc.
- *Education*: Schools are important venues for teaching (and upscaling to communities) safe WASH practices and hygienic behaviors (including safe waste disposal).
- *Agriculture*: Use of fecal sludge on farmlands is common in some cultures, and agricultural extension workers can play a role in ensuring the safe reuse of waste.
- *Construction Industry*: Private sector construction firms are regularly contracted by municipalities or local governments to construct toilet facilities in institutional settings (e.g., schools) and deliver a large part of household toilet construction.

Only 24 of 51countries in SSA, South Asia, and Southeast Asia reporting to GLAAS[17] conduct HR assessments for WASH, and of those, over two-thirds do so on an ad-hoc basis. Similarly, only 20 of the 51 countries reported having a national HR plan/strategy specific to sanitation and/or hand hygiene. Some countries have adopted a more novel approach to assessment and developing HR capacity, as illustrated by the example from Zambia in Box 3.

But while the form of assessment and strategy development conducted by the Zambia Skills Advisory Group provides opportunities for quicker assessment and action, it does not systematically focus on increasing available HR data. **This lack of HR data is a general issue. While some countries (e.g., Ghana) have included parts of WASH-related work in their industry tracking, this often does not extend beyond labor for urban water or sewerage.** For rural professionals, such as sanitary inspectors, masons and artisans, community mobilizers/facilitators, or WASH/sanitation/hygiene specialists, there are no standardized job descriptions or workforce to population ratios available to guide staffing and funding decisions.

Such standards and commensurate data and workforce to population ratios do exist in some countries for the environmental health profession,[18] which, while formally part of the health sector, contributes significantly to the sanitation and hygiene sectors. Of the six assessment countries, Ghana and Nigeria have in place a classification system for environmental health officers (EHOs); furthermore, Ghana has established an EHO to population ratio of 1:700.

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[17] For its 2022 report, GLAAS collected data from 121 countries, of which 51 were from sub-Saharan Africa, and South and Southeast Asia, the focus regions of this CNA. As such, most of the 2022 GLAAS data referenced in this report focuses on these 51 countries.

[18] Ministries of health normally have a team dedicated to environmental health. Environmental health covers topics such as drinking-water safety, sanitation, air pollution, occupational health, and chemical safety. Environmental health departments need to engage with many more actors outside the health sector than other departments within ministries of health to achieve their public health objectives than other departments within ministries of health (WHO 2022a).

BOX 3. THE ZAMBIA SKILLS AND ADVISORY GROUP

The Zambia Skills and Advisory Group (SAG) – Water Supply and Sanitation (WSS) was formed in 2020 with initial support from the German Development Cooperation Agency (GIZ). The SAG brings together WASH sector actors (utilities, private sector, regulator, employers, and employees) with those from the education sector (Technical Education, Vocational, and Entrepreneurship Training [TEVET] authority and colleges) to:

- Promote water and sanitation sector skills, excellence, standards, and careers through mechanisms that will include centers of excellence, career clubs, skills competitions, and skills shows;
- Establish an incentive system (e.g., competition, gender initiatives, tracer mechanism for alumni) for continued participation of the alumni;
- Mobilize funding and make investment decisions for water and sanitation skills development provision for TEVET programs; and
- Act as coordinator of water supply and sanitation skills providers at the TEVET level.

Through regular meetings rather than time-intensive assessments, the SAG-WSS identifies skill shortages and gaps in the sector by discussing issues they face (e.g., the increased mandate for utilities to tackle on-site sanitation in rural and urban areas requiring them to identify, legalize, and strengthen skills of increasing numbers of private sector actors to support rural service delivery) and discussing the employability of recent graduates. The SAG-WSS then develops a work plan to (a) address the lack of skills, (b) ensure equity, and (c) address motivation and retention in the WASH sector.

The SAG supports an internship program at WSS utilities for students from TEVET colleges; has developed dual learning systems where students combine in-college training with practical experience with utilities or private operators; organizes annual Technical Skills Days, supports guest speakers at colleges, and "Girls Takeover Days" where female students take over utility operations to introduce them to the industry; and updates outdated curricula materials in TEVET programs in collaboration with the education regulator.

Key success factors include:

- A strong institution as the secretariat, in the form of the sector regulator, the National Water and Sanitation Council (NWASCO), which has a direct stake in skills development due to their mandate to regulate on-site sanitation in both rural and urban areas;
- The involvement of both the Ministry of Higher Education as chair and the Ministry of Water Development and Sanitation as Co-Chair, as well as the TEVET Authority as the regulator of the TEVET training colleges;
- Operational guidelines for the SAG clearly outlining roles, governance, and operational processes; and
- Synergy with existing activities of its members (for example, NWASCO's initial internship program was amplified and extended under the SAG-WSS group activities) and alignment with key sector days (e.g., International Labor Day) and conferences (e.g., the national WSS conference), which creates awareness and has attracted interest from key actors.

While overall there is improved coordination between the education sector and WASH sector actors, some concerns regarding sustainability were expressed by stakeholders. Notably, despite serving as the chairs, the ministries still exhibit limited ownership of the SAG, and continued funding post GIZ support is not yet secured. The SAG secretariat is currently working to address these concerns.

Source: Interview with Chola Mbilima (Coordinator of the Secretariat)

The study identified only one competency framework directly related to (rural) sanitation professionals. This is the Emptying Services Competency Framework (CAWST 2020), which is a general framework with broad applicability. It *is now used more as a conversational tool, to explain the broad skill/knowledge needs of emptiers, that go vastly beyond the technical knowledge on how to empty a pit* (KII Global Study; Knowledge and Training Institute).

The lack of clear job titles, clear responsibilities, and tasks is an obstacle to standardizing data collection in and across countries and developing career paths in-country. Analysis of GLAAS survey data submitted as part of the 2021/22 data collection cycle (WHO 2022a), found that only 27 of 51 countries[19] reported that the ministries involved in WASH have organizational charts available, and even fewer (21 of 51 countries) have job descriptions available.

In the six assessment countries, the team noted a lack of detailed job descriptions for some of the sanitation/hygiene-related jobs, and it was observed that some titles were used interchangeably across the countries for different responsibilities and tasks. For example, in Nepal the hand hygiene roadmap refers to the need of hygiene inspectors, which have the same role as sanitary inspectors in the Philippines. In Nigeria and Ghana, this inspector role would be assigned to an EHO, who in Nigeria would have less responsibilities than those in Ghana. In Nigeria, a sanitation inspector refers specifically to an inspector checking the FSM chain.

Another example relates to the function of community mobilization and engagement. Community mobilizers, community health (extension) workers, community development officers, and community facilitators can take on very formal roles (e.g., the World Bank introduced community facilitators as experts in community engagement and mobilization in Indonesia), or very informal ones (e.g., community health extension workers [HEWs] may or may not be trained in community mobilization and have more of a focus on curative than preventative health [Nigeria]).

The assessment found that the lack of standardization is one of the likely reasons that the sanitation and hygiene (and WASH overall) sectors are lagging on understanding, planning for, and developing clear career paths for its workforce.

In the assessment countries, limited career paths in sanitation and hygiene were found, especially in the private sector and local NGOs/civil society organizations (CSOs). Many of the NGOs and private sector companies involved in rural sanitation and hygiene sectors still base their staff contracts on projects of temporary nature and depend on DP or (I)NGO funding to cover their staff costs. This reduces the focus on career paths, as the positions are terminated upon the end of projects. Many local NGOs are small, and hence there are few positions to grow into. This often causes brain drain to (I)NGOs or other sectors, where job security is more likely and a career path more visible. This will be discussed further in Section 4.4.

Career paths in the public sector that do exist, such as for the Ghana EHOs or for civil servants in India, are generally not specific to sanitation or hygiene. In addition, WASH sector knowledge or skills are not considered in public sector promotions or shifts.

Lastly, several dynamics at play in the general labor markets (Section 2.3), affect the sanitation and labor market as well:

Reduced investment in WASH will have a direct adverse impact on the (rural) labor market by reducing the number and scale of rural programs being implemented, thereby also reducing the number of available jobs to execute those programs. In general, reduced rural development programming and reduced availability of jobs will impact household expenditure negatively, with a potential negative impact on the demand for sanitation and hygiene products and services, and thus on the business opportunities and jobs related to the provision of those products and services. At the same time, people will go where the jobs are (i.e., urban areas), making it harder to fill the rural jobs that are available with suitably qualified staff. This is further exacerbated by the observed brain drain through migration in some of the countries, especially in South and Southeast Asia. Those who are educated,

[19] Fifty-one countries in the focus regions reported on this question.

skilled, and/or certified, but do not find a job in their own country (e.g., Nepal and the Philippines), choose to migrate and send remittances home. While it is an important contribution to the GDP of a country, it is also reflecting a drain of its properly skilled and qualified workforce.

Rural areas are twice as likely to rely on informal employment, and the sanitation and hygiene labor market follows suit. Without a concerted effort from the public sector, the limited workforce is even more likely to be informal, and initiatives to formalize or certify sector roles may face complications (see Section 3.2). For example, awareness of and demand for certified labor is low in the countries investigated in this assessment. Certified workers compete with unskilled or uncertified labor, which is often cheaper. This was raised in both Nepal and the Philippines, where certification schemes for plumbers exist, but customers prefer to go with less expensive, non-certified plumbers.

3.2 SANITATION AND HYGIENE ACTORS AND JOBS

There is strong (public) sector reliance on NGOs, volunteers, and the informal sector, but the latter two have been overlooked in HR assessments.

Table 8 presents a summary of the institutions and actors responsible or available to conduct the different sanitation and hygiene functions across the six countries. While this overlooks the differences between countries, their institutional context, and actual actors on the ground, it provides a general sense of which functions have existing actors in place, and which do not.

TABLE 8. ACTORS RESPONSIBLE FOR RURAL SANITATION AND HYGIENE FUNCTIONS

	ON-SITE SANITATION	HYGIENE
Policy, strategy, coordination	Ministries (Health, Water Supply and Sanitation, Water Resources)	Ministry of Health (MOH)/Ministry of Sanitation
Regulation	-- Only starting – (e.g., District Authorities in India, Rwanda; Utilities Regulatory Authority in Rwanda)	---
Monitoring	Local government, but NGOs/CSOs often fill the gap	MOH/NGOs
Oversight and Support	Local government, but NGOs/CSOs often fill the gap	MOH/NGOs
Community mobilization and engagement	NGOs, local government – mainly volunteers	NGOs, local governments – mainly volunteers
Construction	Informal private sector (hired by households)	(Informal) private sector, NGOs
Emptying and Transport	Remote rural: none. Rural on road/rural mixed: Informal private sector. Closer to urban: combination of informal private sector, local governments, and utilities with expanded roles beyond city borders	NA
O&M (including treatment, disposal, and reuse)	Households; occasionally informal private sector	Households; occasionally informal private sector
Research and design	NGOs, academia, the private sector (latter in urban, not very likely in rural settings)	NGOs, academia, private sector (latter in urban, not very likely in rural settings)
Business development	(Informal) Private sector (including small entrepreneurs)	(Informal) Private sector (including small entrepreneurs)

There are five take-aways from Table 8 with direct relevance for the rural sanitation and hygiene sectors and workforce.

1. **There is lack of an institutional home for and ownership or prioritization of rural sanitation and hygiene by the public sector.** In all countries included in this assessment, the WASH (sub) sectors are institutionally fragmented and sector ownership is divided across multiple ministries. The Philippines country assessment, for example, clearly shows how fragmentation is impeding the sector to reach its goals because of unclear roles and responsibilities (see Box 4).

BOX 4. FRAGMENTATION IN PHILIPPINES WASH SECTOR

Sanitation and Hygiene in the Philippines is part of a greater WASH sector that is presently characterized as complex and fragmented, given the many government agencies tasked with water and sanitation mandates.

Since each agency draws its mandate from different legal directives, they implement as each perceives and understands its mandate with little coordination between and among the responsible agencies. This has caused the creation of multiple development plans and independent actions from the local implementers. Moreover, there is no central repository of information of all the initiatives undertaken by the various agencies, hence making it difficult to consolidate overall progress.

   Similarly, Table 8 displays multiple functions where informants highlighted that (I)NGOs take a lead, often to fill gaps for mandated but under-resourced local governments.

2. **As regulation has not (yet) been formulated for rural sanitation or hygiene, there are no or few actors with a mandate to regulate in this space.** This finding was confirmed by the Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS) (2022) in their report "The Water Supply and Sanitation Regulatory Landscape across Africa." As a result, there are no HR available to formally think through the complex and challenging matter of regulating the rural sanitation space, particularly concerning post-containment. Some of the countries assessed have provision for the role of sanitation inspectors or supervisors, who in some cases (e.g., Nigeria) keep track of safe disposal of solid and liquid waste.

3. **Hygiene falls largely under the responsibility of the health sector, and this often includes rural sanitation promotion.** Health sector actors can have critical functions, including integrating sanitation in (preventative) health policies, contributing to sanitation norms and standards, using health surveillance to target sanitation investment, and ensuring sanitation and hygiene facilities in health care facilities. Moreover, they often are critical actors in community mobilization, enhancing demand for sanitation, and supporting the practice of proper hand hygiene. The health actors, however, have limited staffing themselves, rely heavily on volunteer extension/community extension programs, and prioritize curative health. Therefore, community mobilization and engagement for hand hygiene often lies with NGOs and/or volunteers.

   An evaluation of community-led total sanitation (CLTS) in Timor-Leste (Government of Timor-Leste and UNICEF 2021) indicated that the rural health workforce took on the added workload to lead CLTS implementation, with the support of (I)NGOs and/or DPs who manage the programs. The same is the case in Ethiopia, where community mobilization and engagement is fully dependent on the health extension workforce (see Box 5) and in the Philippines, where the Barangay Health Workers (BHWs) fulfill this function.

In many countries, this health workforce is already facing shortages, without having to take on additional preventative tasks. In Africa, it is estimated that two million additional (paid) community health workers are needed to simply take on the curative health-related tasks (African Union 2017).

BOX 5. ETHIOPIAN HEALTH EXTENSION PROGRAM

HEWs at kebele and woreda level are paid government staff, who have completed a training program administered by the MOH. The workforce to population ratio set by the MOH is one HEW per 1,000 households, although this standard is not always met. The HEWs are strong advocates for WASH and even WASH businesses. In addition to BCC, the HEWs also connect households to the solution providers (e.g., masons, hardware stores, soap producers) and start to fill the demand activation role that businesses cannot fill themselves. But the health extension program also faces critique:

- There are up to 19 different modules (safe motherhood, nutrition, WASH, etc.), and it is unlikely that HEWs will excel at all these topics. Even so, having seen the success of the HEW program, actors are keen to add on more topics—and increased workload—for the HEWs to discuss with households.
- Not all HEWs can become sales agents and receive commission, although this may shift as the government opens up to this new role/model. But taking on larger sales agent roles may risk diverting them from their core HEW tasks.
- There are limited career paths for HEWs, and even where there are opportunities for promotion, there are only limited numbers of higher-level positions available. The MOH is recognizing this and has more recently started to look at options. Possible options could also include reward schemes or incremental salary promotions within positions.

Source: KII, national-level DP

4. **In rural areas O&M of on-site sanitation facilities is the responsibility of the household, and for shared toilets or handwashing facilities the O&M needs are addressed through a community-based system.** Typically, once the on-site facilities are in place it is up to the household(s) to maintain them, keep toilets clean, manage full pits, keep water running, and ensure soap is available. For more complex repairs or pit emptying services they may turn to informal service providers, where these exist and if households can afford this. While (project-driven) community participatory approaches have been vital to increase community and household engagement and ownership of sanitation and hygiene matters, the post-project support has often failed due to a lack of institutionalization in local governments, to the detriment of system and facility continuity.
5. **There are no or few actors to address emptying, transport, and disposal/reuse of fecal sludge in rural areas.** Emptying and transport services are rare but where they exist, they are provided by a mix of (informal) private sector, local governments, and in some cases, urban service providers with a mandate to service nearby peri-urban/rural mixed zones (UK Aid, Ernst and Young, and Unilever 2022.). In rural areas, depending on context and culture, pits are simply abandoned or emptied by households and the contents either dumped or spread on local fields. For example, in Nigeria, farmers that wanted to move away from expensive chemical fertilizers became the pit emptiers and reused the waste directly on their fields.

Overall, with the limited number of formal institutions responsible for the necessary functions, there also are limited numbers of formal jobs created (Table 9).

TABLE 9. JOBS FOR RURAL SANITATION AND HYGIENE PER FUNCTION IDENTIFIED BY KIIS IN THE SIX COUNTRIES

	ON-SITE SANITATION	HYGIENE
Policy, strategy, coordination	Civil/Environmental Engineers	Senior EHOs, Public Health Engineers, Medical doctors
Regulation	None identified	None identified
Monitoring	Project Monitoring and Evaluation Officers, Sanitation Inspectors, Community Health Workers, Enumerators	(Environmental) Health Officers, Sanitation/hygiene inspectors, Community Health Workers, Enumerators
Oversight and support	Sanitation Supervisors, Sanitation Inspectors, Officers	Health Officers, EHOs
Community mobilization and engagement	Community Development Officers, (CLTS) Facilitators, HEWs, Community Health Workers, or in NGOs: Specialists	Community Health Workers, Teachers, Religious Leaders, or in Hygiene Specialists in NGOs
Construction	Mason, artisan or household/community member.	Mason, artisan, or household/community member. Registered mason for public spaces. Borehole drillers
Emptying and transport	Remote rural: Farmers or no one Closer to urban: Truck owners, (manual) pit emptiers	NA
O&M (including treatment, disposal, and reuse)	Artisans/Masons Treatment and reuse: Farmers	Artisans/Masons for handwashing facilities
Research and design	(Academic or private sector) researchers, private entrepreneurs	(Academic or private sector) researchers, private entrepreneurs
Business development	Sanitation entrepreneurs (truck drivers, emptiers, masons, hardware store owners), business development service providers	Soap producers, Innovators (handwashing technologies)

With the limited formal institutional role in many of the functions together with a higher level of responsibility for households/communities and the informal workforce, there is an almost de facto dependence on low-level skilled workers and NGOs. This holds especially true for community mobilization and engagement, as well as construction, O&M, and post-containment functions.

Higher skill levels are expected of those in local government positions of oversight and support or monitoring (e.g., a degree or diploma), but while important, these positions are not always filled. In the Philippines, for example, there are dedicated local government units (LGUs) for water supply and sanitation, but they have limited dedicated staff for on-site sanitation specifically. In Nepal, after a sweeping federalization process, currently only 77 of the 753 municipalities have a WASH unit in place, and within these, a limited focus on rural sanitation. In Ghana, the positions in Metropolitan, Municipal, and District Assemblies (MMDAs) are not always filled because of their high reliance on limited external funding.

Even monitoring and oversight and support functions in the rural sanitation and hygiene sectors can largely depend on NGOs/CSOs that bring in staff funded externally or mobilize/support volunteers—even those related to government schemes. In the Philippines, the volunteer BHWs have monitoring responsibility. In Nepal, which has started to implement the National WASH (NWASH) system for monitoring, the head of the NWASH program indicated that *The monitoring capacity is low, and DPs have had to come in to perform that work. Even for them to accurately monitor and report on data, there is a need for training on the system we use. Many of my team members spend hours and hours to clean monitoring data.*

The responsibility for research and (technology) design across the assessment countries rests with academia, research institutes, donor-funded projects, DPs/(I)NGOs, and for the rural technologies, potentially small-scale innovators. Primarily, the professionals who fulfill these roles have a technical education either in sanitary engineering, environmental sciences/engineering, environment and development, public health science/engineering, and possibly in sociology, anthropology, and behavioral sciences (as mentioned in several KIIs).

The business development support function is currently executed mostly by donor-funded projects. In these projects, educated professionals from business administration, marketing, sales, and law/governance/supply chain management are brought in and introduced to the sector to strengthen capacity and viability of sanitation enterprises and work with governments and other stakeholders (e.g., the financial sector) to create enabling business environments.

In conclusion, while skilled and/or professional positions are needed across all functions, community mobilization and engagement, construction, emptying and transport, and treatment, disposal, and reuse (where applied) are highly reliant on unskilled or semi-skilled workers and volunteers. These often are not considered professionals (e.g., in the 2014 IWA study these jobs were excluded) but should be recognized as important workers and contributors.

4.0 ACTOR ROLES AND HUMAN RESOURCE CAPACITY

Section 3 highlighted the key actors in the sector and some of the discrepancies between the roles they are expected or mandated to play and those they play in practice. This section discusses in more depth the existing HR capacity, HR-related barriers, and dynamics per type of sector actor, i.e., the public sector (Section 4.1), community/volunteers (Section 4.2), private sector (Section 4.3), and DP/[I]NGO (Section 4.4), and it concludes with some reflections on the role and position of sanitation workers (Section 4.5).

4.1 PUBLIC SECTOR ROLES, FUNCTIONS, AND HUMAN RESOURCE CAPACITY

(Local) government is mandated but under-resourced, and women and youth are underrepresented in public sector sanitation and hygiene jobs.

- There is **decentralization without appropriate allocation** of decision-making authority and human and financial resources.
- **Employees are overburdened** and little consideration of their existing workload is given before adding more responsibilities.
- **Recruitment freezes/quota** limit local government capacity to hire needed HR and bring in younger staff.
- **Unattractive remuneration and work conditions** do not attract a skilled workforce.
- **A lack of recognition of potentially qualified workers, staff rotation schemes, and a lack of understanding of SMS and the types of staff and skills required for rural sanitation programming** all contribute to a lack of local HR capacity for sanitation and hygiene.

The public sector should focus on policy, strategy, and coordination; regulation; monitoring; and oversight and support functions. Challenges to performing these included the lack of clear leadership and ownership, which multiple informants identified as a key reason why many countries still lack a hygiene strategy, policy, or roadmap; the limited or nonexistent presence of regulation for sanitation and hygiene in rural areas; and the limited (decentralized) HR capacity dedicated for these functions.

The reliance on community-based WASH mobilization approaches, and the role of local government in conducing the oversight and support function for rural sanitation and hygiene are topics of ongoing sector debate. There are two issues at play here: First, the fact that government roles such as oversight and support, community mobilization and engagement, and to some extent O&M are currently carried out, at least partially, by volunteers and community systems (and O&M often by households themselves). A review by WaterAid (2021a) discussed various water and sanitation studies that highlighted the lack of sustainability of such community-based systems without a strong enabling environment, post-construction support (both technical and business support), and existence of financial schemes. Key informants agreed that the oversight and support role of the local public sector should be much larger than is currently the case in many countries. Second, the fact that roles that ideally would be paid, such as oversight and support, are carried out by volunteers instead. For example, Swachhagrahis in India conducting monitoring on household sanitation status and reporting to district officials, or BHWs in the Philippines fulfilling roles ideally conducted by sanitary inspectors

Yet, the reality is that the public sector, especially at the local level, does not have the financial resources to perform all these functions through paid positions. This scarcity of jobs (and resources) was flagged in the IWA (2014) study and confirmed in this assessment. While, in the last decade, governments such as Nepal, India, and Nigeria have implemented national-level ODF campaigns and stimulated sanitation and hygiene job creation at the local level (Box 6), existing levels of available jobs are still significantly below the estimated need (also see Section 5.1).

BOX 6. INCREASE IN JOBS AT THE LOCAL LEVEL IN INDIA AND NIGERIA

India

During SBMG Phase 1, five volunteers (*Swachhagrahis*) per Gram Panchayat (GP) were mobilized and engaged across India (5 x 250,000 villages = 1,250,000 volunteers). They were paid results-based stipends based on the number of households that constructed a toilet.

In the State of Bihar, over 72,000 masons were trained during Phase I in the construction of toilet facilities, and just under 42,000 *Swachhagrahis* were mobilized. Under SBMG, there was one district coordinator per district (38 total), and one block coordinator per block (534 total). This was extended under SBMG Phase II by adding a sanitation supervisor per GP (8,387), and two sanitation workers per ward (about 200,000).

In addition, there are 146,000 elected Panchayat functionaries in Bihar who contribute to SBMG as part of their efforts, and a large field force of Accredited Social Health Activists, Anganwadi Workers, Auxiliary Nurses and Midwives, School Teachers, and *Swachhagrahis*, who can lead the sanitation and hygiene interventions in the state.

Nigeria

In 34 of 36 states, Rural Water Supply and Sanitation Agencies (RUWASSAs) have been formed (these serve as project implementation for the state ministries), and WASH units have been established in about 20 percent of the local government authorities (LGAs). This has resulted in the creation of new positions for EHOs in the form of community mobilizers, sanitation officers, hygiene officers, and officers supporting project monitoring and evaluation and overall coordination in RUWASSAs and LGAs.

In Nigeria, 80 percent of the LGAs still need to establish WASH units, and the LGAs with WASH units reported that they need to upgrade the skills of their staff for them to be able to perform their jobs. **In Ghana**, where the workforce-to-population ratio for EHO to population served is meant to 1:700,[20] the assessment found that on average, each EHO is serving at least about 4.5 times more people.

In Nepal, in spite of the disruptions in the public sector caused by the transition to a federal system in 2015, the government, through a combination of mandates, inter-sectoral coordination, and government leadership, managed to deliver an effective national-level ODF campaign. During this campaign, there was no direct increase in job positions at the local level, but volunteers (social mobilizers, CLTS facilitators or "triggerers"), NGOs/community-based organizations (CBOs), and the Water and Sanitation User Committees (WSUCs), played a prominent role in the ODF movement. While some NGOs paid social mobilizers, most of the grassroots HR worked as volunteers. At the time of the assessment, only 77 of 753 municipalities had a designated WASH focal point. The federal government is to address this by transferring budget upon completion of a municipal WASH plan. Yet, because of the lack of skilled WASH staff at the municipal level, many municipalities are behind on the development of these plans.

In the Philippines, there is no dedicated government unit at the local level that focuses specifically on sanitation and hygiene. It is a shared function and the responsibility of one or more local agencies or organizations, including the Local Water Utilities Administration, LGUs, and Metropolitan Waterworks and Sewerage. The workers dealing with sanitation and hygiene, such as the sanitary engineers, sanitary inspectors, and the BHWs, are spread across these agencies. In addition to sanitation and hygiene, this workforce addresses other concerns like nutrition, vaccination, population control, food safety, disease-prevention, etc. While our key informants felt that each of the 42,000 barangays (lowest level of local government) should have at minimum one sanitation inspector, there are currently only 2,700 sanitation inspectors throughout the country, and they are unevenly distributed.

[20] Standard provided by MOH.

In all of the LGUs, municipalities, or villages, except in India, it was indicated by the key informants that the local public sector workforce capacity for sanitation and hygiene is far from what it should be, with an often overburdened, underfunded, and under-skilled workforce.

4.1.1 BARRIERS AND FACTORS AFFECTING LOCAL GOVERNMENT WORKFORCE CAPACITY

There are numerous barriers or factors that prevent having an adequate number of qualified staff in the local workforce. Those most directly linked to the local government level are noted below.

1. Limited funding available to hire the required staff

This is the most prominent barrier. In many cases, as stated by one of the key informants: *80-90% of budgets are already spent on HR and no more budget is available to expand* (KII Global Study, Multilateral Partner). There may also be ghost workers in place (IWA 2014), and in general, local governments have limited sources of revenue.

2. Recruitment freezes or quota

With limited sources of own revenue, local governments are dependent on central government budgets, and consequently have to deal with recruitment freezes or quotas set at higher levels, as illustrated in Ghana and Nigeria (Box 7).

BOX 7. RECRUITMENT FREEZES IMPACT PROGRESS

Ghana

During the finalization of the Ghana Government Budget in November 2022, the Government of Ghana (GOG) announced a hiring freeze for the public sector for 2023, which will severely limit the ability of local MMDAs to hire needed staff. It also may affect establishment of a National Sanitation Directorate.

Nigeria

Due to repeated hiring freezes since 2013, many states have not been able to recruit into the civil service, specifically for offices relating to sanitation and hygiene. This has resulted in an aging workforce and an inability to fill in behind retiring workers.

3. Decentralization

In most assessment countries, decentralization has shifted the responsibility of ensuring delivery of sanitation and hygiene services fully to local governments. Yet, this decentralization often occurs without appropriate allocation of the decision-making authority on human and financial resourcing, and the tasks transferred by far exceed the HR capacity of local governments.

Decentralization may also occur without adequate support or guidance to the newly mandated local bodies. In cases where local governments have not had sanitation and hygiene responsibility before and/or lack expertise, a lack of guidance from national government may result in the local governments not knowing what HR is needed, or what provisions are available (Box 8).

BOX 8. DECENTRALIZATION WITHOUT PROPER DELEGATION OF DECISION-MAKING

Nepal

In Nepal, the Ministry of Federal Affairs and General Administration is responsible for all HR matters and will recruit on behalf of the provinces and municipalities. While the provincial and municipal governments now have formal and increased mandates to ensure water and sanitation services, 46 percent of public sector sanitation and hygiene staff are still based at the federal level. This is partially due to a lack of interest of federal staff to be transferred to provinces or municipal offices, aggravated by a lack of civil recruitment acts that prevented

BOX 8. DECENTRALIZATION WITHOUT PROPER DELEGATION OF DECISION-MAKING

provincial or municipal levels from having the authority and required knowledge to hire new staff, resulting in many vacancies left open.

India

India has guidance materials and financial provisions for districts to tap into when hiring staff and taking action on Phase II of SBMG. During the assessment, however, it appeared that not all district officials were aware of these provisions and guidelines.

4. Unattractive remuneration packages and working conditions in the public sector and in rural areas

Another challenge with the public sector is that the conditions of service are often unattractive, and this appears to be worse in sanitation and hygiene-related occupations. This is characterized by low salaries and limited secondary benefits, particularly in rural areas. The Nepal assessment highlighted, for example, that the lack of road access, education opportunities for children, and health care services were reasons for staff not wanting to work in rural (remote) areas.

Remuneration was identified as an obstacle by IWA (2014), noting that remuneration was lower in rural areas of Niger and Ghana than in urban areas, and that salaries could be up to five times higher in the private sector than in the public sector in Lao PDR. It was noted that even within the public sector itself, remuneration for those working on environmental health (sanitation) can be worse than for those in other sectors (Box 9).

BOX 9. EXAMPLE OF POOR REMUNERATION IN THE PUBLIC SANITATION SECTOR

Ghana

The assessment team identified that staff within the EHO grade[21] in the MMDAs have lower benefits than counterparts in other parts of the public sector. In the health sector, market premium (an allowance paid to health workers in short supply (Asamani et al. 2021, GOG 2009) for degree holders is pegged or calculated at 65 percent of their monthly salary and those for diploma holders are pegged at 58 percent of their monthly salary. However, in the local government service, the premium is pegged at 15 percent, which is equivalent to lower-level staff (e.g., laborers or security personnel) in the MOH. This makes the health care sector more attractive for licensed EHOs.

5. Lack of recognition of potentially qualified workers

There is a lack of formal recognition (especially in the public sector) of workers who learned through experience, apprenticeships, and on-the-job learning, rather than through formal education. Many of the local jobs in sanitation and hygiene are, in fact, carried out by people without formal qualifications, but for jobs in the public sector, qualification tends to be more important than years of experience. This has an impact on the workforce available to be hired as public sector staff, but also those hired by the public sector as (private sector) contractors. It also limits promotion opportunities for those starting as volunteers and hoping to be formally recruited into the local government system, as was found in India and the Philippines.

6. Rotation

Another barrier in the public sector, sometimes aggravated by political or institutional instability, is that employees may be in posts for short periods. Where rotation is more systematic, it is not always

[21] Currently in Ghana, the Ministry of Sanitation and Water Resources manage the EHOs working on sanitation and hygiene. They are no longer under the direct responsibility of the MOH.

conducted based on competencies (knowledge, skills, and abilities), or necessarily within the WASH-related sectors, i.e., otherwise qualified staff may be rotated out of the WASH sector.

7. Low priority for sanitation and hygiene and work overload

In all assessed countries, solid waste management, roads, and construction were felt to have priority over sanitation and hygiene. Within WASH, water is prioritized over sanitation and hygiene. As a result, in places where local government staff is involved in many sectors, time for sanitation is deprioritized. At the same time, across most assessment countries it was felt that local government staff and community health workers (paid or unpaid) face an overload in work (see Box 10), and little consideration is given of existing workload before adding more.

BOX 10. EXAMPLES OF WORK OVERLOAD

High number of topics for community health workers to cover

In the countries of this assessment, the high number of topics and large geographical areas needing to be covered were highlighted as a concern. In Ethiopia, it was indicated that HEWs have to cover at minimum 20 modules/topics.

Sanitary inspectors and block coordinators having to cover too wide of a geographical area

In the Philippines, discussion in the validation workshop highlighted that the lack of available sanitary inspectors means the existing group has to cover areas much too large to be feasible. In Nigeria, to illustrate, the sanitary inspector in one of the LGAs visited by the assessment team indicated the need for at least 10 more staff to cover the geographical area for which he was responsible.

In India, there is approximately one block coordinator that manages *Swachhagrahis* in all the GPs in one block. He/she monitors the SBMG Phase II in these GPs and manages sanitation supervisors. In Banka District in Bihar, one block coordinator is responsible for approximately 192 GPs (which consist of on average 12–13 wards) with a total population of approximately 184,500. The assessment showed that each block would need an additional block coordinator to manage the coordination and oversight tasks.

Training

An increasing number of DP/INGO-funded programs implement through existing public sector staff or volunteers, thereby inadvertently adding workload. This includes the need for careful consideration before offering trainings and workshops, as "*there are many staff that are running from workshop to training organized under projects, and that end up having to do their regular work on the weekends"* (KII Global).

8. A lack of understanding of SMS

Stakeholders in multiple countries, including Ghana, Nigeria, Rwanda, and the Philippines, reported a lack of government-level prioritization of post-ODF activities, affecting the HR capacity dedicated to these tasks. The assessment identified that a lack of understanding of what SMS means, especially at the rural level, is one of the reasons for governments to neglect or not incentivize or focus on post-ODF actions. This then limits their ability to plan for, develop, and capacitate a workforce capable of addressing SMS services (Box 11).

BOX 11. MISSING INCENTIVES TO ACT ON POST-ODF ACTIVITIES

In Nepal, where the government prioritized and took concerted action to reach national ODF status, it has failed to incentivize action for post-ODF activities. Also, the volunteer workforce taken on in the ODF campaign are no longer active (or their whereabouts are unknown), and most municipalities do not yet have WASH units. As a possible consequence, the Nepal assessment references several small-scale studies that have shown slippage in the use of improved sanitation facilities of between 25 and 44 percent.

9. A mismatch between policy/strategy needs and skills

Those responsible for rural sanitation strategy development may not always have the right skill sets and understanding of the types of interventions that rural areas need. In many countries, as was highlighted in Nepal and Philippines, a large proportion of the federal-level staff with responsibilities in the sanitation and hygiene sectors are (civil) engineers. Key informants argued that the strategies these engineers develop tend to have a focus on infrastructure development and are oftentimes biased toward both urban areas and sewered systems, and the more complex design of water infrastructure. To ensure policies and strategies are inclusive of social and behavior change considerations, as well as gender equality and social inclusion (GESI), the informants noted that a wider diversity of staff is needed at central levels.

The African Sanitation Policy Guidelines (AMCOW 2021) provide guidance on the capacity needs for those responsible for the strategy and policy function (see Box 12). The Policy Guidelines additionally raised the general need for those working in governance to understand the importance of sanitation, and its relationship to health, sanitation (concepts) and options, viability and business finance, costing structures, legal instruments, and monitoring systems.

BOX 12. AFRICAN SANITATION POLICY GUIDELINES HIGHLIGHT POLICY CAPACITY NEEDS

The African Sanitation Policy Guidelines describe the policy function as including the following tasks:

- "to assess the adequacy of existing sanitation policies and how effectively these are translated into action to improve sanitation services for all, and particularly for vulnerable members of the population" (19);
- "to do stakeholder engagement in policy creation process" (22); and
- "drive forward policies for change: e.g., tackling equity and inclusion issues; settlement types or geographic areas to be prioritized; eliminating economic and social discrimination in provision of sanitation services; meeting the needs of women and vulnerable groups; meeting the sanitation and menstrual hygiene management needs of girls in and out of school, and of women in health facilities and public places; and safeguarding health and safety and the rights of sanitation workers" (33).

4.1.2 OPPORTUNITIES CONCERNING LOCAL GOVERNMENT WORKFORCE CAPACITY

In addition to the above barriers and factors negatively affecting the local government workforce, the assessment also identified a few opportunities to stimulate it:

1. **National government incentives can have a positive impact on staffing local sanitation and hygiene positions.** In Nepal, the government shifted responsibilities for WASH from the district to the municipality level. Despite the challenges faced by municipal governments to develop an NWASH plan (as noted earlier), the federal government uses these plans to incentivize municipalities. Municipalities are expected to deliver an NWASH Plan (based on a provided template) to receive budget for its implementation and affiliated HR. The (presence of a) plan also determines which municipalities receive capacity development on data collection, the NWASH (national WASH monitoring) system, and monitoring, organized by the federal NWASH team. In India, the introduction of SBMG Phase II was accompanied by clear guidelines and provisions,[22] as well as a set of incentives to stimulate uptake of these guidelines and provisions by states and districts, including different types of competitions, monitoring/benchmarking processes, and sharing and acknowledgement of progress among states or district officials. In the Philippines, the drive to attain Zero Open Defecation status inspired some LGUs to set aside some of their own funds to

[22] Provisions are specific budgets set aside for a particular purpose, which the districts may make use of.

motivate their employees to do better (e.g., allocating bigger allowances to BHWs if through their efforts an LGU can attain Zero Open Defecation status).

2. **Job security in the public sector can be a significant motivator in spite of lower salaries.** In Nigeria, staff at LGA or RUWASSA level did not seem dissatisfied with their remuneration packages, although the assessment did not capture the actual salary levels or secondary benefits. A key informant reported that in Cambodia, public sector jobs are highly sought after and competed for (KII Global) because they offer both job security and a network to support independent consultancies.

4.1.3 GENDER AND YOUTH IN THE PUBLIC SANITATION AND HYGIENE SECTORS

Females are underrepresented in the public sanitation and hygiene sectors in most of the assessment countries. While disaggregated sector data is limited in Nepal, the government's civil service data (World Bank and United Nations Development Programme 2019) indicates that of the total gazette and non-gazette staff, only 12 percent and eight percent are female, respectively. Detailed disaggregated data is not available at the province level and no province has a comprehensive GESI policy.

The GLAAS 2022 survey noted that in 56 of 109 reporting countries, between 10 and 49 percent of government WASH positions are held by women, with 23 countries reporting that women held less than 10 percent of the positions. The Philippines assessment also noted that women are more likely to take on volunteer positions than men, as usually male heads of household are expected to take on paying jobs, with security of tenure.

In Ghana, the gender distribution of EHOs is generally balanced at the district level, but there is gender disparity at regional and national levels. Female staff numbers decline from an average of close to 50 percent at the district level to less than 15 percent at the regional level (see Figure 5), and to less than 5 percent at the national level.

Figure 5. Gender Distribution of EHO in Ghana at District (Left) and Regional Offices (Right, RCC is Regional Coordinating Councils) (Ghana CNA)

In Nigeria, the assessment of the sample of WASH units in LGAs showed that women constitute 32 percent of this public sector workforce (Figure 6). Informants mentioned possible reasons for this being the generally lower educational attainment of women and the absence of domestic help. Notably, the number of male staff were higher in regions more heavily supported by DPs, indicating that DPs have not necessarily had a positive impact on GESI recruitment considerations of local governments.

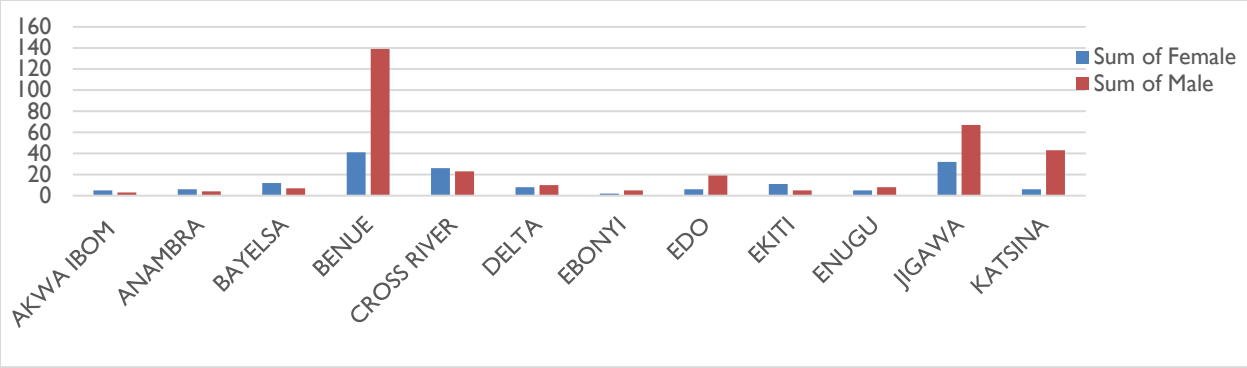


Figure 6. Gender Distribution in Selected LGA WASH Units, by State Nigeria (Nigeria CNA)

In Bihar, India, the state government sought to increase the participation of women in various public sector positions. It was the first state in the country to reserve 50 percent of positions in Panchayat Raj Institutes (PRIs, the combined local government institutions) for women. While the assessment was not able to confirm exact numbers, informants stated that a substantial number of the PRI functionaries—including those in sanitation—are women. Furthermore, the Government of India guidelines in SBMG Phase II highlight that each village should ideally have at least one *Swachhagrahi*, with preference given to women candidates.

Youth are underrepresented in the public sanitation and hygiene sectors. In countries where there is less youth engaged in the workforce overall, the same holds for public sector positions for sanitation and hygiene staff. In Nigeria, analysis of data in 28 WASH units in LGAs revealed that only 14 percent of staff are below the age of 35 (and would be lower if youth is defined as 15–24 years of age). Most staff in RUWASSAs are 40 years or older. Additionally, the Nigeria assessment showed that a lack of recent hiring and replacement of staff upon retirement in the public sector at state level has resulted in many vacancies and could potentially contribute to a poor transfer of skills from the older generation to the next, as well as loss of institutional memory.

4.2 THE ROLE OF THE COMMUNITY AND VOLUNTEERS

Dependence on volunteers is high and often essential, but programs, remuneration, and motivations vary and affect sustainability and quality of volunteer contributions.

The role of the community in rural sanitation and hygiene is important, with communities, households, and/or volunteers fulfilling multiple functions. For example, O&M of sanitation and handwashing facilities in the household dwelling is the responsibility of the household; the emptying and reuse of fecal sludge is managed mostly by households and/or farmers for reuse on their fields; and the community mobilization and engagement role (for CLTS and social and BCC messaging, for example) is highly dependent on community volunteers. Engaging community volunteers in the realization of community sanitation and hygiene goals strengthens the sense of ownership and empowerment and makes use of the close cultural connection of the community volunteers to those that need to be engaged but is often born out of necessity. The limited numbers of local government or NGO/CSO staff are generally not able to reach the entire population in an area.

Many countries have been able to mobilize vast numbers of volunteers directly to support sanitation and hygiene functions. For example, the assessment in Nigeria found that on average, an LGA of about 300 villages will have an estimated volunteer force of between 3,000 and 4,500 WASH committee (WASHCOM) members, including natural leaders. There is also a large number of volunteers who are mobilized in related sectors but are active in sanitation and hygiene promotion. For example, the

Community Health Clubs promoted by the health sector in Rwanda have an important role in sanitation and hygiene promotion, and the community mobilizers in Timor-Leste who work in health (nutrition and education) but are assigned the task of facilitating CLTS sessions (Government of Timor Leste and UNICEF 2021).

In nearly all countries of the assessment, we found presence of a formal government-led volunteer program that works on sanitation and hygiene-related subjects (see Table 10). While Ghana indicated not to have an official volunteer program with this focus, it has a volunteer extension system for the health sector, and a large number of volunteer groups organized under NGOs, foundations, rotary clubs, etc. Overall remuneration (for example, in the form of stipends and reimbursement for certain expenses) and motivations vary, but most will be a combination of giving back to the community, status, the ability to grow/learn, and with a lack of formal jobs, the ability to have some income.

TABLE 10. GOVERNMENT-LED VOLUNTEER PROGRAM, REMUNERATION, AND MOTIVATION

	GHANA	NIGERIA	RWANDA	INDIA	PHILIPPINES	NEPAL
Government program	X	✓	✓	✓	✓	✓
Remuneration	No	Travel allowance (only at LGA)	Travel allowance	Output-based stipend	Stipend	Travel allowance (community mobilizers)
Motivation	Giving back to community	Giving back to community, prestige, status	Not Available (NA)	Status, hope for a job, remuneration	NA	Status, giving back to community, remuneration

The higher presence of volunteers (and the quality of their skillsets) in an area seems to be correlated with the presence of DPs/INGOs either because they or their programs pay for or second volunteer positions (e.g., the World Bank in Indonesia who reimbursed community facilitators at village level) or provide the stipends/travel allowance for the volunteers (e.g., in Nigeria at LGA and RUWASSA level). In Rwanda, the existence of Community Health Clubs and their level of activity coincides with the presence of INGOs. Also, the quality of skillsets of the community mobilizers/engagers often is correlated with the presence of DPs/INGOs as these provide training or capacity development initiatives and opportunities.

In any program that makes use of volunteers, there is a need to provide continuous guidance and direction to volunteers to make progress against targets, guide volunteers toward those areas that are not progressing well, provide capacity development where it is needed, and manage any type of stipend payments. It was observed that despite the presence of government volunteer programs, this "volunteer coordination" role is currently not institutionalized in any of the assessment countries (except for India), and hence there is an overreliance on NGOs to perform this role.

Incentives and/or remuneration are essential to maintaining volunteer engagement. In India, a large percentage of *Swachhagrahis* stayed active for at least a year after receiving their last stipend. The volunteers indicated they either hoped to be considered for government jobs (e.g., as sanitation supervisors) or to be re-engaged in activities that were (partially) remunerated. However, the SBMG also unnecessarily lost quite a number of *Swachhagrahis* in the transition to SBMG Phase II, due to the local governments finding it difficult to determine remunerable outputs beyond the Phase I focus on the construction of toilets, which could be easily measured, and stipends paid accordingly.

In Nigeria the assessment found that members of WASHCOMs who are not receiving any type of travel allowance indicated a level of volunteer fatigue. Whereas initially their motivation lay with the

opportunity to improve things in their community and the potential status and training opportunities linked to WASHCOM membership, they no longer see new opportunities or benefits. They indicated that there is no opportunity to develop this into a career, there is a lack of remuneration, and that training opportunities and attention have started to disappear.

Overall, the country assessments highlighted that there is no choice but for programs and governments to depend and rely on volunteers. The public sector has limited funding available to hire the necessary workforce to take on functions, such as community mobilization and engagement, O&M, and continued oversight and support. Volunteers are needed and can be highly capable in implementing their tasks, but may differ in quality of skills, level of activity, and duration of engagement. Many volunteers require a support structure, guidance, and continued capacity development to effectively carry out their tasks. Additionally, volunteers need appropriate levels of benefits and/or remuneration to continue over the long run. As such, some of the country assessments pointed to opportunities to interact with or build on other (more advanced) extension programs, such as maternal health and child development extension programs and agricultural extension programs, the latter particularly to inform proper reuse of waste in rural areas.

4.3 PRIVATE SECTOR ROLES, FUNCTIONS, AND HUMAN RESROURCE CAPACITY

The role of the private sector is still limited and largely informal with most countries lacking an enabling business environment for the sanitation and hygiene sectors, and private sector actors need capacity on sanitation technologies and entrepreneurship.

There are many functions in which the private sector plays a role, such as design and construction (handwashing technologies and toilet facilities), emptying and transport, O&M (mostly when considering treatment and reuse), business development (soap producers, sanitation/hygiene innovators), financing, and consultancy and training. The formal private sector engagement focuses heavily on large infrastructure development projects (e.g., water/wastewater treatment plants, public buildings, and increasingly also FSTPs), O&M of piped water supply and sewerage systems, financing, and consultancy. In India, for example, large consultancy companies have jumped at the opportunity to support the government in an advisory capacity on the SBMG.

But the role of the private sector in rural areas is still limited and largely informal, especially in situations where households are the clients and the facilities are located on individual household dwellings. These are mostly small construction projects without formal contracts, and long term-maintenance is not standard.

Our assessment illustrated that the interest of the informal masons and artisans is also not necessarily in toilet construction itself, due to the low amount of labor that can be charged. Their indicated preference is to work on larger construction projects (e.g., house construction) or being hired by the formal private or public sector for construction of public spaces, even though their ability to react to tenders is limited due to their informality, size of the organization, and lack of formal registration. In Ghana, the assessment revealed that these informal masons or artisans will still be hired as sub-contractors by the more formally registered private sector who are able to win MMDA contracts.

The informal workforce focused on construction (i.e., artisans, masons) have learned their technical skills largely from apprenticeships, on the job, from their neighbors, or may have taken a relevant TVET course, but were generally felt to have some knowledge and skills gaps. Some have learned through many years of experience, and "*one has to question whether education or experience counts more toward becoming a professional*" (KII Global study, Regional Training Center). Yet, multiple informants pointed to a lack of knowledge on available technological options, requirements, and materials to ensure safe construction. And beyond the technical competencies,

transferrable knowledge and skills identified to be missing were largely focused on entrepreneurship (e.g., understanding the supply chain, business set up, financial and contract management, sales and marketing).

In rural areas, there are very few if any workers focused on emptying and transport of fecal sludge, as the demand for these services has yet to materialize to a point that would attract businesses. Most often, pits that are full are abandoned and new pits are dug. Even in cases like India, where large numbers of toilets have been constructed in recent years, informants indicated that the demand for emptying is simply not there yet. This is an issue that should be planned for. In Nepal, two municipalities followed different models for FSM. In one, the private sector was fully in charge of pit emptying; in another, the municipality purchased trucks and hired (external) staff to respond to customer needs, mainly because the (unregulated) private sector service providers had been sharply overcharging for their services. In general, there is scope to explore the role of (urban) utilities to fulfill this function in adjacent rural areas, but this would require training and additional HR (UK Aid, Ernst and Young, Unilever 2022).

The skills and knowledge needs for pit emptying businesses are broader than knowing how to safely empty the pit. Accordingly, the pit emptier competency framework developed by CAWST (2020), highlights four areas of focus: O&M, finances, business administration, and stakeholder engagement. Our assessment found that the identified knowledge and skill gaps related to the emptying and transport function were mostly around the issue of understanding the tools, technologies, and health and safety measures available to ensure safe practices; planning skills linked to scheduling emptying routes and services in the most efficient way; and entrepreneurial skills such as business management, bank language (to raise capital), sales and marketing, and accounting.

Overall, informants felt that there is not yet enough market demand for the private sector to be a sustainable and sizable provider of formal job opportunities in sanitation and hygiene. Greater public sector investment is required in the development of enabling business environments to accommodate an increased role for the private sector in sanitation and hygiene services. The assessment found, however, that the public sector lacks private sector engagement skills, knowledge on how to design contracting mechanisms, and understanding of contracting cycles, procurement processes, and proposal evaluation.

Most efforts to research and increase private sector participation, formalization, and skills of those involved in the informal private sector are currently fully funded and supported by INGOs and DP projects. Some examples are listed in Box 13.

BOX 13. DEVELOPMENT PARTNER SUPPORT TO THE PRIVATE SECTOR

Ethiopia

USAID Transform WASH has undertaken market analysis and a range of demand creation and activation activities, as well as supporting entrepreneurs to build their businesses (using Sanimark centers originally conceived under a World Bank project to support centers for entrepreneurship development in both business and technical skills). They actively engage with the government to build a more enabling business environment, including through reducing import tariffs and piloting subsidy models, and to capture learning and inform adaptive management.

Ghana

The GOG with UNICEF support is in the process of setting up a certification scheme to help artisans progress in their career. This is a scheme to build capacity through a licensed artisan program where artisans, based on the level of certified work done, could rise through the ranks to become highly qualified or chief artisans. Initial certification will be based on training programs undertaken by selected NGOs or training organizations. Following these initial trainings, the artisans are certified to construct and then MMDA staff (engineers and

BOX 13. DEVELOPMENT PARTNER SUPPORT TO THE PRIVATE SECTOR

EHOs) will inspect and undertake quality assurance of works done. The artisans can then progress based on the quality of work and numbers of latrines constructed.

Africa-wide

The Bill & Melinda Gates Foundation has supported the African Water Association (AfWA) in the development of the Pan-African Sanitation Association (PASA). PASA brings together a large number of associations of sanitation workers or pit emptiers across the continent in an effort to professionalize the sanitation workforce. PASA supports sharing experiences and learning and joint advocacy, with the aim of creating a synergy in the interventions of private sector sanitation actors for the development of the sanitation sector in Africa. The Association *has the power to create a global stage for pit emptier professionals, and functions as a major incentive for people to work in this unsexy sector* (KII).

4.4 THE ROLE OF DEVELOPMENT PARTNERS AND (I)NGOS

DPs play key roles and positively impact local investment in HR, but also disturb local systems and processes through projectized approaches, fomenting a brain drain to (I)NGOs and DPs, and implementing in uncoordinated, misaligned capacity development efforts.

As indicated in Section 3.2, NGOs, INGOs, and DPs fill, support, and/or fund many of the functions related to monitoring, oversight and support, and community mobilization and engagement. DP support is also significant in policy, strategy and coordination, and regulation. They also are important drivers for supporting private sector participation.

Strikingly, the functions supported by INGOs and DPs represent the "soft" skill sets, versus technical skills such as civil engineering or medical doctors. With the exception of India where local government structures take full responsibility for monitoring, oversight, and regulatory functions, the other countries in our assessment rely heavily on partners to supply or support staff and capacity development for: (1) community mobilization and engagement; (2) monitoring, oversight, and support; and (3) the support needed to engage the private sector—three pillars of most INGO/DP-funded sanitation and hygiene programs.

DPs and (I)NGO programs contribute tremendously toward the needed human resource capacity by investing in positions, offering secondments of staff, or paying for consultants. They may also contribute to paying for community facilitators or coordination and remuneration (e.g., travel allowances) of volunteers.

BOX 14. DEVELOPMENT PARTNER CONTRIBUTION TO PUBLIC SECTOR STAFF OR TASKS

- The World Bank's Third Water and Sanitation for Low Income Communities (PAMSIMAS) program in Indonesia: The World Bank paid for community facilitators until the beginning of 2021 when the payment of these facilitators was institutionalized into government budget. The World Bank continued to jointly plan the activities with the Government of Indonesia.
- Global Sanitation Fund Rural Sanitation and Hygiene Promotion in Nigeria program: Ran until 2020 and focused on two states, embedded at least one sanitation and hygiene mid-level officer within each RUWASSA and one mid-level officer within each of the target LGA WASH units. Similar practices have been followed by UNICEF and others.

The presence of (I)NGO/DP programs is uneven across geographical areas, leaving parts of the country untouched. The uneven distribution of (I)NGO/DP project or program presence was observed in Ghana (Figure 7), Nigeria, Rwanda, Nepal, and India, and informants indicated that a lack of coordination among DPs and (I)NGOs likely contributed to geographical areas, topics, and/or audiences remaining uncovered**.** In Nigeria, the presence of INGO/DP programs directly affected the number of

staff (and volunteers) that local governments have in place for sanitation and hygiene interventions. Benue, Jigawa, Katsina, and Cross River state—with high donor presence—had higher staff numbers in both the LGA WASH units and the RUWASSAs (Figure 6, Section 4.1). In Ghana, the regions with higher numbers of EHOs (i.e., Northern, Greater Accra, Ashanti, and Eastern Region [Figure 7]) also largely corresponded to the regions where there is higher DP and/or (I)NGO presence. The assessment team, however, could not establish that higher EHO numbers were a direct result of (I)NGO/DP presence.

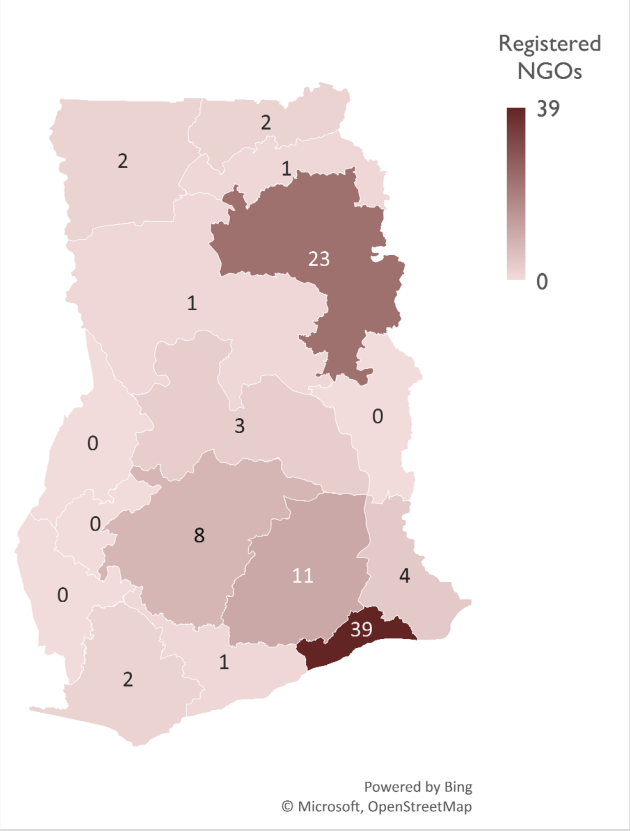


Figure 7. NGOs Working on WASH in Ghana

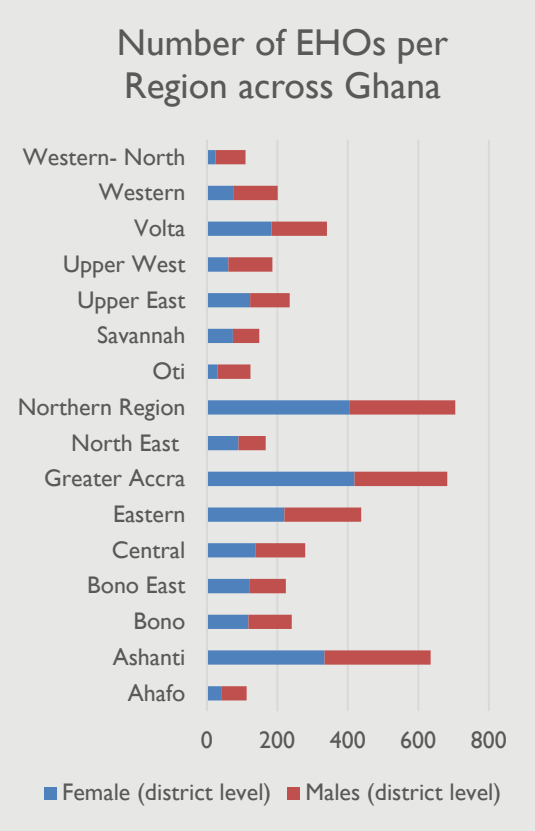


Figure 8. Ghana Distribution of EHOs in Region and According to Gender

However, (I)NGO dependence on external (project) funding and project cycles increases the risk of staff being discontinued when projects end or funding decreases. This does not only impact the local (NGO) staff capacity but may also affect the (I)NGO's own staffing. The project-driven nature often results in reduced levels of permanent staffing and has large impact on knowledge management and retention in the organization or project area. Informants felt that this issue is worse in emergency situations, where projects are often of short duration and staff sustainability is limited.

There is a need to investigate the way we judge humanitarian situations to benefit this process. There are plenty of areas that face an emergency that is now returning each year. Is it still fair to call it an emergency? Or should these be moved to more structural development programs? The benefit of the latter is at minimum longer duration of support and more structural staff in place (KII Global study; Knowledge and Training Institute).

In addition, brain drain to (I)NGOs or DPs is a key barrier to retaining qualified workers and professionals in the local system (public, private, or NGOs). This brain drain can occur in multiple ways. First, by attracting public sector staff into (I)NGOs/DPs with better remuneration and/or

perceived career opportunities. Secondly, as a direct result of programs. For example, a key informant from the Smart Centre[23] stated that *a successfully trained business owner was drawn in by the INGO to lead the business development program, taking him out of the market.*

Furthermore, too many DP and INGO programs and projects are still developed without proper accounting for the time contribution and level of effort required from local partners. This was highlighted by a number of KIIs, quoting examples of projects engaging community health workers and volunteer groups, without approaching and carefully planning their engagement with them or their supervisors.

Lastly, while DPs and (I)NGOs clearly play a major role in sector capacity development, informants at both global and country levels indicated that too often, **capacity development is still equated with training.** It can be seen as "a check the box" exercise—a one-off training—and it is then often assumed that the trainees will be fully able to perform the new tasks without proper follow-up or systematic support. Capacity development and its challenges are discussed in more detail in Section 6.1.

4.5 THE ROLE OF "SANITATION WORKERS"

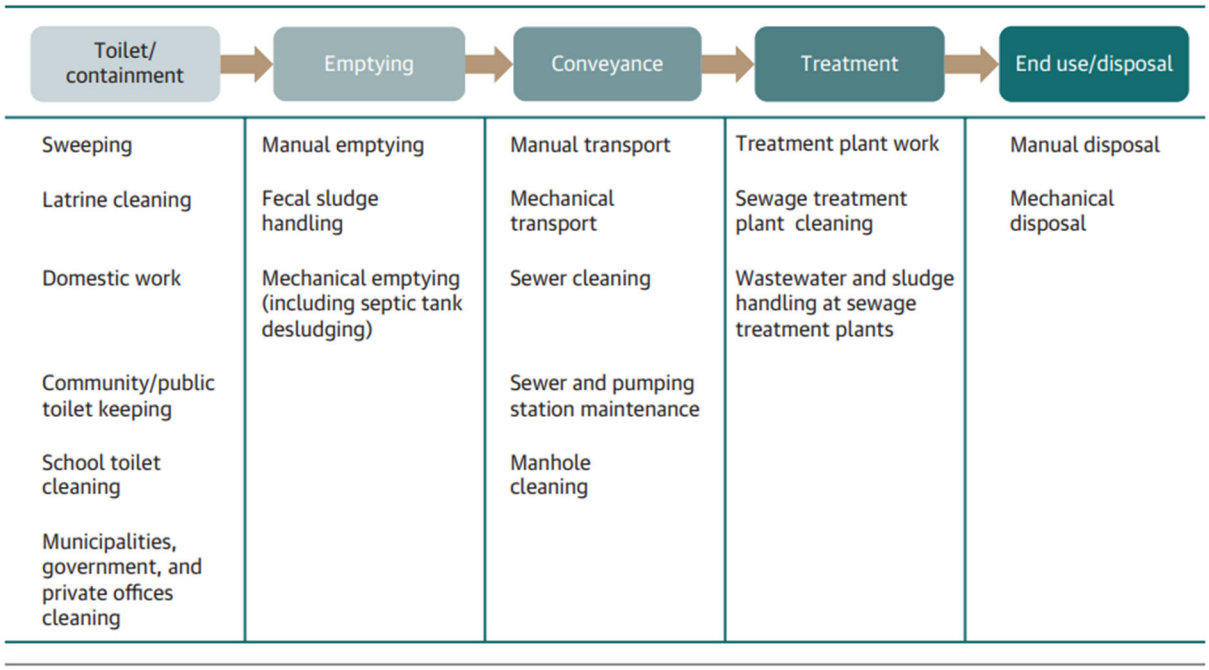
Sanitation workers are those directly involved in waste handling. They work across the sanitation service chain and are employed across actors, but they remain largely informal and face significant societal stigma and discrimination.

There is increasing attention in the sector to the importance and status of sanitation workers, i.e., those directly involved in waste handling. This group, however, is involved in different functions, fulfills different jobs, and crosses from informal work to more formalized work in the sewerage systems, from public to private sectors, from solid to liquid waste handling, and from rural to urban (see Figure 9). This makes it extraordinarily difficult to: (1) have accurate data (numbers) on these workers unless they are hired full time by government, and (2) disaggregate between rural and urban workers as those involved in sewer cleaning in urban areas may also undertake manual pit emptying in peri-urban and rural areas.

In recent years, there has been a focus on recognizing and improving the condition and status of sanitation workers. For example, the Global Sanitation Workers Initiative spearheaded by the World Bank, ILO, WaterAid, and WHO is advocating for the health and safety of sanitation workers and, among others, has undertaken an assessment on sanitation worker health and safety knowledge and evidence gaps in the field (WHO 2022b).

They, and others, are drawing attention to the plight of sanitation workers and the stigmatization they suffer. **The continued societal stigma on sanitation jobs has a major impact on the sanitation and hygiene workforce in certain countries and regions, particularly in South Asia.** While work is underway to increase visibility and appreciation of the important work undertaken by sanitation workers, there is a continued perceived conflation of the sanitation worker jobs and their identities and position in society. This was highlighted, for example, by a study in Pakistan (Aqeel and Gill 2021) that described how the traditional caste structure continues in sanitation, and how *social stigma and discrimination attached to sanitation in Pakistan are further rearticulated in religious overtones, which are unchecked in government policies* and how *sanitation labor is life-threatening, intimidating, unhygienic, and financially insecure work*.

[23] A foundation focused on rural areas mostly to train the local private sector, predominately in African countries, in SMARTechs (Simple, Market-based, Affordable, Repairable Technologies) in water, sanitation, and hygiene.



Source: Adapted from Dalberg Advisors 2017.

Source: World Bank, ILO, WaterAid, and WHO 2019

Figure 9. Types of Sanitation Work across the Sanitation Service Chain

Beyond the suffering of the sanitation worker themselves, the stigma associated with sanitation work also means that, in South and Southeast Asia and to a lesser degree also in SSA, socially and culturally many do not want to be associated with sanitation jobs, or families will not allow individuals to work in this sector. Sanitation workers often end up working these jobs by necessity, more than by choice.

5.0 HUMAN RESOURCE SHORTAGES AND GAPS

This section presents trends with regard to HR shortages (numbers) as well as HR gaps (competencies), through an HR gap analysis by function.

5.1 HUMAN RESOURCE SHORTAGES

There are significant HR shortages in both sanitation and hygiene across all focus regions and assessment countries.
The country assessments showed the most significant HR shortages are in policy, strategy, and coordination; regulation; emptying and transport; O&M, treatment, disposal, and/or reuse; and business development.

In their GLAAS 2021/22 submissions, the countries from the regions of interest[24] reported significant HR shortages in both sanitation and hygiene (Figures 10 and 11). For sanitation, over 60 percent of countries in South Asia and SSA report "below 50% of HR that is needed" to deliver on sanitation. This shortage is slightly less in Southeast Asia (57 percent of countries reporting "between 50-74% of what is needed").[25]

Five of the six country assessments confirmed these shortages and highlighted that for urban and peri-urban sanitation, relatively more HR is in place than for rural-on-road and rural remote areas. India is the exception with sufficient numbers of HR in place, also in rural areas, due in large part to the SBMG. However, even India has new capacity needs emerging from the transition to a post-ODF, SMS focus.

For hygiene, over 50 percent of countries in our regions report "below 50% of HR that is needed" to deliver hand hygiene (WHO 2022a). The country assessments confirmed these findings for Ghana, Nigeria, Rwanda, and Nepal. In the Philippines and India, the assessments highlighted that hand hygiene was still considered of low priority, with the Philippines lacking the policy and monitoring on hand hygiene, and India focusing mostly on sanitation.

Figure 10. Sanitation HR Sufficiency (Analyzed Using GLAAS 2021/2022 Data)

24 Fifty-one of 69 countries in the focus regions reported to the GLAAS 2021/2022 survey.

25 Caution is needed in interpretation as the number of Southeast Asian (seven) and South Asian (six) countries that reported to GLAAS is vastly below that of sub-Saharan Africa (38).

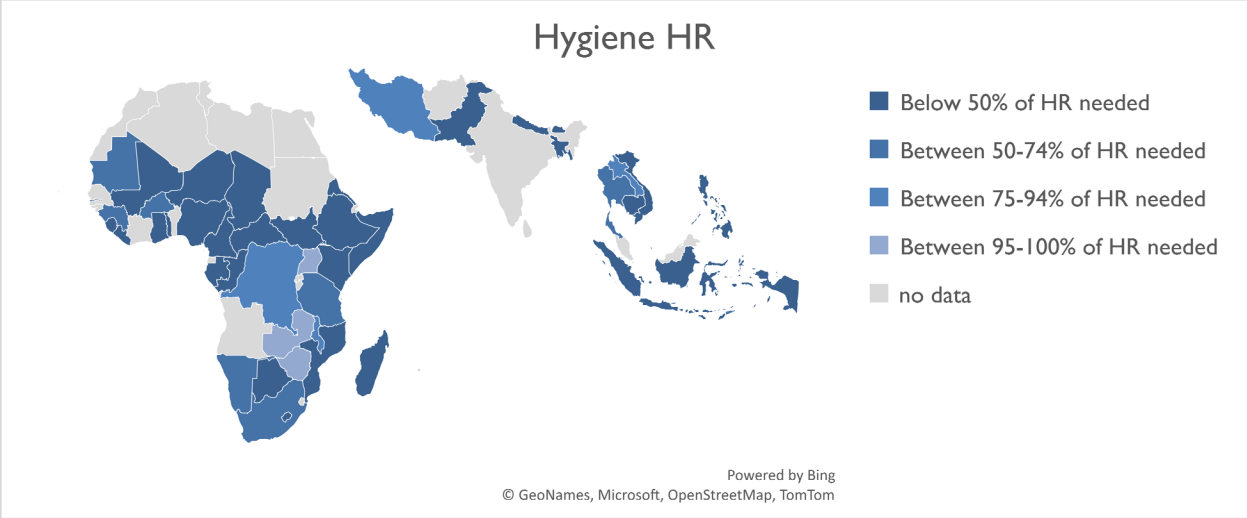


Figure 11. Hygiene HR Sufficiency (Analyzed Using GLAAS 2021/2022 Data)

The GLAAS 2021/2022 survey also provided insights into the barriers to reaching sufficient HR for sanitation and hygiene, with 83 percent of the 51 countries (in our focus regions) **reporting the lack of financial sources as a moderate to severe barrier for sanitation and hygiene HR, and 80 percent of countries noting a lack of awareness of WASH job opportunities.** The latter appeared less of an issue in Southeast Asia and, from the SSA assessment countries, was not reported as an issue in Ghana. Two-thirds of the 51 countries (and up to 100 percent in South Asia) reported competency insufficiency to deliver sanitation as a moderate to severe barrier, and more than 80 percent of the countries (up to 93 percent in Southeast Asia) reported staff not wanting to work in rural areas as a moderate to severe barrier.

The country assessments did not seek to quantify shortages of sanitation and hygiene staff, but instead used traffic light exercises[26] to get a sense from informants of HR shortages against the different functions. Table 11 provides an overview for HR in rural-on-road areas in the assessment countries. Table 11 reflects the fact that in the majority of country assessments participants distinguished some of the functions by national from local. **Linking back to the sanitation progress categorization introduced in Section 2.1,** Ghana, Nigeria, and to a lesser degree Rwanda represent Category 1 countries, i.e., working toward basic access. Nepal and India, while still needing to address remaining pockets of OD, fall in Category 2, sustaining SMS. The Philippines has the highest level of SMS services but is also off-track to reach universal basic sanitation coverage by 2030, which places it somewhere between Category 2 and Category 3, sustaining SMS.

Alarmingly, this exercise showed that there were no functional areas that could be considered to have sufficient numbers of HR to meet demand, except in India. It supports the GLAAS 2021/2022 (WHO 2022a) findings and demonstrates that the shortages are significant. According to the assessment of the country CNA participants, most functions require at least a doubling of the current level of staffing.

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26 In most country assessment, the traffic light exercise was completed as part of a workshop. The colors represent the collective opinion of a group of 25 to 50 sector stakeholders per country and are not supported by substantial analysis of data. It should, therefore, be interpreted as signaling a trend rather than a finding based on primary data collection. Only in Nepal, this data was not compiled in a workshop but through all KIIs and analyzed afterward. The Rwanda assessment did not undertake this exercise.

It is surprising to note that participants from Nepal and the Philippines signaled the largest shortages from among the five countries assessed. There are several possible explanations for this. First, while Nepal progressed relatively fast to achieve ODF, it is currently regressing. Many of the key informants spoke about slippage, highlighted a significant reduction in focus on sanitation and hygiene post-ODF, and limited attention entirely to SMS. The Philippines is progressing well on basic access to sanitation, but still has areas (across the thousands of islands) with no access to sanitation, and about 40 percent of the population does not yet have access to SMS. Additionally, the assessment team expects that the countries that are further ahead in their progression toward universal coverage are likely to have a more informed view on their HR capacity gaps, including of the additional workers needed to reach SMS.

TABLE 11. SIGNAL OF HR SHORTAGES IN DIFFERENT FUNCTIONS

FUNCTION	GHANA		NIGERIA		INDIA		NEPAL		PHILIPPINES	
	S	H	S	H	S	H	S	H	S	H
Policy, strategy, and coordination (federal level)										
Regulation (federal level)										
Monitoring (federal level)										
Regulation (district/local level)			NA	NA					NA	NA
Monitoring (district/local level)									NA	NA
Oversight and support (provincial, local government, municipality)										
Community engagement and mobilization (participation)										
Design and construction										
Emptying and transport										
O&M (includes treatment, disposal, and reuse)										
Research and design										
Business development										

NA = Data Not Available. Blank cells = the function is not relevant for the sector (e.g., hygiene)

	Under 50 percent of what is needed to meet current demand/future demand (to reach SDG/national targets)
	51–95 percent HR to meet current demand/future demand (to reach SDG/national targets)
	Sufficient HR to meet demand (to reach SDG/national targets), above 95% of what is needed

While Nepal signaled a general shortage of HR across all functions, India estimated HR shortages to be largest in emptying and transport, O&M (of existing infrastructure and future FSTPs), regulation, business development, monitoring, and oversight and support, including continued community engagement at local level, after the large-scale mobilization during the ODF campaigns. These functions largely align with the required stronger focus on SMS.

Both Ghana and Nigeria, countries that still need to focus on increasing access to basic sanitation, showed moderate HR shortages in the functions of oversight and support, community mobilization and engagement, and construction—functions that have received a lot of programmatic focus in recent years. However, as illustrated in Box 15, in absolute terms these shortages are still substantial.

BOX 15. ESTIMATES OF NATIONAL HR SHORTAGES IN OVERSIGHT AND SUPPORT AND CONSTRUCTION FUNCTIONS IN NIGERIA, GHANA, AND INDIA

Nigeria

The assessment team analyzed data from 28 LGAs in Nigeria and found there to be an average of 17.5 workers per WASH unit. With 80 percent of the 774 LGAs (=619) not yet having a WASH unit, this would mean there is a shortage of roughly 10,832 workers at the local government unit level for the **oversight and support and community engagement and mobilization functions alone.** This includes sanitation and hygiene promoters, community mobilizers, and monitoring and evaluation personnel.

Ghana

The assessment estimated that there are 4,835 active EHOs working on sanitation issues at the public sector level. The government-stipulated ratio for EHO/population is 1:700. Based on a population of 32 million, the required number of EHOs needed is 46,900, an almost ten-fold increase from current levels.

The DPs/INGOs indicated that they jointly trained approximately 1,000 artisans to construct toilet facilities over the past 30 years. With over 400,000 additional toilets needed each year to achieve the SDG 6.2, and currently approximately 50,000 built each year, an eight-fold increase in number of artisans would be needed at minimum. Thus, a shortage of around 7,000 artisans.

India

The assessment in India investigated HR in Bihar State. Despite adhering to formal minimum staffing requirements, informants indicated that one block coordinator for 184,000 people was insufficient, and that a doubling of staff would be needed to adequately manage the oversight and support and monitoring functions. This would imply a need for 534 additional block coordinators in Bihar alone. For India as a whole, this would mean a minimal increase of 6,311 block coordinators.

Even higher shortages were identified in the functions related to sustaining SMS—including monitoring, emptying and transport, O&M, regulation (and enforcement), and business development—where, as the country assessments demonstrated, focus has been lacking. Box 16 illustrates some of the estimates based on the country CNAs, but because of the high dependence on the informal private sector, estimates were particularly difficult to make for business development.

BOX 16. ESTIMATES OF NATIONAL HR SHORTAGES FOR SANITARY INSPECTORS

Nigeria

Anecdotal evidence from Nigeria indicated a need for substantial increase in sanitary inspectors to deliver on the inspection of safe disposal of fecal sludge. In 2019, the Director of Environmental Health in the Federal Ministry of Health indicated a required five-fold increase in sanitary inspectors from 7,000 to 35,000 in the country, a shortage of at least 28,000 sanitary inspectors.

Philippines

The assessment in the Philippines indicated a very high need for sanitary inspectors to enforce guidance, standards, and regulations for improved sanitation services. Based on current standards, every barangay should have a sanitary inspector. With 42,000 barangays, and 2,700 active sanitary inspectors, there is an estimated shortage of 39,300 sanitary inspectors. The discussion with informants indicated that financially it would be unfeasible to create so many new positions.

For hygiene, the indicated shortages occur mainly in the areas of policy, strategy and coordination, regulation, O&M of handwashing facilities, research and design, and business development.

An additional exercise undertaken as part of the country assessments was to understand how certain larger trends may affect sanitation and hygiene HR in the coming years. Box 17 summarizes the key expected impacts.

BOX 17. TRENDS THAT WILL IMPACT SANITATION AND HYGIENE HR

Climate change strongly affects water resources and the increased occurrence of natural disasters, such as floods or extreme storms. This will require increased knowledge and skills related to quality latrine construction, sanitation system resilience, and ensuring (water for) hygiene. In addition to technical skills, the sanitation and hygiene sectors will require adaptability, flexibility, problem solving, coordination, and communication skills, as well as closer cooperation between sectors and with climate change departments.

Digitalization may change the jobs and methods used in sanitation and hygiene monitoring, data collection, and data storage and management. The rapid developments and increase in use of new information technology (IT) will likely increase the need for data scientists and IT specialists. Digitalization may also affect behavior change programs, as communications technologies and use of mobile phones may make it easier to reach remote rural communities with messaging and follow-up. Remote management and digitalization of (certain processes in) FSTPs is also on the rise, and there is a growing application of digital tools in planning and service delivery, for example, in route calculation for pit emptiers. And for businesses overall, digitalization will help facilitate better management of customer services, financial management, and client relations. Digitalization will also impact capacity development and learning processes and opportunities. The Swiss Federal Institute of Aquatic Science and Technology (EAWAG), for example, reported a sharp increase in the interest in digital learning in recent years, stimulated by the COVID-19 pandemic, which saw many universities invest in distance and digital learning. This trend is expected to continue, also including hybrid learning models for existing sector professionals, and digital learning processes such as peer-to-peer exchanges, knowledge webinars, learning workshops, massive online open courses (MOOCs), mobile phone courses, videos, and mentoring programs. Importantly, this also will affect HR requirements in the sanitation education field, with increased needs for capacity development specialists, pedagogical, and/or adult learning specialists that are IT savvy and trained to work with digital learning systems.

Pandemics, such as the COVID-19 pandemic, are expected to impact the sanitation and hygiene job market through an increased demand for hygiene specialists and hygiene promoters, and through increased (public sector driven) demand for sanitation and (hand) hygiene facilities. At the same time though, more challenging living conditions and decreased incomes may negatively affect household investment in sanitation and hygiene facilities vis-à-vis other expenses regarded as higher priority. This may affect demand for and availability of jobs to produce those sanitation and hygiene facilities negatively.

The increased focus on GESI has already had a clear impact on jobs within DPs and (I)NGOs, which now largely have GESI specialists in place to support inclusive program design and implementation, and inclusive technology design. In some of the assessment countries, such as Ghana and India, the assessment team observed a push by government and/or organizations to improve equitable and inclusive HR recruitment processes and manage equal opportunities for those with different backgrounds and gender. Such policies and practices were, however, not commonplace.

5.2 HUMAN RESOURCE GAPS

There is an overall lack of diversity in disciplines and skills of staff at national, district, and local levels. Specific key gaps include:

- Skills and understanding related to SMS, including design and construction, and treatment, disposal and/or reuse.
- Skills and understanding related to regulation for (rural, on-site) sanitation and hygiene.
- Skills for (digital) data collection, analysis, and application in decision-making and adaptive management.
- Skills and understanding, in both public and private sector actors, of business development (support), including business administration, marketing and sales, financing, procurement, and contracting.
- Crosscutting skills related to adaptation and flexibility, problem solving and critical thinking, and GESI.

Having established the sizable HR shortages in the sanitation and hygiene sectors, below the deficiencies in the competencies needed to performance the functions, i.e., the HR gaps, are explored.

Based on a survey of 290 sector professionals undertaken to understand sanitation sector competency gaps and training needs, USAID (2017a) reported a strong gap in management and leadership skills, rather than in technical skills. Figure 12 displays the top 10 competencies reported to be lacking and highlights only BCC as a technical skill.[27]

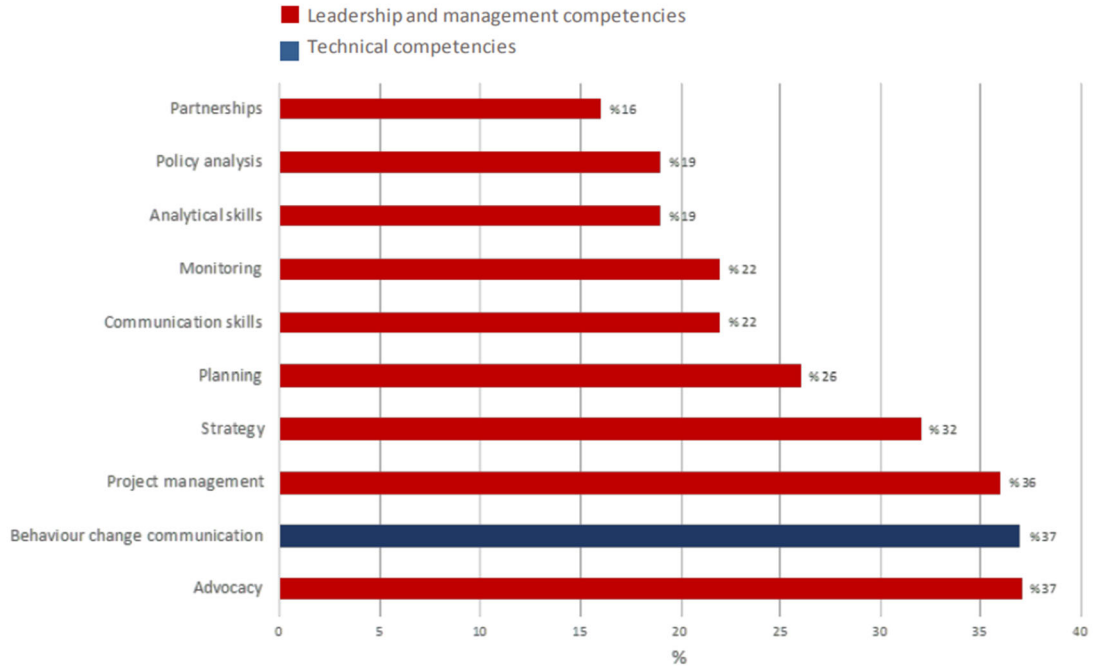

Figure 12. Missing Competencies of Sanitation Professionals (USAID 2017a)

Findings from our assessment and prior studies (USAID 2017a, 2017b, 2017c, 2017d; IWA 2014; WaterAid 2020, 2021b) concur on a number of common competency gaps, particularly concerning transferable skills such as leadership, project management, communications, and data collection/surveying. For example, WaterAid in Cambodia identified competency gaps in meeting facilitation, planning, teamwork, report writing, and critical thinking (WaterAid 2020). A more technical gap identified was linked to the specialist skills related to *reaching the last mile*, skills such as GESI, policy, and micro-financing.

Below is an overview of competency gaps by functional area, as informed by the desk review and global KIIs and validated by the six country assessments.

5.2.1 POLICY, STRATEGY, AND COORDINATION

Several countries reported a lack of diversity in disciplines and skills of staff at national, district, and local levels. The current national-level public sectors in sanitation and hygiene are highly dependent on civil engineers and/or medical doctors or health professionals. It was noted that professionals with different skills, such as policy analysts, research and development experts, legal experts, BCC specialists, private sector engagement specialists, and lobbyists, would be beneficial for developing more comprehensive, systemic, and inclusive policies, strategies, guidelines, and provisions

[27] Note: The vast majority of respondents had higher education levels and a strong urban focus.

needed to the diversity of tasks and HR on the ground. In Nepal, where reliance is on civil engineers, informants indicated a need for WASH experts, climatologists, environmental engineers, and public health experts. The India assessment highlighted a need for specialists in innovative financing and BCC/education at the policy level.

There is a reported knowledge gap on SMS. Many of the countries are focused on reaching ODF status but have limited or no efforts underway or planned in post-ODF policy or strategy development. In the Philippines, informants indicated that the sector is struggling with the concept, including understanding who is responsible for the different steps of the sanitation value chain and who pays for the safely managed systems, particularly in rural areas. Nigeria has had a post-ODF plan and guideline in place since early 2022, but only one or two states are developing a post-ODF strategy to sustain area-wide ODF, and this with the help of UNICEF.

Several countries identified that national policies, plans, and guidelines are not cascaded down because of skills and competency gaps at the local levels. This is, however, also a matter of having the right systems in place to ensure rollout and implementation, and ensuring that local governments are sufficiently resourced, capacitated, and supported to take on these additional roles and responsibilities. In both India and the Philippines, informants indicated that local governments either do not receive or manage to gain access to the guidance or support available (e.g., India) or could in fact use more guidance (e.g., Philippines).

Coordination, stakeholder engagement, project management, and the ability to communicate (with politicians) are transferable skills noted to be missing. Overall, the support and enabling role that was identified for the public sector requires facilitation and interaction skills, the ability to lead and manage (policy) projects, and, from the sector partners' point of view, the ability to engage, work with, and influence politicians regarding sanitation and hygiene budgets, policies, or reforms (see USAID 2017b, 2017c, 2017d). An overall understanding of public sector governance, and sanitation and hygiene-specific governance was identified as an essential knowledge gap for most sector professionals, including (I)NGO project staff, noting that required levels of understanding and skills in this space might differ depending on the level at which the professionals are working.

5.2.2 REGULATION

There is limited to no focus on regulating rural (on-site) sanitation and hygiene in Africa (ESAWAS 2022), and in South Asia and Southeast Asia regulation is still focused strongly on sewerage systems and septic tanks. Both the presence of data collection (e.g., enumerators) and enforcement personnel (such as sanitation/hygiene inspectors in Nigeria, Nepal, and the Philippines) was flagged as areas of shortage, particularly in the rural areas.

While regulation requires key technical skills related to, for example, law, financing, sanitation and hygiene safety standards, etc., the global and local informants also identified a set of essential transferable skills and competencies that were lacking (Box 18).

BOX 18. SKILLS AND KNOWLEDGE GAPS FOR REGULATION AND ENFORCEMENT

Skills	• Data collection and management skills • Stakeholder engagement skills (with communities, private sector, public sector across different sectors) • (Multidisciplinary) communication and awareness-raising skills (e.g., vis-à-vis customers, end-users and/or possible polluters, and other stakeholders)
Knowledge	• Understanding of law, policies, and standards and how to develop these (e.g., for technologies, wastewater disposal)

BOX 18. SKILLS AND KNOWLEDGE GAPS FOR REGULATION AND ENFORCEMENT	
	• Understanding of citizen engagement practices, such as reporting systems and customer feedback mechanisms • Understanding of private sector engagement, licensing, and/or formalization

5.2.3 MONITORING (NATIONAL, PROVINCIAL, AND LOCAL)

The assessment identified that too often, monitoring is equated with reporting only. Informants in four of the six countries noted the importance, but lack of, monitoring experts, data scientists, data analysts, and IT specialists to facilitate progress monitoring, informed decision-making and course correction, and development, application, and rollout of new systems and technologies for monitoring.

The KIIs highlighted that the need to strengthen monitoring competencies existed from national to local levels. At the lowest level of government, there also was a felt need for enumerators and consistent training and capacity building to ensure high quality, error-free data collection, recording, and analysis across all local governments, reducing the dependence on NGOs and DPs.

Transferable skills of particular importance to monitoring were project management, report writing, and presentation skills.

5.2.4 OVERSIGHT AND SUPPORT

For oversight and support (at local government/municipality level) the vast majority of cited missing competencies were transferable skills. Particularly, project management, program design, stakeholder engagement and facilitation, private sector engagement, and advocacy and influencing skills were reported as lacking. These missing competencies were mostly identified among those staff coordinating programs and projects. In the majority of countries, this was aggravated by the fact that the public sector also faces HR shortages in staff to coordinate these programs at the public sector level.

5.2.5 COMMUNITY ENGAGEMENT AND MOBILIZATION

Overall, as discussed in prior sections, in the majority of assessment countries there is a shortage of staff working to engage and mobilize the population with properly designed programs for advancing sanitation and hygiene and there is a strong reliance on volunteers. It is essential that those who engage with the communities are properly capacitated in BCC, facilitation and engagement, have intercultural skills, and the ability to relate to the communities and their circumstances. **It is now broadly felt that these are skills not everyone can learn, which generally requires training and engaging more staff and volunteers than will ultimately be employed.** As stated by one informant: *You either belong to one of three types: You have it, you can learn it (but through experience), you do not have it and will never get it* (KII Global Study, Knowledge and Training Institute). Additionally, there is growing recognition that community mobilizers also should have a level of technical knowledge, including on sanitation technologies, hygiene promotion messages, and knowledge on solution providers (to support the households that want to take action).

5.2.6 CONSTRUCTION

Exposure to best practices and appropriate technologies for on-site sanitation, FSM, and handwashing is essential for those involved in design and construction. A particular concern of informants is ensuring that the informal workforce has the right knowledge and skills regarding toilet construction, use of materials, and (climate or geographical) adaptations. This will require different and

adaptive capacity development practices, including practical, on-the-ground training, and possibly the use of certification schemes as discussed in prior sections.

5.2.7 EMPTYING AND TRANSPORT

Waste emptying and transport businesses require a broad set of skills and competencies that are missing, especially in rural areas. In the assessment, specific mention was made of the importance of knowledge and skills linked to health and safety and risk management (personal protection equipment), and, as noted, the knowledge on how to manage, regulate, and enforce liquid waste standards, which was felt to be significantly lacking among practitioners.

5.2.8 O&M (INCLUDING TREATMENT, DISPOSAL, AND/OR REUSE)

O&M in sanitation and hygiene in rural areas is often dependent on the household, including cleaning of the facilities. Skills and competencies in this case are transferred within the household, or with the help of NGOs/CBOs, EHOs, or volunteers. Beyond this, the informal private sector (e.g., plumbers, artisans, masons) will be called upon and require skills to deal with any problems with the facilities. With regard to public spaces and schools, O&M and assurance of cleanliness also require understanding health and safety concerns and measures.

A transition toward SMS systems in rural areas will require planning professionals to improve their understanding of the best SMS practices and methods, including if relevant the siting and design of FSTPs, decentralized systems, and transfer stations, or other options for safe treatment. This also will require engineering capacity for those who design and construct these systems (see above), and increased O&M capacity for those who will operate the plants. Actors such as the Bangladesh University of Engineering and Technology – International Training Centre (ITN-BUET) and Bremen Overseas Research and Development Association (BORDA) (in India) indicated they have started training professionals in these areas, but that the government's reaction to anticipate these increased needs was felt to be lagging.

For safe reuse, **there is still a lack of knowledge locally on how and when liquid waste can be reused, and what the required level of treatment may be** (e.g., for use of waste in agriculture).

5.2.9 RESEARCH AND DESIGN

Several country assessments pointed to the need for **more expertise in design of durable, affordable, and appropriate infrastructure, both for on-site sanitation and for handwashing.** Linkages were also made to the need for growing expertise on designing resilient systems in the light of climate change and the growing threat of extreme weather events.

5.2.10 BUSINESS DEVELOPMENT

While a function in its own right, the assessment found that competencies needed for business development are required across several functions, to drive MBS as well as to stimulate private sector engagement in hand hygiene. The key competencies that countries or at least the sanitation and hygiene sectors are lacking in business development/support function are business administration and management (including what it takes to start up a business), marketing (especially market analysis), and sales and financing (including micro-financing), and an overall understanding of procurement and contracting cycles (across public and private sector actors). The transferrable skills needed are networking and influencing to drive changing practices through policies and laws (including affecting taxes).

As noted in Section 1.2, some additional functions were identified over the course of the assessment. Competency gaps for these added functions are presented below.

5.2.11 ADVOCACY AND INFLUENCING

Effective advocacy and lobbying require at a minimum more monitoring and data analysis, research, writing, and communication skills. It also requires understanding politics and how to engage politicians, and, increasingly, the ability to apply new (digital) learning and communication tools or engagement techniques, such as the CLTS-based institutional triggering technique used to mobilize and activate (local) decision-makers. Where (I)NGOs/DPs support local NGOs/CBOs to hold their decision-makers to account, skills around civil society engagement and inclusive facilitation of voice and ownership also are important.

5.2.12 FINANCING

While the assessment did not explore the HR needs of this function in detail, a number of required competencies did emerge as important and lacking in some cases. Financing and micro-credit institutions need to have a broad understanding of the sanitation and hygiene sectors to be able to offer appropriate financing products and solutions, and private sector professionals need to have proper skills to engage with these institutes to obtain appropriate financing. DPs/(I)NGOs involved in sanitation and hygiene business development also require skills to engage with and influence the financial institutions and their sector offerings, and, increasingly, knowledge of alternative financing channels and mechanisms.

Looking across functions, the assessment highlighted that coordination and facilitation skills are essential across all levels of engagement, from national to local. **But a key skillset, highlighted most often across all global KIIs, is that related to adaptation and flexibility, problem solving, and critical thinking.** These are skills that were felt to be essential across all levels, but particularly for leadership. They were, however, also noted to be lacking across the board. Also, it was mentioned repeatedly that **area-wide programming approaches, such as city-wide inclusive sanitation (CWIS) and area-wide sanitation, require a different, more proactive approach to GESI,** which will require upgrading of relevant skills and understanding across all functions and actors. And lastly, the assessment concluded that **additional attention is needed for the skills and competencies related to (hand) hygiene,** recognizing that there is a general shortage of hygiene-related staff in the public sector with knowledge of preventative health related to WASH and "*it is low on the agenda in the health sector itself*" (Global KII, (I)NGO). In addition to the aforementioned skills related to design, BCC, and cross-sectoral engagement., this includes the need for increased understanding of hygiene promotion across environments, behavioral settings, the life cycle, and in difficult contexts.

6.0 SKILL SUPPLY AND CAPACITY DEVELOPMENT

Section 5 provided a sense of the current and anticipated HR shortages and gaps. This section explores how these HR shortages and gaps are being filled through the supply of graduates and the common challenges related to supply and capacity development (Section 6.1) and discusses formal and informal education opportunities (Section 6.2).

6.1 SUPPLY AND CAPACITY DEVELOPMENT INSTITUTIONS

HR capacity supply, need, and demand often do not match.

- There is insufficient supply of graduates from training institutions in on-site sanitation and hygiene.
- Graduates supplied by the education sector lack skills and knowledge relevant to rural on-site sanitation and hygiene, particularly transferable skills and practical experience.
- Limited jobs are created by the sector to absorb needed capacity or capacity supplied.
- There is a gap in capacity development opportunities and formal recognition for lesser-educated staff and low-level skills acquired on the job (e.g., volunteers and informal workforce).

6.1.1 SUPPLY SHORTAGES

In our focus regions—SSA, Southeast Asia, and South Asia—**86 percent of the countries reporting to GLAAS indicated there is insufficient supply of graduates from training institutions with skills in on-site sanitation and hygiene** (see Figures 13 and 14, sourced from the GLAAS data portal). The broad categorization of topics does make it hard to judge true sufficiency, however. Also, no distinction is made in these figures between the type or level of professionals, nor between rural and urban contexts.

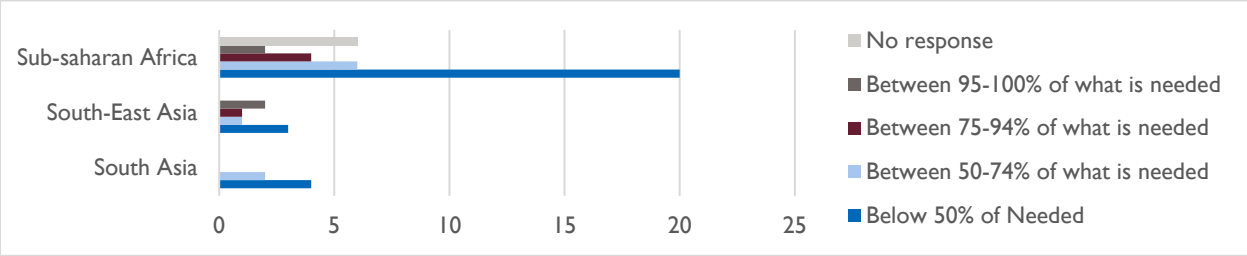

Figure 13. Sufficiency of Graduates on "On-site Systems and FSM" (N=45)

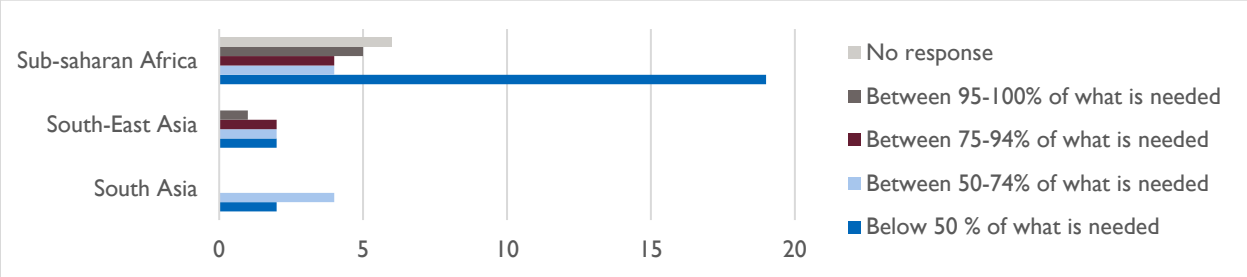

Figure 14. Sufficiency of Graduates on "Hygiene Facilities, Technologies, and Behavior Change" (N=45)

6.1.2 COMMON CAPACITY DEVELOPMENT PATHWAYS

The majority of public sector staff interviewed during the country assessments, especially those residing and working in the rural areas, received their education from local public colleges (i.e., polytechnics). Moving up to regional/state/national level, the majority attended local (or in some cases regional) universities (e.g., Makarere University in Uganda, Blantyre in Malawi). Several global KIIs indicated that most national public universities often still rely on sanitation curricula that are engineering-heavy and highly focused on sewered systems, and that are less applicable to on-site sanitation options. This finding was reinforced in Nepal, where at three levels of government, KIIs indicated that the current supply of HR did not match the needs in the sector, and in the Philippines, where mainstream universities provide formal training on (environmental) sanitary engineering without linking to what the market really requires. Having said that, and as illustrated in Section 6.2, there is an indication that this is changing.

The proportion of rural staff that received education from international universities (e.g., IHE Delft, Water Engineering and Development Centre (WEDC), EAWAG, London School of Hygiene and Tropical Medicine, Cranfield) was very low, and often represents people working for (I)NGOs, private sector, or are senior levels in the national public sector.

There is a limited offering of TVET opportunities for sanitation and hygiene-specific topics, and it does not seem a topic that is prioritized. In a large initiative by the African Union—the African Skills Initiative—none of the TVET institutions that applied for support in building their equipment and upgrading their facilities, did so in relation to sanitation, hygiene, or WASH courses (KII, African Skills Initiative).

Overall, TVETs tend to focus largely on educating masons and plumbers, but they often lack aspects of the broader sanitation or hygiene curricula and only reach selected geographies of the countries (Box 19).

BOX 19. TVET OFFERINGS FOR SANITATION AND HYGIENE PROFESSIONALS

Ghana

Formal training for artisans is undertaken by TVET institutions; however, it was noted by informants that courses in TVET institutions may not have aspects on CLTS and other sanitation training and they recommend that the TVET curriculum be updated to include sanitation methods (CLTS, SMS, MBS) and technologies. Also, in some of the Schools of Hygiene (Ghana), EHOs are being trained to construct sanitation facilities, with the informants questioning whether this is appropriate given their responsibilities.

Nepal

The local governance information system offers general capacity development for local government staff, the Center for Technical Education and Vocational Training offers courses to plumbers and assistant plumbers, and the National Water Supply and Sanitation Training Center (NWSSTC) is dedicated to strengthening the capacity of local-level institutions in the context of federalized governance. The assessment highlighted a lack of coordination between these institutes and an inability to reach all areas of the country, with no training centers outside of Kathmandu. It also highlighted that the NWSSTC was largely focused on water and had a limited budget to offer needed training to all municipal staff.

For continued professional development, there is some public sector investment in capacity development for rural sanitation and hygiene, but it generally falls short of the need. For the majority of workers active in the rural sanitation and hygiene space (i.e., WASH coordinators/officers [local government level], sanitation/hygiene inspectors, EHOs, masons/artisans, emptiers [where present]), the training offered by the public sector is either on-the-job training of transferable skills (e.g., public sector administration), environmental health training that often does not

fully incorporate the needs of the sanitation and hygiene sectors, or limited technical training. Box 20 provides examples from four of the assessment countries.

BOX 20. EXAMPLES OF PUBLIC SECTOR ORGANIZED CAPACITY DEVELOPMENT

Ghana

The majority of the HR in the sanitation and hygiene sectors comes from three Schools of Hygiene administered by the MOH and the Ministry of Sanitation and Water Resources (MSWR). While recruitment of students for the schools is facilitated by the MOH, funding for training, the institutes, and materials is provided by MSWR. Upon completion, graduates are employed mostly by the local government service (i.e., Office of the Head of Local Government Service and MSWR) while others find their way into the MOH.

India

The Department for Drinking Water and Sanitation (DDWS) has dedicated budget and personnel to direct capacity development, mainly at the national and state levels. It has developed several manuals, toolkits, a YouTube channel with learning products and videos for capacity development, and a SBMG academy that is Interactive Voice Response System-based. These resources should be made available to functionaries at district and sub-district levels and made more systematic and institutionalized.

Nigeria

The Clean Nigeria - Use the Toilet Campaign has offered (in the past two years) technical support to selected states, where a technical team and funds from the Federal Ministry of Environment provides specific training (e.g., on CLTS or sanitation marketing) at a state level. In Ebonyi state, the RUWASSA has an internship arrangement with the Ministry of Education whereby students from Colleges of Health are sent on industrial attachments or internships at the RUWASSA. This provides a workforce boost for the RUWASSA but also serves as training for the students. However, this is not a systemic arrangement, and the assessment could not confirm how many states benefit from this or similar efforts.

Nepal

NWSSTC has adopted tailor-made HR development interventions to be compatible with local needs and is ultimately dedicated to strengthening the capacity of local-level institutions in the context of federalized governance. It conducts orientation workshops for the elected representatives of local governments (Palikas) to enhance their knowledge and skills on water quality, WASH planning, and total sanitation. NWSSTC also provides on-the-job/in-service training for local government staff. Trainings vary from two days (e.g., WASH for WSUCs), to nine days (e.g., design of FSM/FSTP training for government engineers). NWSSTC conducted 27 training events in 2022, of which nine were online.

While these are positive examples, there still are **limited local institutions focused on professional development of the sanitation and hygiene workforce,** especially without the funding of DPs. This compromises the sustainability of the capacity development offered and of the training institutions themselves. In several countries, the reach of the capacity development offers was found to be limited, often due to limited budgets. In Nepal's NWSSTC and for the capacity development to advance NWASH monitoring, it became clear that given available budgets and training sites, the federal level would have to prioritize which municipalities would be eligible for capacity development support.

6.1.3 CHALLENGES TO SUPPLY, CAPACITY DEVELOPMENT, AND SECTOR NEEDS

There is a mismatch between the needs of the rural sanitation and hygiene sectors and the graduates supplied by the education sector. As many national public universities have curricula based on sewered sanitation, these do not reflect the on-the-ground reality where sanitation relies more on on-site options. It is costly for these universities to expand the scope of their courses and incorporate the various specialists from different disciplines, as this may require a much larger staff to design and deliver the new courses. Private universities were considered to face less problems in

adapting their curricula, incorporating professionals from the sector, and incorporating different learning needs.

Additionally, university courses are often narrowly focused on technical design and miss the more general program design, project management, and planning skills that are also needed. This is important, especially for those at the local government level (i.e., those who do not work as engineers but manage program implementation) with a lack of program design and implementation skills.

This mismatch also is observed in DP and (I)NGO capacity development efforts, where the focus can be on what DPs/(I)NGOs feel is important rather than on (local) needs assessments. Generally, this is due to a lack of understanding of the public sector system and a lack of groundwork prior to designing and delivering trainings. The assessment noted some anecdotal examples:

> *I have seen trainings focus on pit emptying methods and tools and safe practices, while the emptiers really needed support on how to manage the businesses* (KII Global; Knowledge and Training Institute).
>
> *The effort can be to train staff of the utility to serve the urban poor, but the mandate is not there to serve informal settlements* (KII Global, DP).

These examples point to the importance of fully understanding the public sector system, laws, mandates, and governance, as well as problems and priorities of the country (or even provinces or districts) prior to developing capacity development efforts. In addition, informants noted that in DP/(I)NGOs, many of those developing courses or trainings are not experts in adult learning and capacity development and/or may lack facilitation and training skills. This would affect their ability to design the most appropriate and effective capacity development programs for their target audience.

Furthermore, there continues to be a lack of structured opportunities to learn from practical experience during theoretical courses and trainings. To apply learning, one needs to put in practice the newly acquired knowledge, skills, or approaches. This is essential for those working in oversight and support, research and design, construction, and community engagement functions. The lack of practical experience was noted by numerous informants and also in IWA (2014), as a limiting factor for the employability and competitiveness of graduates.

Conversely, for those already in sector professions, the assessment identified a gap in education, adult learning, and capacity development specialists who could work to make courses and education programs more appropriate for the learner (e.g., mid-career) needs and preferences.[28] As such, capacity development efforts can be reactive rather than carefully planned. For example, in the USAID (2017a) study, the survey revealed that those focusing on technical competencies learn most efficiently through practical experience, site visits, knowledge exchanges, and academic courses/studies. Those developing their leadership and management skills learn better through mentorship, short courses, and on-the-job/practical experiences.

It is also hard to measure the impact of capacity development (especially more fluid processes of learning that go beyond training), which affects the ability of actors to convince donors/funders to invest in capacity development. Generally, there is a lack of impact monitoring of capacity development and education, both in terms of tracking alumni and monitoring results. This assessment asked selected universities or training institutes for their data (e.g., on background of students, jobs of graduates, or how students rate their learning experience), but while some were able to indicate their graduate

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[28] The USAID WALIS study (USAID 2017a) highlights learner preference of 290 (urban) sanitation professionals in Africa. Note there tend to be differences across regions, cultures, affordability, and accessibility, and these findings may not be relevant for South Asia and Southeast Asia or be applicable to rural professionals.

numbers (e.g., SBMG Academy, universities in Ghana), few knew the backgrounds of their students (e.g., EAWAG in Switzerland), and at best they monitor the success of a course by performing a six-month post evaluation. None of the institutes sampled across the countries, regions, and globe had clear tracking data on their alumni. And the smaller the institute or capacity development effort, the less tracking and monitoring is done. The global KIIs (from (I)NGOs and DPs) alluded to the lack of monitoring of impact of their capacity development activities beyond number of trained individuals.

In addition to the lack of (appropriate) education and training courses, **the sanitation and hygiene sectors also lack the ability to create the jobs to absorb new graduates and staff, even where they are supplied.** This was identified, for example, in Ghana, where both our assessment and the GLAAS 2021/2022 survey indicated that training sufficiency is a low constraint to HR, but where graduates from the Schools of Hygiene, which in theory are offered guaranteed employment in the public service, have struggled to find jobs and remain unemployed. Hiring freezes also play a role (e.g., Nigeria and Ghana).

6.2 POSITIVE DEVELOPMENTS IN SANITATION AND HYGIENE-FOCUSED EDUCATION

There are openings to improve sanitation and hygiene-specific education.

- The dynamics for learning have changed and digital learning offers major opportunities.
- There is an acknowledgement of the need for interdisciplinary learning.
- Education offerings have changed in the last decade with an increase in non-sewered sanitation education, FSM, and entrepreneurship.
- Regional capacity development modalities/knowledge networks have flourished.

Despite the challenges noted above, there are concrete opportunities to improve sanitation and hygiene-specific education, and positive developments to build on. These can be divided into formal education opportunities, where learning happens in a school/training institute or university and results in formal certification, and informal/non-formal learning, which happens outside of these formal spaces and can include a wide range of learning modalities.

6.2.1 FORMAL EDUCATION

The dynamics for learning have changed in recent years and there is a major opportunity to reach a wider and more targeted audience through digital learning. While digital learning platforms and courses (for example, MOOCs [Box 21]) can be costly and time-consuming to produce,[29] there are lower cost options, such as developing videos,[30] and cost savings because of reduced (international) travel needs of speakers or professors. The established programs in this space will continue to grow and flourish, while the less well-resourced universities and training institutes will need substantial support in going digital.

BOX 21. EAWAG MOOC COURSES

EAWAG has produced four MOOCs attracting over 165,000 professionals, of which 60 percent are from developing countries (with India, Nigeria, Colombia, and the Philippines providing the most). The majority is aged 34 or under and the female participation rate is between 25–39 percent. The courses are built on EAWAG's latest research and two of them are directly relevant for sanitation professionals: Planning and Design of Sanitation Systems and Technologies and Introduction to Fecal Sludge Management.

[29] Between USD 38,980 to USD 325,330 per MOOC – EJ1045989.pdf (ed.gov).

[30] EAWAG estimated during the interview that a video production cost between USD 2,000 and 3,000.

But, as noted by most professionals in the USAID WALIS survey (USAID 2017a) and those in our assessment involved in teaching, not everything is appropriate for online training. A preferred option and rising trend is a hybrid course that combines online (for general/introductory lectures) and on-site (for practical/hands-on or lab time) training.

Over the last decade, curricula have started to evolve to respond to sector needs, including a growing focus on decentralized sanitation systems. There is now an increased focus on non-sewered sanitation education, FSM, and entrepreneurship. Universities have started to offer FSM courses (e.g., IHE Delft, EAWAG, and some local universities). ITN-BUET[31] in Bangladesh is developing to become the regional hub for CWIS-related trainings and has developed FSM curricula for adoption by municipalities. These currently are being offered to regional universities within Bangladesh to deliver to interested municipalities. AfWA is supporting the development of the **African Water and Sanitation Academy**—a new academy for water and sanitation training for utilities. The Academy will operate under the umbrella of AfWA and will be led by the Training Center of the National Water and Sewerage Company Uganda. And as part of the Global Sanitation Graduate School (GSGS), 43 universities have now adopted (and adapted) the Non-Sewered Sanitation course materials (Box 22).

BOX 22. GLOBAL SANITATION GRADUATE SCHOOL

The GSGS is a platform to facilitate the development of and empower the dissemination of knowledge on sanitation through postgraduate (MSc) programs, online (self-study and instructor-led) courses, face-to-face (on-campus) courses, and tailor-made training. It is managed by IHE Delft and financed by the Bill and Melinda Gates Foundation.

The GSGS offers a Master course on Non-Sewered Sanitation based on open-source material, expanded and used currently by 43 universities, translated in French and Spanish, and contextualized locally. The course allows students to connect across different universities through online engagement and exchange, and carefully considers the approaches used to continuously find new and better ways to learn together.

The interdisciplinary curriculum includes courses on sanitation systems and services, analysis of sanitation flows, sanitation technology, governance and financing, behavior change and advocacy, emergency sanitation, and more general project management subjects.

Course materials were developed by IHE Delft based on a large array of sector expert viewpoints on current sector priorities. The research component, geared to the demands of the sector, is considered extremely important. Regular meetings with sector representatives keep the course topics relevant and on point, in close collaboration with the local academic institutions. While IHE Delft did not yet have available data on students, their backgrounds, and alumni tracking, a monitoring system is under development.

The open-source materials are shared for adoption and adaptation with the universities that want to become part of the GSGS. For example, 2IE in Burkina Faso translated the materials and worked with WaterAid to contextualize the curricula. Seventy percent of the curricula stayed the same, while 30 percent was contextualized.

There are other existing vehicles for exchanges and collaboration among universities, such as the New Partnership for Africa's Development Centers of Excellence initiative, which brings top African universities together to develop the research agenda on water resources, although this does not (yet) feature sanitation.

Responding to the need to engage and activate the private sector (within and beyond the sanitation and hygiene sectors) and strengthen business development skills, there has been

[31] A national training center under Bangladesh University of Engineering and Technology.

an increasing number of entrepreneurship-focused training programs. For example, there is the 2IE-developed the Entrepreneurship for Water, Sanitation, Energy and Construction (FILE-IN) program. The FILE-IN program *teaches an upcoming generation about developing user-friendly, cost-effective, and inclusive SMART engineering solutions in the fields of water, sanitation, energy and construction* (KII Global; 2IE). Through this program, they are training their students on how to use new tools to develop sustainable services and how to develop their businesses.

For hygiene, the international institutes have been adapting and changing their curricula according to sector developments (e.g., growing focus on menstrual hygiene management, hygiene and the elderly, new BCC methods). *As we discover more, it is a challenge to know what we need to filter through to our students. It is already hard for us as lecturers to stay abreast.* (KII Global Study, Knowledge and Training Institute).

These international institutes provide education to public health engineers and environmental health specialists (mostly at Master level), but the frontline workers will still and foremost be educated by local health colleges or Schools of Hygiene (e.g., Ghana). These local institutes do not often have sanitation and hygiene high on their educational agenda, as curative health is prioritized.

6.2.2 INFORMAL LEARNING METHODS

The number of regional capacity development modalities and knowledge networks is steadily growing. AfWA, with its focus on CWIS, has developed a Training of Trainers for 52 cities and is working on connecting utilities through Sanitation Operator Partnerships, through which mentor utilities will coach utilities/service providers in other cities.

Similarly, global knowledge networks related to (on-site) sanitation have evolved and new ones have emerged (Box 23). Key informants (globally) expressed the importance of knowledge networks in capacitating sector professionals, as the individuals involved in these networks have opportunities for targeted conversations (sometimes within their field of expertise and sometimes across disciplines) and learn from each other. The knowledge networks often offer networking opportunities, knowledge sharing (events), and at times mentoring programs for the younger generation (e.g., IWA).

BOX 23. GLOBAL SANITATION KNOWLEDGE NETWORKS

- **The Sustainable Sanitation Alliance (SuSanA),** in existence since 2007, is an informal network of Partners and individual Members who share a common vision on sustainable sanitation. SuSanA connects members to a community of people with diverse expertise and opinions.
  - SuSanA has developed regional chapters: Africa, India, Latin America, West Asia, and North Africa, and with those is aiming to bring forward knowledge from the region.
  - SuSanA now hosts the Sanitation Workers Knowledge and Learning Hub: About - Sanitation Workers Hub (susana.org)
- **The Sanitation Learning Hub (SLH),** formerly the CLTS Knowledge Hub, is based at the Institute of Development Studies and funded by SIDA. It is a participatory and action-oriented program aimed at promoting and facilitating timely, relevant, and actionable learning and research in the sanitation and hygiene sectors. It achieves its aim by co-convening global, regional, and thematic workshops for reflecting, sharing, and learning; innovating "Rapid Action Learning" participatory approaches and methodologies; co-producing action-orientated research, publications, and tools; and providing timely digital communications via their website, newsletter, and social media.
- **The Fecal Sludge Management Alliance** is focused on bringing experts in the field together to further the profession and provide a platform for exchanging the latest thinking. The network has organized conferences and FSM skills challenges to raise the profile of FSM jobs.

BOX 23. GLOBAL SANITATION KNOWLEDGE NETWORKS

- **The IWA Non-Sewered Sanitation Specialist Group** is focused on bringing together experts, scientists, and practitioners with experience in FSM and non-sewered sanitation, to generate, collate, and disseminate knowledge worldwide.

DPs and (I)NGOs have also developed relevant courses for their staff and in-country partners. Many of these courses appear to be aimed at introducing new paradigms or publicizing new thinking or shifts in position and demonstrate the way of thinking of that specific organization. Examples are systems-strengthening, GESI, and sanitation marketing through, for example, the IRC Academy (ircwash.org) or UNICEF's AGORA (unicef.org).

Increasingly, DPs and (I)NGOs also collaborate on the development of courses. An example of this is the **Rethinking Rural Sanitation** course (WaterAid, UNICEF, Open University), based on a joint rural sanitation guidance framework that introduced, among others, the rural geography typologies used in this assessment. The course materials are openly accessible on the three partners' websites and are currently used in Nigeria by the National Water Resources Institute to develop their WASH program, through the support of WaterAid.

There is also growing sector interest in the facilitation of peer-to-peer learning (Box 24). Many of the global key informants, in particular, highlighted the high potential of this learning method as an efficient way of capacity development. Some claimed it is the *only way in which decision makers are reached* (KII, Global Study, Knowledge and Training Institute).

BOX 24. EXAMPLES OF PEER-TO-PEER LEARNING

The Global Sanitation Fund country programs facilitated structured peer-to-peer learning, both within country programs and among them. This was focused, in particular, on improving the quality of CLTS programming and institutional triggering and, among others, led to the successful application of a programming approach developed in Madagascar, Follow-Up MANDONA, across several other countries, including Uganda, Benin, Togo, and Nigeria (Water Supply and Sanitation Collaborative Council 2015).

UNICEF in the Philippines incorporated peer-to-peer learning to overcome the inability of provincial level government to offer continuous support post-training to local governments, due to a lack of understanding of the local context and problems. The peer-to-peer learning was organized between CLTS facilitators from different municipalities, who would often face similar challenges. UNICEF provided a basic training and then would combine facilitators with older/more experienced facilitators.

The SLH supported the application of peer-to-peer learning in India during the SBMG, particularly between Panchayats.[32] In these peer-to-peer learning events, the participants would bring in what they wanted to discuss, with a high process rather than topic focus. Examples of process-related questions included: How can we engage self-help groups in mobilizing the communities? How do we get the help of masons into the villages? How do we promote twin-pits to households that want a septic tank?

Identified advantages of peer-to-peer learning include that it is very practical, hands-on, and based on day-to-day activities. It also has been embraced because of its empowering nature, as it assumes that those who work on the ground know what is needed and can in discussion with their peers come to new ideas on how to manage programs and processes. P*eer-to-peer learning provides incremental learning. It helps to answer the nitty gritty questions (e.g., how do I implement this, what forms to fill). When you have a peer who knows the day-to-day job, it will be very practical and hands-on* (KII, Global Study, Knowledge and Training Institute).

32 They also did this at block, district, and state levels.

However, it is difficult to monitor the impact of peer-to-peer learning. This has made it challenging to effectively measure and provide evidence of its effectiveness. An additional obstacle in advancing peer-to-peer learning is its institutionalization, especially of government-led coordination of peer-to-peer learning. Most opportunities are still managed fully by DPs/(I)NGOs and stop when projects are finished. As an example, in the SLH peer-to-peer events, the government of India paid for flights of staff to attend the events and bought into the process, but coordination and management of the learning events were fully managed by SLH and stopped as soon as funding was over.

There are other learning methods that the KIIs brought forward, many of which are not yet properly monitored for impact or effectiveness (Boxes 25 and 26). These methods have started to become more popular among DPs/(I)NGOs, in particular, as a means to recognize that different people learn in different ways, and more methods can be used to teach or capacitate staff.

BOX 25. OTHER INFORMAL LEARNING METHODS

One-to-one (1-2-1) support and/or mentoring support that is offered to strengthen organizational or individual capacity. For example, CAWST provided 1-2-1 support for the institutional development of PASA, including advisory support to design and roll out the Association. CAWST also supported the development of PASA's capacity development efforts, with an advisor to support the design, but also advice and support on themes such as meeting organization and governance, and grant management.

(**Virtual) exposure visits between countries (or service providers)** often in relation to a water or sanitation operator partnership (Global Water Operators' Partnerships Alliance, AfWA, WaterAid, etc.). The two organizations involved in such partnerships visit each other's facilities/projects based on particular themes on which they want to share experience and knowledge. But organizations also offer this internally (e.g., WaterAid, which organizes exposure visits between country programs to learn from each other), and DPs also have come together to support exchanges at a higher political level, such as the exposure of Nigerian officials to India's SBMG in 2018/19.[33] During COVID-19, such exposure visits became virtual, where videos of the project location would be made and an online discussion would be facilitated. PASA also organizes visits between emptier associations across the countries. During COVID-19 they hosted these visits virtually but quickly moved back to live events when the pandemic allowed it.

Competitions that support learning and knowledge sharing. The organization of competitions between projects, or public sector local bodies. In India, several competitions for ODF districts were organized and praised. While this is mostly an incentive-based program to motivate action, it also stimulates learning and knowledge sharing among the districts.

33 See for example: Modi's Swachh Bharat Mission an inspiring model, says Nigerian minister | The Financial Express

7.0 SYNTHESIS OF BARRIERS AND FINDINGS

Sections 3 to 6 identified several barriers to HR development in the sanitation and hygiene sectors, particularly for rural sanitation and hygiene. A barrier analysis against the four levels of capacity outlined in Section 1.2 showed that most barriers were identified at the level of organizational capacity, associated with broader enabling environment and societal barriers, and directly affecting individual capacity. This section provides a summary of key findings, organized to introduce the recommendations presented in Section 8.

COUNTRIES LACK SUFFICIENT INFORMATION ON THEIR SANITATION AND HYGIENE HR NEEDS AND CAPACITY BUT OVERALL, FACE LARGE SHORTAGES

Less than half of the countries reporting into GLAAS in SSA, South Asia, and Southeast Asia conduct HR assessments, and of those, over two-thirds reported doing so on an ad-hoc basis only. Even fewer reported having a national HR plan or strategy specific to sanitation and/or hand hygiene.

The lack of disaggregated data on sector HR is a significant issue, as such data is generally only tracked for certain professions (e.g., EHOs in Ghana) or urban utilities. This concerns firstly disaggregation of sanitation and hygiene tasks performed (particularly for those working across themes and sectors, such as HEWs or local government staff), but also data on gender, age, and education levels of the workforce, and, as contextually relevant, data on ethnicity or caste. A key challenge is the lack of data on the informal workforce and volunteers, who play a very large role in community mobilization and household sanitation and hygiene but are not sufficiently captured in public systems. The lack of data and HR assessments affect sector actors' ability to make informed decisions on issues such as what jobs to create, what professions to invest in, what competencies to develop, and what barriers to address.

For rural professionals, such as sanitary inspectors, masons and artisans, community mobilizers and facilitators, or WASH/sanitation/hygiene specialists, **there are almost no standardized job descriptions, job titles, competency frameworks, or workforce-to-population ratios available.** This lack of standardization and proper data collection were identified as likely reasons why the sanitation and hygiene (and WASH overall) sectors are behind on understanding, planning for, and developing clear career paths for their workforce, compared, for example, to the health, agriculture, and education sectors.

Alarmingly, five out of six country CNAs showed that **none of the functions in the sanitation and hygiene sectors have adequate HR capacity** (i.e., between 95–100 percent of needed HR). The HR shortages are significant, and most functions were assessed by country informants as having less than 50 percent of needed HR, effectively requiring a doubling of the existing HR. Countries whose main focus is on increasing access to basic sanitation showed moderate HR shortages (having between 50–95 percent of required HR) in the functions of oversight and support, community mobilization and engagement, and construction. They showed higher shortages in the functions related to sustaining SMS, including monitoring, emptying and transport, O&M, regulation (and enforcement) and business development. For hygiene, the indicated shortages occurred mainly in the areas of policy, strategy, and coordination; regulation; research and design; and business development. The lack of HR needs assessments and sector HR planning also means that many of the functions are currently performed by people without the appropriate skills profile, and there is a **distinct lack of diverse skills and disciplines,** particularly at the national level. For example, there is a mismatch between policy/strategy needs and the skills available at the central level. Often with primarily an engineering background, those in charge of rural sanitation strategy development may not have the breadth of skills and understanding of the type of interventions that rural areas need.

AS CROSSCUTTING THEMES, SANITATION AND HYGIENE ARE NOT PRIORITIZED AMONG THE SECTORS AND INSTITUTIONS IN WHICH THEY FALL, RESULTING IN A LACK OF JOBS

All countries in our assessment faced issues with a lack of prioritization for the sanitation and hygiene sectors. In the African countries, this concerns the achievement of universal basic access to sanitation and hygiene facilities, while in the South Asian countries where ODF achievement had been prioritized over the last decade, the sector now faces difficulty to politically prioritize SMS. Even in India where the SBMG Phase II is underway, the assessment found a stronger focus on solid waste management than on liquid waste management.

Rural sanitation and hygiene are crosscutting sectors and do not have a standalone dedicated labor market. Instead, they are heavily interlinked with broader services associated with solid and liquid waste management, health, nutrition, and education. Sanitation and hygiene mandates can be housed in or across multiple ministries, including ministries of rural development, water resources, water and sanitation, or health. The possible challenges caused by this are fragmented oversight and decision-making, lack of a champion to advocate for funding, lack of priority and focus, and ultimately, less time and effort spent on addressing sanitation and hygiene issues, including fewer HR and fewer jobs.

This lack of prioritization and institutional home has significant implications for the budgets and systems available to create the jobs (or even tasks within a job) necessary to effectively carry out the required functions. Moreover, **decentralization is not often accompanied by the necessary mandates and incentives,** and local governments are severely limited in their ability to develop the required local HR capacity. As such, job creation is difficult, and attracting or even absorbing new capacity is challenging because of the limited remuneration that can be offered.

Furthermore, **recruitment freezes, quotas, or a lack of recruitment acts further limit local government ability to create the jobs and hire the HR they need.** This was identified as an obstacle in the IWA study (2014) and again in this assessment for Nepal, Ghana, and Nigeria. Beyond that, the absorption capacity of institutions is often low.

RURAL SANITATION AND HYGIENE SECTOR WORKFORCE CONDITIONS ARE POOR

Where jobs are present, unattractive remuneration and working conditions, particularly in public sector jobs, do not attract a highly skilled or motivated workforce. Some countries reported that salaries in sanitation and hygiene were lower than for comparable positions in other public sectors such as health, or lower in rural areas than in urban ones. Working conditions, especially in rural areas, are difficult. Lack of public services, healthcare, and education, and distance from the family make it difficult to attract skilled professionals, and few countries have incentive schemes in place for rural employment. The country assessments highlighted that the public sector can attract personnel mostly because it can offer more steady jobs and job security. While remuneration tends to be better with (I)NGOs and the larger private sector organizations, employment in these organizations often is project-driven and temporary. Where possible, people seek job security in public sector employment but combine this with consulting or other engagements to supplement their income.

The sector workforce is severely affected by the projectized and contract-driven nature of the sector. Private sector jobs are often on contract basis for a particular project, the humanitarian WASH sector continuously faces operational struggles because the projects are so short and people move on, and the (I)NGO sector also recruits much of its staff based on project duration. Even parts of the public sector functions are heavily reliant on donor funding, often linked to programming cycles, after which staff will be rotated off the subject or moved elsewhere. As such, knowledge, skills, and institutional memory are lost, and the sector is less able to attract professionals seeking job security.

Sector employers, particularly in the public sector, lack clear GESI policies or other incentives to contribute to addressing gender and age disparities in the workforce. The assessment showed a largely male dominated workforce, and an aging one. The latter is also influenced by recruitment freezes and affects the ability to ensure intergenerational intra-institutional transfer of knowledge and skills. Our assessment showed that males are many times more likely to be employed in the sanitation and hygiene workforce than women. Women will more often take on the (unpaid) volunteer positions (e.g., Philippines) and men will take on the paid jobs and/or take on the entrepreneurial roles.

With limited institutional actors and formal jobs available to fulfill the rural sanitation and hygiene functions, there is an almost de facto dependence on low-level skilled workers, volunteers, community systems, and the informal sector. Both the public sector and DPs/(I)NGOs depend greatly on volunteers. Notably, higher numbers of volunteers, including those working as part of local government WASH units, were found in areas with higher DP or (I)NGO activity. But while volunteers are a necessity to ensure broad program outreach, clear support structures, guidance, and continued capacity development opportunities were found to be lacking, affecting both the quality and sustainability of program delivery.

Because remuneration is low and formal jobs are limited, it is often the more vulnerable, unskilled individuals with few other opportunities, who settle for work in rural sanitation and hygiene—often in the hopes of more. These include those working in the informal private sector on construction or pit emptying, or those working as volunteers or on a stipend, or as community health workers. The potential increase in income when graduating to a formal job within the local government can be significant and one of the motivations for volunteers to get involved in community sanitation and hygiene work. Yet, there **are limited opportunities for volunteers or unskilled workers to grow into official or fixed positions.**

Taken together, **these factors affect the quality of the workforce working in rural sanitation and hygiene.** Many well-trained professionals with strong leadership, facilitation and management skills are likely to move to more respected professions in different sectors or move up in the sector to jobs at the national or even international level—making brain drain a real challenge for rural sanitation and hygiene.

THERE IS LIMITED ATTRACTION AND PERSISTENT STIGMA TO WORK IN THE (RURAL) SANITATION AND HYGIENE SECTORS

People regard sanitation as an unattractive sector to work in, particularly in positions such as toilet construction, emptying, treatment, or reuse. This is partly linked to the poor working conditions and remunerations outlined in Section 7.3, but also linked to the persistent stigma and people's perceptions of the sector. The continued stigma on sanitation jobs was reported in our assessment to be worse in South Asia and Southeast Asia than in SSA, and it was acknowledged that steps are being taken in several countries to increase visibility of the important work undertaken by sanitation workers and to "rebrand" their jobs. But there is a continued perceived conflation of the sanitation worker jobs and their identities and position in society. As a result, socially and culturally many do not want to be associated with sanitation jobs, or families will not allow individuals to work in this sector.

For private sector actors, MBS is not generally an attractive business. The likelihood of a sanitation business being viable increases when the sanitation work is combined with other business lines. Much can and is being done by the public sector and DPs/(I)NGOs to improve the business environment and strengthen sanitation business capacity, but (stable) employment opportunities are still limited.

HR DEMAND, SUPPLY, AND TRAINING OPPORTUNITIES ARE MISMATCHED, LEADING TO COMPETENCY GAPS AND A LACK OF SKILLS DIVERSITY

While there is some investment in capacity development for rural sanitation and hygiene by the public sector, it generally falls short of the need. The assessment confirmed that **there is insufficient supply of graduates from training institutions with skills in on-site sanitation and hygiene.** However, beyond a numerical shortage, there is also a **mismatch between the requirements of the sanitation and hygiene sectors and the graduates supplied by the education sector.** This is particularly true for rural sanitation, where the practices and technologies in use are often not what is being taught in traditional engineering or construction courses and the non-technical competencies are often ignored.

The study highlighted several common competency gaps that applied across those in oversight and support functions and policy, strategy, and coordination functions. **The transferable skills** highlighted included leadership, project management, communications, data collection/surveying, planning, adaptive management, and problem solving. **The more technical competency gaps** identified were in understanding SMS service delivery, planning and service delivery for area-wide sanitation and hygiene outcomes, and application of GESI approaches and interventions to reach the last mile. The informal workforce and small businesses face technical knowledge and skills gaps around technological options, technical requirements, and materials to ensure safe construction, as well as transferrable knowledge and skills around entrepreneurship and business management.

There is a lack of lower-level education or capacity development opportunities, illustrated among others by a patchy offering of TVET opportunities for sanitation and hygiene professionals. Not only do these lack geographic spread across the countries, but the TVET courses are often not adapted to the expertise, preferences, or ability of the learners. Many of the (public) training institutes (universities, TVETs, and other education service providers) also struggle with a lack of financial and HR, a lack of physical training facilities and infrastructure, a lack of skilled trainers, and the theoretical and non-interdisciplinary focus of education. These challenges affect the range and quality of education provided to existing sector professionals, as well as the supply of new graduates.

In addition to the lack of formal education and capacity development opportunities, there is an **identified coordination gap between the sector needs, supply, and ability to absorb, as well as across development providers** (e.g., training and education institutes, but also DPs and [I]NGOs). This lack of coordination results in unequal offerings across geographies or topics/themes, and training/course development that is focused on the supply side (what those offering the courses think is needed) instead of on expressed training needs.

Lastly, for those already in the sector, **there is a gap in diversified offering of continuous professional development and on-the-job learning.** This is still often ad hoc, based on one-off trainings without proper follow-up and with a lack of long-term planning and thinking. An associated problem is that the public sector is often not set up to value or allow much time for learning, skill accumulation, and adaptation.

On a more positive note, the growth in digital learning offers major opportunities and the last decade has seen **increasing development of more interdisciplinary education offerings** around, for example, non-sewered sanitation education, FSM, entrepreneurship, and GESI.

8.0 RECOMMENDATIONS

This section provides five key recommendations, with 20 proposed actions, which are the result of the analysis of findings and recommendations from the global and national CNAs. The assessment team also incorporated feedback received on the preliminary recommendations during two consultation workshops.

8.1 RECOMMENDATIONS AND ACTIONS

The five key recommendations are structured around primary stakeholder groups with responsibilities in sanitation and hygiene: namely, those engaged in Policy and Oversight, in Training and Capacity Development, and in Product and Service Delivery (acknowledging that certain actors, like DPs, can span several of these groupings). As depicted in Figure 15, each recommendation falls under one of the stakeholder groups and some apply to more than one. It is acknowledged that recommendations and actions to strengthen sanitation and hygiene sector HR capacity are also dependent on and affected by broader influences and trends, such as those discussed in Section 2, over which sector actors may have limited or no control. While this report makes no recommendations to address these broader "enabling influences," some of the country reports did include recommendations targeting specific stakeholders outside of the sector, for example, related to advocacy, or reform of the broader public sector. Each recommendation includes a set of proposed actions, as described below. Annex 3 provides a tabular overview of the recommendations and actions, indicating proposed timeframes for each of the actions.

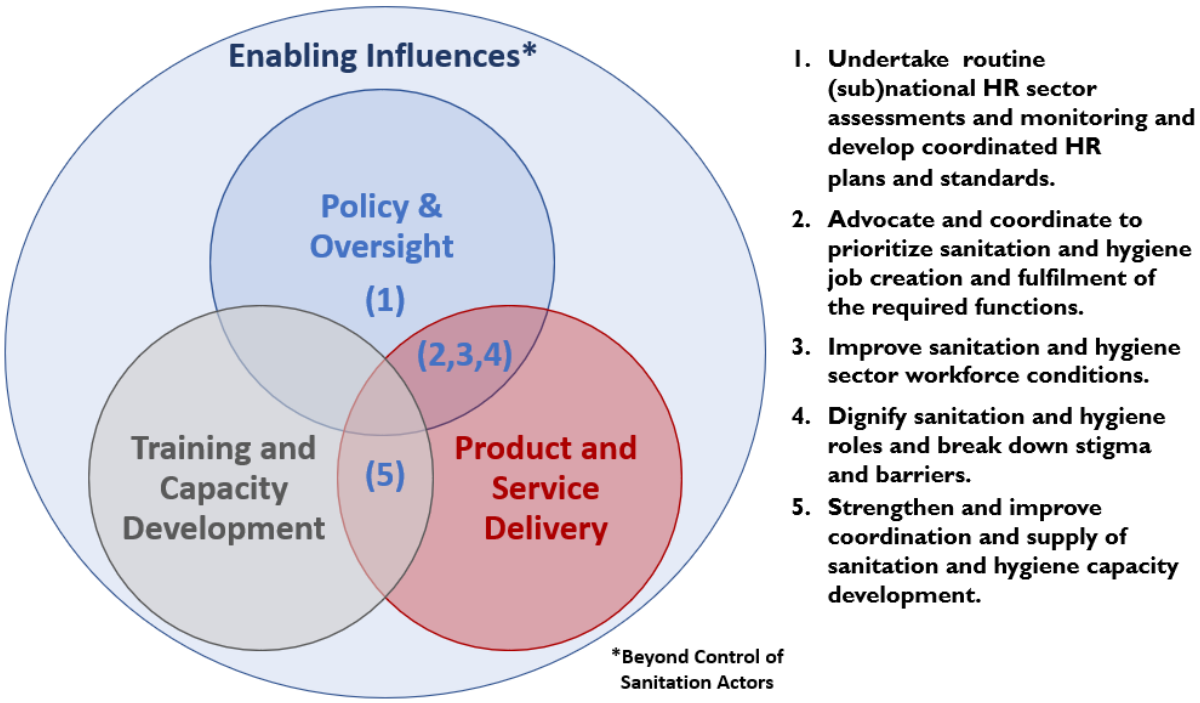

Figure 15. Recommendations by Key Actors

8.1.1 INSTITUTIONS RESPONSIBLE FOR POLICY AND OVERSIGHT

1. UNDERTAKE ROUTINE (SUB)NATIONAL HR SECTOR ASSESSMENTS AND MONITORING AND DEVELOP COORDINATED HR PLANS AND STANDARDS

The first recommendation is aimed at increasing the availability and quality of HR data and standardizing jobs to facilitate better human resource planning and context-specific capacity development in the

sanitation and hygiene sectors, as well as developing clear career paths for aspiring professionals. Proposed actions under this recommendation are:

1.1. Undertake WASH sector-wide or sanitation and hygiene-specific HR assessments

To improve our understanding of the workforce needs in the sanitation and hygiene sectors, a comprehensive HR assessment (where appropriate, incorporating water) is necessary. The national ministry/ies responsible for sanitation and hygiene should spearhead these assessments.

In the near term, an initial step could involve organizing a national or state-level workshop to discuss HR capacity shortages, identify gaps, understand barriers, and identify opportunities to overcome these challenges. For instance, in Zambia (Box 3), such workshops were undertaken by the Skills Advisory Group. While these workshops can provide quick insights into high-level gaps and shortages, they may lack detailed evidence or numerical data to support the findings.

To obtain such numerical data, the ministries responsible for sanitation and hygiene in coordination with public administration departments, could undertake more substantial and in-depth HR assessments at the national, state, or district levels.

All six country reports feature recommendations to undertake HR assessments, with some focusing on the entire WASH sector and all its stakeholders, others specifically targeting the public sector, and some being linked to national, state, or district-level plans for sanitation and hygiene. For instance, in the Philippines, the report proposed that cascading the Philippines Water Supply and Sewerage Management Plan would include developing LGU master plans for WASH, including the HR they would need.

DPs and INGOs can play a facilitating or support role in these HR assessments at the country level. However, given the need to develop locally owned costed plans, it is essential that the assessments are executed and led by the country partners who can effectively develop and implement these plans. This approach ensures ownership and sustainability of the proposed HR interventions.

1.2. Develop costed sanitation and hygiene HR strategies or plans linked to national plans and targets

Based on the HR assessments described in recommended action 1.1, the same ministries should develop a costed HR strategy/plan or, at minimum, incorporate clear HR requirements into the national plans and targets. In the Nigeria report, this recommendation was integrated with the first recommendation - *to undertake a CNA across all LGAs with the aim to develop a costed plan, as well as allowing the CNA to inform where issuing a directive to develop the LGA WASH units (or departments) was still needed*.

The HR strategies/plans should encompass a comprehensive range of skills and disciplines essential for fulfilling all sanitation and hygiene functions and roles. This includes considering diverse levels of engagement, from national to regional and local levels, and catering to various urban and rural geographies. Furthermore, these should consider the competency needs for the application of both on-site and off-site technologies.

1.3. Work toward standardization of jobs, roles, position descriptions and needed qualifications, career pathways, salaries, and job conditions for all levels and across actors

A higher degree of standardization of sanitation and hygiene jobs is recommended as it can facilitate more systematic HR data collection, improve the accuracy of HR gap assessments and development of costed plans, clarify career pathways, and overall enable more informed conversations on the

topic of HR. Where sanitation and hygiene sectors lack institutional ownership, these standardization exercises will need to be managed by the ministries/departments involved in sanitation and hygiene-related functions, such as the ministry of health, water resources and sanitation, rural development, education, and/or possibly even agriculture. In the short term, a first step can be to clarify overlapping roles between different job positions and/or departments. This could be further elaborated by developing standardized jobs for a few key roles in the sectors, clarifying job descriptions and qualification and competency needs, as well as determining levels and pay grades. For some jobs, such as EHO or community health officer, standard worker-to-population ratios could be developed, if they do not already exist. In the Philippines, the assessment recommended several actions to professionalize the sanitation and hygiene workforce, including determining an appropriate ratio of Sanitary Inspectors and BHWs per population, conducting an inventory of and legislating the professionalization of BHWs, upgrading salary grades for and upskilling Sanitary Inspectors, and revisiting several policies seen as hindering progress.

Acknowledging the role of DPs and (I)NGOs as sector employers, and to better facilitate career progression across and between the public sector and timebound sanitation and hygiene projects, where possible DPs and (I)NGOs should seek to use the same standardized roles and job descriptions (e.g., for project implementation staff) as used in the public sector.

1.4. Undertake transparent, disaggregated data collection across sector actors to monitor factors such as gender, ethnicity, education, salaries and attrition rates across the sanitation and hygiene workforce

To improve the quality and completeness of the HR data available, there is a need for all sanitation and hygiene actors to undertake transparent, disaggregated data collection on HR (including gender, ethnicity, education, salaries, and attrition). In the short term, this requires advocacy efforts that enable actors to understand the purpose for collecting this data. Departments of public administration, together with the responsible ministries have the responsibility to lead this data generation effort and could make it a prerequisite through policy or guidance. In the longer term, detailed HR data collection can become a prerequisite part of developing and implementing national plans or it can become standard policy for (government, private sector, or non-governmental) organizations and projects to share (non-personal) HR data, and/or conduct HR satisfaction/departure surveys.

For instance, in Nepal, a recommendation was made for all sector organizations to generate an up-to-date HR database, with disaggregation based on gender, caste/ethnicity, age, education levels, qualifications, and areas where staff serve. This data-driven approach can facilitate better planning and decision-making in the sanitation and hygiene sectors while promoting inclusivity and equitable representation.

INGOs and DPs can play a supportive role in advocating for increased flow of disaggregated data to monitor progress on gender, ethnicities, and religious backgrounds. For example, they can encourage and incentivize the recording of HR data, including data related to the informal and volunteer workforce, within their ongoing projects and policies. Collaborative partnerships can further foster collective action on HR data collection across country projects.

8.1.2 INSTITUTIONS RESPONSIBLE FOR POLICY AND OVERSIGHT IN CONJUNCTION WITH SERVICE PROVIDERS

2. ADVOCATE AND COORDINATE TO PRIORITIZE SANITATION AND HYGIENE JOB CREATION AND FULFILLMENT OF THE REQUIRED FUNCTIONS

While recognizing that the lack of financial resources is a significant impediment to the creation of sector jobs and incentivization of rural employment, sanitation and hygiene sector investment in job creation and development of a qualified and diversified workforce is essential. This recommendation calls for advocating to prioritize investment in the (rural) sanitation and hygiene sector and its jobs, as well as using coordination across sectors to ensure that the sanitation and hygiene functions are fulfilled, and necessary jobs are created. Proposed actions under this recommendation are:

2.1. Based on costed HR plans/strategies, undertake targeted advocacy for continued investment in (rural) sanitation and hygiene sectors and jobs

To ensure continued and increased national and international investment in the (rural) sanitation and hygiene sectors and jobs, there is a need to undertake targeted advocacy (including exploring alternative finance schemes, such as cross-subsidization of the [rural] sanitation and hygiene sector). Targeted advocacy should be based on the costed HR plans or strategies or at minimum on the findings of the HR assessments and should be led by the (local) government departments responsible for sanitation and hygiene together with local service providers. Such advocacy could also include the call to explore alternative mechanisms to increase sector investment, such as cross-subsidization between urban and rural areas. In Ghana, the assessment recommended to pursue further mobilization of funds for the sector as well as the establishment of a dedicated National Sanitation Authority.

At the international level, partnerships, such as the Sanitation and Water for All with its access to finance ministers, can advocate for investment in sanitation and hygiene jobs/HR capacity, if there is a clearly costed case to make. There is also an explicit need for donor organizations to continue to invest in rural areas.

2.2. Coordinate across sectors to attract, retain, and manage workload of rural workforce in sanitation and hygiene through cross-sectoral planning of programs and tasks, staffing, workload, and capacity development

To break silos and make more effective use of HR across locally delivered services, such as housing, water supply, sanitation, solid waste management, and community health and hygiene, local governments should develop a coordinated approach or plan to deliver on tasks across different departments, attract and retain qualified personnel to the rural areas, and coordinate capacity development locally. This can be supported by a national costed HR plan/strategy but is not dependent on that action.

An example is to explore if agricultural extension workers who work with farmers could be trained to deliver information and undertake oversight on safe reuse of fecal waste, or a combination of vaccination campaigns with sanitation and hygiene promotion activities. Coordination could also entail finding opportunities to strengthen transferable skills (e.g., project management, communication, problem solving, stakeholder/community engagement) across staff from different departments.

2.3. Develop incentive schemes and rewards for local government achievement of key performance indicators in sanitation and hygiene

To stimulate coordination and collaboration across sectors locally, the central government (i.e., different ministries involved in sanitation and hygiene as well as related sectors) can develop incentive schemes and rewards for local government achievements in the intermediate term. This will directly and indirectly affect the investment of local government bodies in their own HR or the enabling environment for businesses that they wish to implement the work.

The Nepal report includes the recommendation to introduce a conditional grant system or performance-based grants to local governments in the WASH sector, to stimulate HR development locally. These types of grants could also be used to stimulate cross-sectoral coordination. Local governments themselves could also introduce incentive schemes to award strong performance. In the Philippines, several LGUs used their own funds to provide additional motivation and rewards to BHWs for achievement of Zero Open Defecation status in areas under their care.

3. IMPROVE SANITATION AND HYGIENE SECTOR WORKFORCE CONDITIONS

By taking action to improve workforce conditions, this recommendation is aimed at increasing the appeal of the (rural) sanitation and hygiene roles and improving opportunities for talented volunteers and qualified professionals. Proposed actions for the recommendation are:

3.1. Work toward comparable working conditions and remuneration packages for staff in sanitation and hygiene sectors as in other public sectors (e.g., health) and explore policies that stimulate rural presence of senior staff

To attract and retain qualified staff in rural areas, public administration departments (i.e., the department managing HR in the public sector) should work together with the departments for sanitation and hygiene to improve working conditions, remuneration packages, and build incentive schemes for rural employment.

For the public sector, this could include aligning the rural remuneration packages across sectors, providing additional benefits (e.g., related to healthcare benefits or education opportunities for employees and/or family members), improving promotion opportunities for those working in rural areas, stimulating more local hiring, or even hiring (talented) volunteers. In Nigeria, the assessment also recommended introducing more internship/trainee programs in rural areas to familiarize upcoming professionals with work in the rural areas.

3.2. Develop appropriate recruitment acts, policies, guidance, and allocations for local governments to enable them to build the required workforce

To ensure that local governments are empowered to hire the required workforce and as appropriate within the country's devolved governance, the central government (i.e., department of public administration) should promulgate national acts that outline the legal framework and share guidelines for recruiting employees at the local level, including rules for advertising job openings, conducting interviews, and making hiring decisions. This was a recommendation for Nepal and Ghana, to allow local bodies to take charge of hiring their required HR. In India, the Panchatyati Raj Institutions already have the power to hire locally, but the central government reissued guidelines and reiterated existing support mechanisms after the country assessment.

3.3. Formalize volunteers or volunteer schemes by increasing access to capacity development opportunities, ensuring clear and fair incentive schemes, and establishing

schemes to enable (talented) volunteers to transition into formal local government positions, including by recognizing work experience as qualification

To address the sustainability and quality of work undertaken by the much-needed volunteers working in sanitation and hygiene, this action calls for both ministries responsible for sanitation and hygiene, as well as local governments, to formalize volunteer schemes. This also means that where DPs and or (I)NGOs support paying for volunteer schemes, sustainability, as well as any negative or unintended consequences linked to the volunteer scheme, need to be investigated upfront. Sustainability in this context refers to both the services performed by volunteers and their own sustained engagement and access to incentivization, capacity building, and/or support.

An immediate kick-off action in this regard could be for local governments and/or program implementers to record their volunteers (and performance) engaged in sanitation and hygiene-related work/activities. These records could allow governments and programs to tap into a potential pool of workers that have experience and/or have already received levels of training, rather than starting from scratch.

Local governments (possibly with support of higher-level government) could also change their tendering or recruitment processes for practical jobs (e.g., artisan, mason, community health worker) to include accepting a certain level/amount of practical work experience as a form of qualification. This could open up positions for those who volunteered or learned through previous apprenticeships.

Once the volunteers (and performance) are better recorded, it may also become easier for local governments to establish targeted capacity development programs for the volunteers to improve their performance and grow professionally, as well as to identify (talented) volunteers that could transition toward paid functions in local government. Hiring of volunteers has been applied in Nigeria, where talented community volunteers are engaged at LGA WASH unit level to volunteer with the benefit of a small stipend, and in India, where talented *Swachhagrahis* have been hired as sanitation supervisors. In the Philippines, the assessment recommended to improve the working conditions and transportation means for BHWs to reach the more remote areas in the LGU, as well as upgrading them into a formal job category.

(Local) governments should develop fair incentive schemes for volunteers. Sector research institutes, DPs, and (I)NGOs could support them by undertaking further research to understand motivations and benefits, (unintended) consequences of remuneration, and sustainability of the use of volunteers and official volunteer schemes.

3.4. Develop and use GESI policies and national HR strategies/plans to build diversified (multidisciplinary, gender, and age-diverse) local and national government teams to carry out the sanitation and hygiene functions

To deliver the diverse range of tasks and strengthen workforce capacity, the public sector needs to build multidisciplinary, gender, and age-diverse teams across the sanitation and hygiene functions. To this effect, national HR strategies and plans (see Recommendation 1) should be used to advocate for and develop appropriate positions, processes, and organizational systems to stimulate diversity and inclusivity. Revised/new GESI policies can further stimulate and support development and monitoring of (progress toward) a more diverse workforce, through guiding implementation of organizational GESI policies, data management, and knowledge management systems.

Local governments should strive to include mid-level professionals who can manage the range of program design, implementation, oversight, and monitoring of programs. Similarly, at the national level the public sector needs to attract a wide range of different disciplines (e.g., policy analysts, data

scientists, governance specialists, BCC specialists, finance experts) to develop and support the range of sanitation and hygiene policies, strategies, and programs needed to deliver and sustain (on-site) rural sanitation and hygiene.

To enable this action, local and central divisions can assess the plans and programs managed or supported by each division and determine whether the current staff disciplines and available job positions align with the objectives. Consequently, there should be advocacy for creating such new positions in the local and central government that encompass a wider range of disciplines. In Ghana, the assessment recommended to develop/ensure a diverse range of positions for professionals, such as monitoring, public health engineering, and BCC, in the Environmental Health Sanitation Units of the MMDAs. For the central government, the assessment proposed that the range of professionals should reflect the diversity of the rural programs they lead.

To ensure a dynamic and age-diverse workforce, local governments can also take steps to encourage the engagement of young professionals. This can be accomplished through the creation of internship and trainee positions, as well as establishing mentorship programs to support early career professionals. Additionally, un- or underemployed youth can be encouraged to participate in local sanitation and hygiene sector programs, which may involve developing skills as artisans, masons, and in community health work.

To monitor progress and implement course correction, data management systems play a crucial role. Collecting disaggregated data on various aspects, such as gender, ethnicity, religion, age, education, salaries, and attrition, in a transparent manner enables organizations to understand the composition of their workforce, the in- and outflows of their staff, and identify areas of improvement. Moreover, local organizations should develop or strengthen their knowledge management strategies to retain institutional knowledge despite the challenges posed by frequent employee turnover (due to rotation, ageing, or brain drain).

4. DIGNIFY SANITATION AND HYGIENE ROLES AND BREAK DOWN STIGMA AND BARRIERS TO ENTER THE (PRIVATE SECTOR) WORKFORCE

This recommendation is aimed at reducing the stigma and barriers to enter the sanitation and hygiene workforce, including barriers for increased private sector engagement. Proposed actions under this recommendation are:

4.1. Develop campaigns and advocacy efforts to eliminate barriers and stigma around sanitation and hygiene roles, curb discrimination and biases against sanitation workers, and remove caste/religious linkages to sanitation professions

The societal barrier of stigma around sanitation (and hygiene) functions will need to be reduced through a multifaceted approach that involves education and awareness campaigns, community-led initiatives, positive messaging, rebranding of sanitation workers, and collaboration among different stakeholders to change perceptions and curb discrimination and biases against sanitation workers and remove caste/religious linkages.

Together with DPs and (I)NGOs, ministries responsible for sanitation, together with their local governments, can identify the existing stigma and barriers to design the appropriate advocacy campaigns. Based on examples from the international Sanitation Worker Initiative, governments can start raising awareness on the important role of sanitation workers through video stories, billboard campaigns, and radio messaging. There are also opportunities to take inspiration from other national campaigns, e.g., the "sweepers are superheroes" campaign in Pakistan, or the rebranding of sanitation workers by having sanitation workers wear municipal uniforms or branded PPE materials,

as in Bangladesh. The latter also addresses some of the dangers associated with being a sanitation worker, which may in turn reduce the unwillingness of people to work in these areas.

Where governments are not yet active in tackling the stigma, DPs and (I)NGOs can develop country partnerships that support developing the evidence base, and advocate for and push governments into action.

4.2. Identify and continue to break down barriers for female and youth engagement in the workforce, including through structured engagement in local programs

In addition to introducing GESI policies as described in recommended action 3.4, tackling the low participation of females and youth in paid work in the sanitation and hygiene sectors also requires further identifying and continuing to break down barriers through research and monitoring of existing programs. Research institutes, DPs, and INGOs that focus on GESI in sanitation and hygiene sectors could support this, for example, through research/tracking of the (un)intended consequences of certain programs (e.g., the effect on female participation when volunteer positions are turned into positions with stipends). In addition, and as mentioned in recommended action 3.4, local programs can encourage diversity in gender and age in the workforce by promoting involvement of more local women and youth in local programs. In practice, this counts for both local government initiatives and DP/INGO programs.

4.3. Facilitate increased and improved private sector engagement in sanitation and hygiene by improving the business environment and working conditions, including through increased focus on regulation and health and safety

To increase viability and appeal for private sector/individuals to enter sanitation and/or hygiene fields, require actions that help understand private sector engagement and enable the business environment. These actions are a joint effort by the local, regional, and central governments, and could be supported by DPs and INGOs.

An initial step could be to research the current role of the informal and formal private sector in certain sanitation functions, the viability of their engagement, and the challenges they face. This includes identifying required government actions or responses to ensure an enabling business environment, e.g., through policy, regulation, and/or incentivization (e.g., through tax breaks for sanitation businesses), as well as a focus on the working conditions of personnel in the private sector. This also requires a focus on the support functions required to sustain those businesses (e.g., market analysis, training support, supply chain management).

4.4. Examine the channels, implications, and (unintended) consequences of formalization of informal service providers (e.g., around taxation and registration)

As with volunteers (recommended action 3.3), further research is required to examine appropriate ways to engage and/or formalize the informal private sector so that this is beneficial to them. This includes understanding motivations to remain in the informal sector, barriers to formalize, and possible unintended consequences of formalization schemes. This research can be supported by DPs and INGOs that are supporting governments in developing their private sector in the sanitation and hygiene fields.

An example of this is a certification scheme of artisans and masons identified in Ghana as part of the assessment. For such a scheme to be successful, the criteria and process for certification have to be developed, (several) institutions need to be identified that can train and certify informal actors, and criteria and processes by which certified professionals can continuously maintain/renew that certification need to be established. But as found in Ghana, there is also need for public awareness raising, or possibly incentivization or standard setting, to stimulate households to

exclusively use certified professionals when constructing their household toilets, as they may end up charging higher rates for their services.

8.1.3 TRAINING INSTITUTIONS IN CONJUNCTION WITH SERVICE PROVIDERS

5. STRENGTHEN AND IMPROVE COORDINATION AND SUPPLY OF SANITATION AND HYGIENE CAPACITY DEVELOPMENT

This recommendation is aimed at overcoming the lack of coordination and ownership of capacity development in the sanitation and hygiene sectors and strengthening and diversifying capacity development efforts targeted at the rural sanitation and hygiene workforce. The proposed actions below can facilitate development and coordination of the capacity development activities required to address the context-specific competency and skills needs identified in the individual country reports.

5.1. Develop a national government-led and/or DP coordination mechanism for capacity development providers (universities, TVETs, DPs, others) to coordinate filling HR capacity and skills gaps, address barriers, and plan the partners' capacity development efforts

To improve the coordination and ownership of capacity development efforts, the assessment team recommends that governments develop or strengthen a national government-led coordination mechanism/platform of capacity development providers (universities, TVETs, and others), sector policy and oversight institutions, and service providers. In the short term, this may entail establishing a regular meeting to discuss HR capacity gaps, barriers, capacity development efforts, and coordination. It may also be integrated into national sector coordination and planning cycles. Or countries may take inspiration from Zambia, where this coordination is done through the Skills Advisory Group led by the Ministry of Higher Education, the Ministry of Water Development and Sanitation, and TEVET, with the secretariat managed by the regulator for water supply and sanitation (NWASCO) (see Box 3).

Another intermediate step in situations where a government-led coordination mechanism is not (yet) in place would be to establish a DP/(I)NGO capacity development platform to facilitate improved collaboration, planning, and implementation of capacity development efforts. In all cases, such mechanisms or platforms should increase capacity development offerings across themes, groups of professionals, and/or regions of a country.

5.2. Strengthen national capacity development structures such as TVETs to address the need for formal education and continuous professional development for low and mid-level professionals in sanitation and hygiene

To address the limited offering of sanitation and hygiene capacity development for low and mid-level professionals in rural areas, the ministries responsible for sanitation and hygiene together with the Ministry of Education and/or TVET authorities should work to strengthen the educational institutes and geographical reach of those. Especially where those institutes already offer sanitation and hygiene-related courses, such as masonry, plumbing, pit emptying, FSM, health/hygiene behavior change, or community development/engagement.

The country assessments recommended strengthening the educational institutes (e.g., TVETs) that offer practical courses in sanitation and hygiene, both for the purpose of supplying the sector with more professionals as well as providing continuous professional development. In Nepal, the assessment recommended the establishment of training centers in the provinces, whereas now people need to travel to Katmandu for training. Where possible, this encouragement of using local training institutes should also be stimulated by DPs and INGOs in lieu of them developing their own

trainings, to stimulate sustainability of the capacity development offerings that are developed over the life of a project.

Strengthening of TVET or other local education structures could entail expanding training sights and upgrading facilities or training equipment, recruiting (and ensuring sustained financing for) highly qualified teachers and/or a teacher pool with more diverse skills to draw from for their courses, and developing business models to include more diversified ways of teaching.

5.3. Develop or strengthen diversified ways of practical, continued, or on-the-job learning, including through certification schemes, internships, and peer-to-peer learning initiatives

Key informants globally and at country level argued for diversification of learning methods. Examples that were provided included experience-based learning, exposure visits, blended learning, knowledge networking, and/or joint research and advisory services. In particular, several global and country-level stakeholders recommended the use of peer-to-peer learning methods in public sector roles, where staff newly entering roles could be connected with more experienced staff. But also for education providers, training institutes, and capacity development providers to broaden their capacity development efforts to include a variety of these learning methods.

In Ghana, the recommendation was to develop continuous professional development programs for sector professionals, with a combination of on-the-job training, short courses, and reskilling/retooling. Such programs could be produced in-house or by professional associations. In Nigeria, the recommendation for improved capacity development focused on introducing peer-to-peer learning between local governments that are willing to capacitate their staff toward attainment of LGA-wide sanitation, and introduction of more practical internships/attachments for students. In India, the recommendation focused primarily on increasing the deployment of information communications technology tools and multi-modal delivery to enhance effectiveness.

5.4. Review curricula, collaborate, and share open-source materials to ensure an up-to-date, appropriate, and interdisciplinary offering of courses and subjects, including on appropriate sanitation and hygiene systems and technologies and transferable skills and competencies

To continue to provide relevant capacity development, there should be continuous review of curricula at TVET, university, and other capacity development courses. It is essential these efforts include the latest developments in sanitation and/or hygiene. In this assessment, the gaps found in Section 5 could provide direction for current curricula review, but such reviews should also take into account local considerations or developments.

At minimum, it is recommended that training institutions review curricula on their inclusion of up-to-date knowledge and skills on SMS, sanitation and handwashing technologies, and BCC, as well as on transferable skills, including coordination, facilitation, adaptive management, problem solving, critical thinking, GESI, program design, and project management.

For universities, training institutes, and capacity development providers, key informants recommended developing open-source materials and sharing of (human) resources across different (already existing platforms) to create a less costly way of updating the curricula. Examples at university level for this exchange are the GSGS and the African Centers of Excellence that currently focus on Water Resource Management.

To adapt to digitalization in education, hybrid approaches could be considered with introductory lectures provided online or through an interactive voice response system and practical learning still

organized face-to-face. Capacity development providers should, however, continue to investigate if online learning may have detrimental effects on equal access between gender and other minorities.

5.5. Develop and undertake impact monitoring of capacity development initiatives to inform and continuously strengthen the offerings

To increase our understanding of the effectiveness of (new) learning and capacity development efforts, all education, training, and capacity development providers (including DPs and INGOs) should increase monitoring of the impact of the capacity development efforts. Monitoring then goes beyond investigating the number of people trained, but instead focuses on indicators such as the impact on and skills gained by the trained individuals, or the ways in which newly gained knowledge or skills are applied.

8.2 A CALL TO ACTION

The findings in this report have confirmed that the lack of a sufficiently skilled sanitation and hygiene workforce contributes to gaps in sanitation and hygiene service delivery and hampers the achievement of universal sanitation and hygiene goals and outcomes. The assessment has also demonstrated that the barriers to ensuring full HR capacity are multiple and complex. Yet, across the key sector actors, actions can and are being undertaken to address barriers; understand and develop the types of jobs, skills, and knowledge required to deliver the range of sanitation and hygiene functions; and strengthen the supply of appropriately skilled sanitation and hygiene professionals. In this, coordination is key.

The recommendations and proposed actions in this report serve as a call to action. This report is thus the first step in a longer-term process to engage multiple partners at global, regional, and local levels in the development of concerted, coordinated actions to address the HR capacity gaps in the rural sanitation and hygiene sectors. To this end, this report has been accompanied by a roadmap that incorporates a global action plan and guiding tools for the development of country action roadmaps, outlining proposed actions and examples by countries' sanitation progress and HR context. These will be published under a separate cover.

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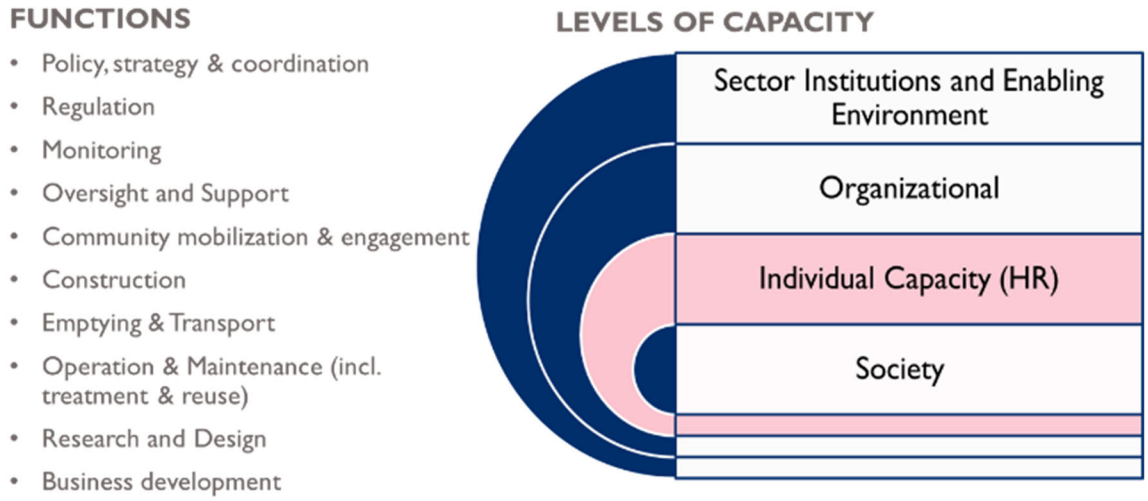
ANNEX 1. METHODOLOGICAL FRAMEWORK

1-1 SCOPE

To assess and address human resources (HR) capacity shortages and/or gaps requires a full understanding of four interconnected levels of capacity: individual, organization, enabling environment, and society, (Lincklaen Arriëns and Wehn de Montalvo 2013). This assessment focuses on the importance of individual capacity but illustrates that individual capacity is intrinsically influenced by other factors. This system-thinking approach was also reflected in choosing to assess HR needs for all functions of the sanitation and hygiene sectors.



In addition to the role of the professional sanitation and hygiene workforce, the assessment team acknowledged that households, especially in rural areas, carry the main responsibility for implementation of on-site sanitation and hygiene facilities. They may undertake the tasks themselves and/or depend on informal workers (i.e., those working without a contract, unregistered, and/or those working for unregistered entities), which are not considered part of the professional workforce. Additionally, the team acknowledges the large role of community members who contribute voluntarily (or under a very minimal stipend) to engage the community, undertake health promotion, or related activities. The informal workforce (definition in ILO n.d.b.) and the volunteers (definition in ILO n.d.a.) are therefore included in this assessment.

1-2 DEFINITIONS

OVERALL	
Area-wide sanitation	A systems-based, outcome-driven framework to achieve equitable, universal access and use of SMS and hygiene in a given administrative area, such as a district (United States Agency for International Development [USAID] 2023)
On-site sanitation	A sanitation system in which excreta and wastewater are collected, stored and/or treated on the plot where they are generated (SSWM n.d.)
Hygiene	In this study, strictly confined to fecal-related environmental cleanliness and hygiene
Capacity	The ability of individuals, organizations, and societies to perform functions, solve problems, and set and achieve objectives (Fukuda-Parr et al. in Willems and Baumert 2003)

OVERALL	
HR capacity (individual capacity)	The number of HR (personnel or self-employed individuals) and their competencies available to perform functions, solve problems, and set and achieve objectives
HR shortages	Refers to a deficit in numbers of HR needed versus those available
HR gaps	Refers to a deficit in competencies needed versus those available
Competency	Knowledge, skills, and abilities needed for an employee to perform their job in an effective manner
Technical (knowledge and skills)	Knowledge and skills (competencies) that a person has in a specific field (e.g., behavioral scientist with BCC skills, environmental engineer with design skills to develop FSTPs
Transferrable (knowledge and skills)	Knowledge and skills (competencies) that a person may need for their job but are not specific to that field. These knowledge areas or skillsets are applicable across multiple jobs (e.g., computer skills, relationship management, project management, communication skills)
Formal workforce (ILOSTAT n.d.)	All workers in incorporated enterprises, including government employees
Informal workforce (ILOSTAT n.d.)	All workers in unincorporated enterprises that produce at least partly for the market and are not registered. It excludes households that produce exclusively for own final use, subsistence agriculture, construction of own dwellings, etc.
GEOGRAPHIES DEFINED: ADOPTED AND ADDED ONTO FROM GUIDANCE ON PROGRAMMING RURAL SANITATION (WaterAid 2019)	
Rural remote (far from urban)	• Small and remote communities • Unpaved roads • Low population density • Primary agricultural livelihood • Low market reach (products and services not reaching rural remote area) • Low affordability of sanitation products and services • Few sanitation finance options (few finance institutions or services available)
Rural on-road (close to urban)	• Small to medium communities connected with rural centers • All-weather roads • Low to medium population density • Agricultural and other livelihoods • Low to medium market reach • Low availability of market products and services • Low affordability of MBS products and services • Some options for sanitation finance
Rural mixed (peri-urban)	• Large rural settlements and rural areas within urban catchments • Paved roads • Medium to high population density (some congestion problems) • Mixed livelihoods • Some tenants (rented accommodation) • Medium to high market reach • Medium availability of market products and services • Low to medium affordability of MBS products and services • Increased options for sanitation finance
Urban	• Large settlements within urban catchment • Unpaved or paved roads • High population density (congestion problems) • Mixed livelihoods • Fall in mandated area of the utility • Medium to high market reach • Medium to high availability of market products and services • Can have lack of land ownership (informal/illegal settlement) • Low affordability of MBS products and services • Increased options for sanitation finance

1-3 FUNCTIONS

The definitions of the functions used as the basis for the CNAs are provided below.

FUNCTIONS	
Policy, strategy, and coordination	The policy, strategy, and coordination function includes the development of strategic plans for the sector at a national or regional level; establishment of a strong legal framework for service provision; defining governance models; creating an effective institutional framework with clear responsibilities; designing regulatory frameworks; setting realistic targets to improve service quality; ensuring sufficient financing; ensuring transparency and access to information; promoting equality in service access; and

FUNCTIONS	
	coordinating financial resources, user participation, HR capacity development, conflict resolution, and research promotion to optimize sector performance and meet societal and environmental goals. (Based on the function described in the IWA Lisbon Charter 2015)
Regulation	The regulation function includes applying and enforcing standards, criteria, rules, or requirements that have been politically, legally, or contractually adopted, and exercising autonomous authority over the services in a supervisory capacity. (IWA 2015)
Monitoring	The monitoring function includes a deliberate, regular process in which defined aspects of the system are tracked, enabling an assessment of change over time and/or comparison with other systems that might be monitored in a similar way. Monitoring sanitation and hygiene systems[34] goes beyond monitoring sanitation and hygiene outputs and outcomes (infrastructure and service that system delivers) in that it includes monitoring levels of service (quantity, quality, and reliability), equity and performance (including financial viability), and monitoring of the resource allocations, expenditure, and governance. (Adapted from WaterAid 2021b)
Oversight and support	The oversight and support function concerns the work done to support the implementation of national plans at the local level and/or support the mandated service providers. This is a function executed by government bodies at regional, district, or municipal levels that manage water, sanitation, and hygiene implementation, and includes planning and budgeting, overseeing program implementation and monitoring, and providing technical and business support to community-based systems. It also includes procurement of services, as well as management of enforcement of national policies and standards, in support of the regulation function. At district/regional levels, this function includes coordinating capital investment plans, defining roles and responsibilities, providing support for procurement and management, overseeing municipalities, and ensuring compliance with national policies for water, sanitation, and hygiene services in their region/district. (Adapted from WaterAid 2021b)
Construction	Construction involves managing the planning and execution of capital investment projects for sanitation and hygiene infrastructure, including toilets, handwashing facilities at the household level, and FSTPs at the public level. This includes interacting with clients to engineer the system based on functional requirements and (household) needs, engaging with stakeholders or clients for design, creating plans compliant with construction standards, and ensuring the installation of necessary machinery to operate the system while adhering to relevant laws and regulations. In rural areas, construction involves creating the plans, interacting with the customer (and their needs), ensuring the delivery of the materials needed for construction, and the building of the facility (sanitation or handwashing). (Adapted from WaterAid 2021b)
Emptying and transport	Emptying in the sanitation field refers to the process of removing of waste from septic tanks, latrines, or other containment systems, ensuring they do not overflow or pose health hazards. Transport involves the safe and efficient movement of collected waste to treatment facilities or disposal sites, preventing environmental contamination and promoting public health. (Based on the Sanitation Service Chain)
Community mobilization and engagement	The community mobilization and engagement function involves the activities that ensure active involvement and engagement of communities in sanitation and hygiene initiatives. This includes social and BCC to raise awareness of the benefits of sanitation and hygiene, public participation during the design phase, establishing small financing schemes with professional support, and promoting sustained behavior related to sanitation and hygiene practices. This function includes (where relevant) fostering customer relations and transparent communications to build trust and willingness to pay for services. (Adapted from IWA methodological framework and WaterAid 2021b)
O&M, including disposal and reuse	The O&M function involves using HR, equipment, materials, and facilities to deliver inclusive, sustainable, and climate-resilient (water), sanitation, and hygiene services while complying with relevant legislation. It also includes implementing techniques and procedures to foresee and prevent system

[34] WASH system monitoring should be considered different from project monitoring.

FUNCTIONS	
	failures and disruptions, ensuring ongoing routine maintenance, and promptly repairing any disruptions that occur to maintain the optimal functioning of the infrastructure. It was also intended to include disposal and reuse, assuming that where treatment plants exist the safe disposal and potential reuse lies under the responsibility of those who operate and maintain the plant.[35] (Adapted from WaterAid 2021b)
Research and design (from both business and academics)	The research and design function involves the learning and adaptive management to both technological developments in sanitation and hygiene facilities (including toilets, handwashing, and fecal sludge treatment) as well as management methods/approaches to sustainable services. It includes the innovation that is needed and the research/ assessments/intelligence necessary to achieve sustainable sanitation and hygiene services. (Adapted from WaterAid 2021b)
Business development[36]	The business development function involves designing and evaluating business models for private sector growth in the sanitation and hygiene sectors. This includes conducting assessments of production and supply chains, providing capacity development for sales and marketing, accounting, inventory management, planning, record-keeping, and contracting cycles, as well as increasing access to business capital and financing and identifying high-potential entrepreneurs for investment opportunities. (This definition was co-developed with three business development support specialists during the inception phase of our work.)

It was recognized over the course of conducting the assessment that the set of sanitation and hygiene functions guiding the CNA needed refinement to better capture the breadth of functions required for successful delivery of rural sanitation and hygiene. Refinements are captured in the table below in red, with additional explanation provided underneath.

SANITATION AND HYGIENE FUNCTIONS	
FUNCTIONS USED IN THIS ASSESSMENT	**PROPOSED REVISED FUNCTIONS FOR FUTURE ASSESSMENTS**
Policy, strategy, and coordination	(National) policy, strategy, and coordination
Regulation	(National) regulation and enforcement
Monitoring	(National) monitoring
Oversight and support	(National) finance
Community mobilization and engagement	(Subnational/local) oversight and support (including monitoring)
Construction	(Subnational/local) community mobilization and engagement
Emptying and transport	(Subnational/local) advocacy and holding to account
O&M, including treatment, disposal, and reuse	(Subnational/local) construction
Research and design	(Subnational/local) O&M
Business development	(Subnational/local) emptying and conveyance (sanitation specific)
	(Subnational/local) treatment and disposal/safe reuse (sanitation specific)

35 During this study, it was observed that disposal and reuse (especially in rural areas) would not fall under O&M type of actors; safe disposal being a responsibility of emptiers (or the treatment points where they empty), and reuse could, depending on the sanitation technology, become a household/community responsibility.

36 During this study, it was critical to include a business development function, but not as the category where businesses would be but the support function. The title of the function was adapted to focus on the support needed for businesses to develop, as a business could fit also in the emptying, construction, and O&M functions.

SANITATION AND HYGIENE FUNCTIONS	
FUNCTIONS USED IN THIS ASSESSMENT	PROPOSED REVISED FUNCTIONS FOR FUTURE ASSESSMENTS
	Research and design
	Business development support

Firstly, informants proposed to **incorporate a finance function** to recognize the role of funding at the national level (i.e., those who decide on government budget/resource allocations) and sanitation financing (for households, communities, and/or businesses) by (micro) finance institutes. These functions can influence sector direction and will require dedicated HR.

The function of advocacy and holding to account was introduced to recognize the actors (e.g., CSOs) and HR that focus on advocating and lobbying for changes in approaches, strategies, and budgets, as well as those that monitor government actions and seek transparency and accountability.

To clarify that enforcement is part of the regulation function, it was recommended to include that word in the function title.

To acknowledge the different roles and actors involved in the sanitation service chain, it was suggested that treatment and safe disposal and reuse be removed from the O&M function. In the original set of functions, O&M was considered to include treatment, disposal, and safe reuse. It became obvious in our discussions that for rural sanitation, O&M of the facility (toilet/handwashing) is the responsibility of the household. Treatment, disposal, or reuse are more complex and while they can depend on the household, overall safe management of fecal sludge—conveyance, treatment, disposal/reuse—would likely introduce new actors (e.g., emptiers, public/private sector treatment services, and businesses) and a different caliber of professionals. It was, therefore, suggested to separate these functions more clearly.

For the function of emptying and transport, informants proposed new terminology—emptying and conveyance—to capture both management of sewage and fecal sludge. This was proposed in light of the increasingly blurred boundaries between rural and urban areas, meaning workers could be crossing these boundaries as well. Additionally, it would allow this framework to be inclusive of sewered sanitation and be applied in the future to assess HR across the urban and rural divide.

The business development function was further refined to focus on the business development *support* function. This recognizes the roles played by different ministries and (international) nongovernmental organizations ([I]NGOs)/DPs in advocating for and supporting small business development and strengthening of the overall business environment, whereas the businesses themselves are in the design and construction, emptying and conveyance, and treatment/disposal/safe reuse functions.

1-4 DATA COLLECTION

The following data collection methods were used: (1) desk reviews, (2) KIIs (where relevant, candidates may gather for group interviews or FGDs), (3) secondary data collection (GLAAS, AMCOW; WALIS Survey), and (4) country CNAs.

Example of a KII interview guide

EXAMPLE OF A KEY INFORMANT INTERVIEW SCRIPT KNOWLEDGE AND INTERNATIONAL TRAINING INSTITUTE	
~ 10 min	Introduction 1. Thank interviewee for their time. 2. Introduce yourself and the Sanitation Sector Capacity Assessment: a. I am a consultant for USAID's Water, Sanitation, and Hygiene Partnership and Learning for Sustainability (WASHPaLS) #2 project, that was awarded to Tetra Tech. The project aims to strengthen USAID's water, sanitation, and hygiene (WASH) programming at the country level and enhance global learning and adoption of the evidence-based programmatic foundations needed to achieve the SDGs. The objective of WASHPaLS #2 is to generate and facilitate WASH sector research and learning that result in sustainable, at-scale, and equitable improvements in key services, behaviors, and environmental conditions at the community and household levels. b. WASHPaLS #2 is currently conducting a sector-wide capacity and professionalization needs assessment focused on SSA and SEA regions. We will combine a systematic desk review of existing sector assessments with KIIs and country case studies. 3. Confidentiality and anonymity: a. The data will be collected and stored without identifying information. b. The interviewees' answers will not be published separately, but will be used together with other interviews, desk review, and country case studies for analysis. Permission will be sought by the consultant for use of quotes in the report. c. The interviewee will be acknowledged as a Key Informant in the Annex of the report, unless explicit anonymity is requested. Ask if they would like to remain anonymous. d. Ask for approval to record this interview for proper transcription. The recording will be deleted immediately upon finalization of the analysis. 4. Explain direction and length of interview: a. In this interview, we will dive into sections to gain an understanding of the capacity gaps in sanitation sector, understand different modalities for sanitation and hygiene sectors' capacity development and their contribution to needed human capital, and understand the barriers and incentives (at all levels) to access, recruit, and retain existing workforce capacity. b. The interview will take xxx minutes. Request if that is in fact the time the interviewee has available. 5. Ask the interviewee if they have any questions.
~10–15 min	Introduction Context Descriptors—tell me about yourself (your organization, the region of focus of your organization, the experience you yourself have working in Southeast Asia (SEA), SSA, your expertise in workforce/capacity development, rural, and urban).
	Human Resource Demand Transition—I would like to spend some time speaking with you about your knowledge on the future HR demand. a. (1.2.1) Across all functions – policy to research/design to implement (mobilize construct and O&M) to deliver sanitation and hygiene for all, what type of HRs are needed? And with what competencies? How is that different for remote, rural-on-road, rural mixed, and urban? (*Functions and definitions for rural remote, rural-on-road, rural mixed and urban to be provided to respondent.*) b. (1.2.1) If you would have to estimate, what is the percentage of these functions are dependent on informal workforce, volunteers (non-remunerated), or untrained (e.g., households)? Probe for evidence from countries/differences in regions/countries. c. (1.2.3) What are cross-sectoral HR dynamics for those working in sanitation and hygiene (e.g., health sector staff performing hygiene promotion; education sector taking responsibility to implement WASH in schools)? d. (1.3) What are the trends impacting sanitation and hygiene sector capacity? And how will this change the competencies/types of professions/numbers of personnel needed? i. Probe for status and challenges affecting sustainability of sanitation and hygiene for all.

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	ii. Probe for understanding trends beyond the sector as well (e.g., broader labor market, employment, urbanization, and climate change) and what the impacts are on the demand now and in the future. **Gaps** Transition—so now that we have a broad understanding of what we expect our future HR demand to look like, we understand our current challenges and future trends, and a rough understanding of the current HR capacity. a. (1.4) What is the scale of shortage (use Global Analysis and Assessment of Drinking Water and Sanitation [GLAAS] percentages—we have below 50% of what is needed, between 51–74% of what is needed, between 75–94% of what is needed, or 95% or more)? Probe to understand the scale of the gap and if it is missing in sector, or across countries. b. (1.5) What are typical jobs within those functions that sector is missing? How is this different for rural remote, rural-on-road, rural mixed, and urban? c. (1.5) What are the vacancies that remain unfilled? d. (1.5) What are the competencies that are missing (knowledge/technical/functional skills) across the functions? e. (1.3/1.5) Reviewing the trends, what are the competencies that need to be prioritized? f. (1.3) Are skills available for adaptive management? Probe for where across all functions these skills have been observed.
	Human Resource Supply/Modalities of Capacity Development for Sanitation and Hygiene: a. (2.1) For the countries in which your organization works, who delivers the education for sanitation and hygiene (*record per country)* and where does the largest proportion of professionals get their education? b. (2.1) For countries in which your organization works, which organizations/institutes are focused on supporting capacity development? How is this different for rural remote, rural-on-road, rural mixed, and urban? c. (2.2) Who are addressed in capacity development efforts? Probe if volunteers/non-rewarded/untrained have access to training. d. (2.1) What is the role that the various educational/training institutes play? How do you see collaboration? Probe for understanding the regional collaboration and differences. e. (2.2) How are they responding to sanitation and hygiene sector needs? f. (2.2) What are the gaps and challenges that training institutions face? g. (2.3) What are examples within and beyond your organization that are success cases in developing and sustaining HR capacity? h. (2.3) What were the key success factors of sustainable capacity development? How did that work/initiative sustain itself?
	Optional depending on background/work experience in more than countries in the region—barriers and incentives to attract, recruit, and retain professionals. a. (3.1) What are barriers the sector has to address in the capacity gap? Probe to understand barriers at four levels—enabling environment, organizational, individual, and society. b. (3.1.3) To what extent are the HR and/or capacity strengthening actions of DPs (DPs) aligned with government and programs? Probe for examples of countries where it is or is not working and why. c. (3.2) What barriers do different types of organizations face to attract professionals (e.g., competition and location of work)? Probe for evidence. d. (3.2) What challenges do organizations face in retaining staff and why? e. (3.3) What are individual barriers to enter the sanitation sector? Probe for evidence. f. (3.4) What are larger societal factors influencing the sanitation profession? Probe for evidence/examples. g. Optional: (3.6.3) What are common career pathways for sanitation professionals such as yourself? Probe for illustrative example of him/herself and for an example of different professionals in different settings.

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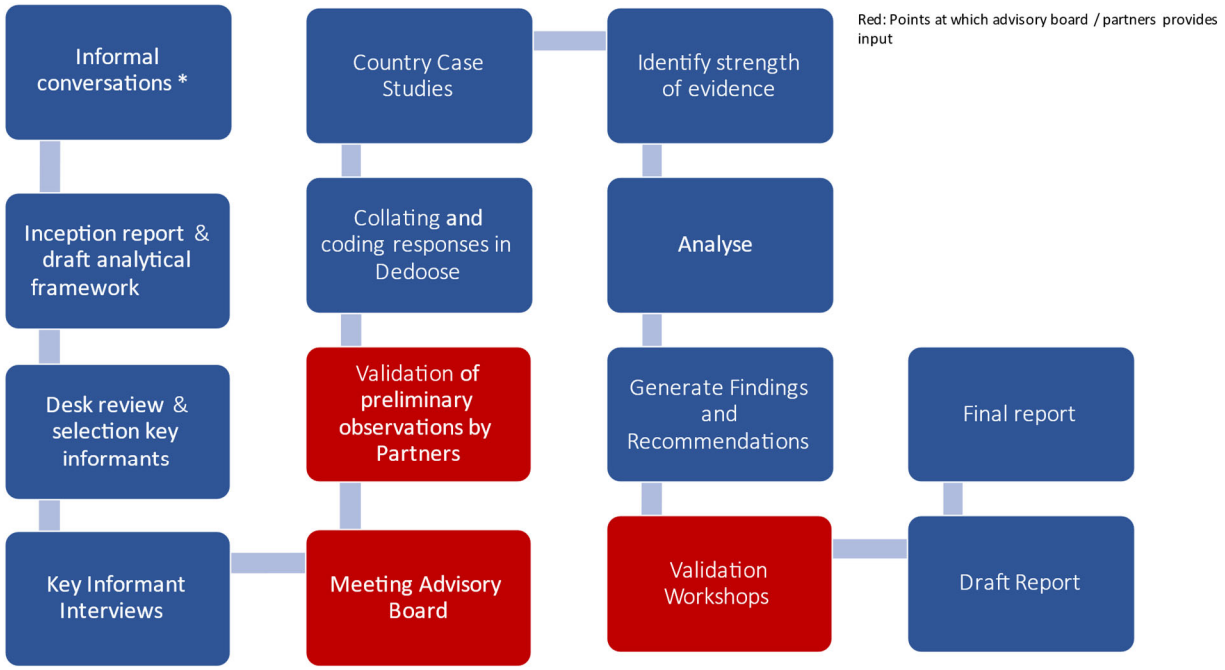
	h. (3.1) What are examples of programs/initiatives that have enabled the environment for developing jobs and capacities in the sanitation and/or hygiene sector? (e.g., What can we learn from other sectors?) i. (3.2) What are incentives implemented or activities that sector actors have done to attract HR? j. (3.2) What are opportunities for organizations/sectors to increase HR capacity? k. (3.3.) How can we overcome individual barriers that people may face to enter the sanitation and hygiene professions? l. (3.4) How can we overcome societal barriers for professionals to enter the sector?
	Actions a. (4.1) What capacity gap needs to be addressed immediately? b. (4.1) What opportunities/initiatives/actions are you aware of that address the workforce in sanitation/hygiene? c. (4.1) What initiatives/actions are you aware of that are addressing workforce capacity issues in other sectors? Probe for evidence of why those are working and whether this can be applied to sanitation and hygiene. d. (4.1) What actions can DPs focus on to address the gaps? Probe for actions at the four levels: enabling environment, organizational level, individual level, and societal level (i.e., probe for the conditions of success). Probe for adaptive actions and transformative actions. e. (4.1) What role can your organization have in addressing the workforce capacity in on-site sanitation and hygiene?
	Conclusion 1. Thank respondent for their time. 2. Tell the respondent they are welcome to contact you for further information. Inform them about what will happen next and how they will be informed about the progress (e.g., they will receive the output and they will be recognized in the list of Key Informants). Ask permission for use of the respondents' name in the report and to use a quote and record their response.

1-5 DATA ANALYSIS METHODS



During the preliminary desk review, an initial understanding of the information available will be reviewed. The documents reviewed were matched to the sub-questions to form a preliminary overview of the knowledge available on HR workforce in the sanitation and hygiene sectors, provide contextual information, and provide input into further data collection methods.

For the primary data collected through KIIs, the consultant developed codes and descriptors for analysis. Dedoose was used for uploading qualitative texts from interviews, doing pattern and context analysis, and identifying strength of evidence for each of the preliminary findings.

The country teams used their preferred methods of analysis in consultation with the international consultant. As data from countries was coming in later than finishing the analysis using Dedoose, the data was used to check and validate preliminary findings and correct these where necessary. These and the desk review were used to explain certain patterns.

The secondary data—GLAAS and Water for Africa through Leadership and Institutional Support Program [WALIS]—became available in Excel sheets and the African Minister's Council on Water provided reports. The latter were taken up in the desk review, and the GLAAS and WALIS data were analyzed for relevant findings and development of figures.

1-6 DATA VALIDATION

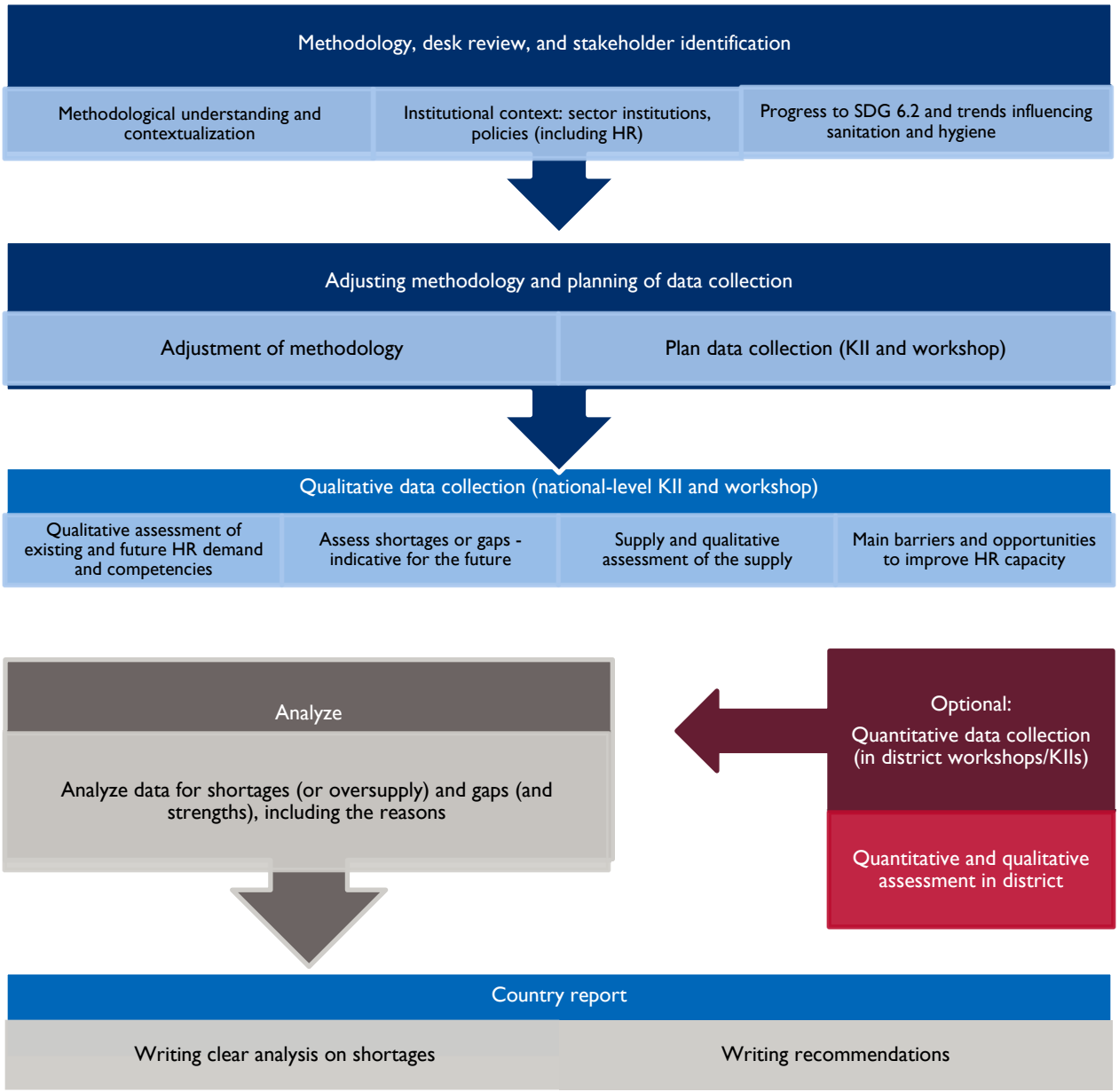
The following methods were used to ensure validity and reliability of data, always utilizing two or more methods per key question in the assessment:

- Interviewee triangulation: Relying on a variety of backgrounds in those interviewed and over 40 interviews;

- Investigator triangulation: In particular for the in-country CNAs, as some (Ghana, Nigeria, Nepal, and the Philippines) had two consultants, and the others worked together with the international consultant; and
- Validation meetings: A validation meeting with the WASHPaLS #2 Advisory Board was held to validate findings and examine areas of further interests, and two validation workshops (All Systems Go Ghana and University of North Carolina conference) were held to validate findings and preliminary recommendations.

ANNEX 2. COUNTRY ASSESSMENT FRAMEWORK

Process for Country Capacity Needs Assessment



METHODS AND EXAMPLES OF EXERCISES

In the initial phase of the country CNA, the consultant teams did a desk review, starting with an overview of institutional context. A key exercise was to perform a mapping of functions and responsible actors (i.e., employers), provide an overview of the country's labor market, and show progress toward SDG 6.2 and in-country trends relevant to the HR. An example overview is provided hereunder. This led to the support and/or identification of stakeholders for KIIs, FGDs, and the (validation) workshop.

EXAMPLE: MAPPING FUNCTIONS AND RESPONSIBLE ACTORS				
FUNCTION	**RURAL REMOTE**	**RURAL ON THE ROAD**	**RURAL MIXED (PERI-URBAN)**	**URBAN**
Policy, strategy, coordination (national)	Ministry of Rural Development (sanitation)		Ministry of Urban Development	Ministry of Urban Development
	Ministry of Health - department on sanitation and hygiene (Hygiene)			
	Ministry of Environment - oversees solid waste management and liquid waste			
Regulation (national, regional)	None available	None available	Ministry of Environment (nationally)	Independent Regulator x
			Provincial department of xx	
Monitoring (national/regional)	Ministry of Rural Development -department x (sanitation)		Ministry of Urban Development	
	Ministry of Health – department on sanitation and hygiene (Hygiene)			
	Ministry of Environment – oversees solid waste management and liquid waste			
Advocacy/holding government to account	CSOs (list the various CSOs present)			
Oversight/ management (provincial/local)	NGOs/CSOs	NGOs	Municipality	
	Provincial government	Provincial government		
	None	None	Utility	
Construction	Informal private sector (hired by household/CSO)	Informal private sector (hired by household/CSO)	NGOs with private sector firms in informal settlements	In x Government Program - x private sector leads
Community mobilization and behavior change	Ministry of Health			
	CSOs/NGOs	NGOs/(I)NGOs	(I)NGOs	Utility
				(I)NGOs
Empty and transport	None available	None	Pit emptiers – often informal private sector	
				Utilities
O&M	Households			
				Utilities only sewerage networks and FST plants
Research and tech design	Academic/research institutes			
	Large private sector firms/small innovators			
	NGOs			
Business development	Ministry of Economy (stimulating private sector engagement)			
	Private sector			

EXAMPLE: MAPPING FUNCTIONS AND RESPONSIBLE ACTORS				
FUNCTION	**RURAL REMOTE**	**RURAL ON THE ROAD**	**RURAL MIXED (PERI-URBAN)**	**URBAN**
	(I)NGOs/DPs			

Per country, a decision was made on the level at which the analysis would take place (national, national and district, or focused on just a few detailed questions) and whether a workshop would be used for data collection or validation. This led to the decision to focus the Ghana assessment on the national level; include assessments of sample districts in the Nigeria, Nepal, and India assessments; and conduct a more focused assessment on a smaller set of guiding questions for Rwanda and the Philippines.

Each of the four guiding questions for the CNA was subdivided into a further set of sub-questions. These are outlined in the table hereunder.

QUESTIONS	METHODS AND SOURCES
What are the HR capacity gaps impeding sanitation and hygiene sectors' achievement of universal access to sustainable services?	
Existing HR: • What is the labor market looking like? • Who are the actors responsible for the varying functions in sanitation/hygiene (how is this different for rural mixed, rural-on-road, rural remote)? • What functions may be facing a gap of actors? • What jobs exist in these functions? And what are the exact responsibilities? • What percentage of the functions relies on volunteers? • What percentage relies on an informal workforce? • Workforce composition: Gender, caste, age, other minority groups? HR Demand: • Trends and impacts on HR? • What are the cross-sectoral dynamics? • What type of job positions are needed per function?	Workshop: Ministry of Water and Sanitation/Water Resources and Sanitation/Ministry of Health (Health and Sanitation Department), service providers, private sector (I)NGOs operating in country, NGOs, CSOs Desk Review Workshop – national and district Workshop – national and district Workshop – national and district, but potentially also, reaching out to ministry/departments of labor
What are the different modalities for sanitation and hygiene sectors' capacity development and to what extent have they contributed to achieving and sustaining needed human capital?	
Modalities of capacity development Who are the key institutions involved in training, skills development and sector capacity strengthening (think beyond formal education providers to professional associations, government training programs, and NGO training programs)? • What are the gaps (e.g., outdated curricula, mismatch with needs, student diversity)? • What are their challenges (e.g., funding/ability to recover cost, sustainability of efforts)?	Interviews with a selection of four sanitation professionals (on careers in sanitation) Derived from interviews KIIs with training institutes (or universities), public institutions responsible for training public officials. Interviews with Sanitation professionals itself. Interviews, (I)NGOs, private sector (large and small [one person]), public sector, and perhaps telephone interviews with competing sectors
What are the capacity gaps impeding sanitation and hygiene sectors' achievement of universal access to sustainable services?	

QUESTIONS	METHODS AND SOURCES
Shortages (signaling trends) • What functions are needed to deliver SDG 6.2? Where is HR shortage (numbers)? What is the scale of the shortage (in %)? • What jobs remain unfilled? What qualifications? What positions? • Where are the shortages (rural mixed [peri-urban], rural-on-road, rural remote) and why are there shortages? • What are the barriers to increase the number of professionals? • What are opportunities (i.e., can the shortages be filled through educating existing personnel? Can shortages be filled by attracting people from other sectors)?	National/District Workshop and KIIs National/District Workshop and KIIs National/District Workshop and KIIs Interviews with Sanitation Professionals KIIs – Employers National/District Workshop and KIIs
Gaps (competencies) • What are the technical knowledge and skills gaps at which function? • What is the functional knowledge and skills gaps at which function? • Is there a broader barrier that is disabling staff to do what they should do?	Workshops national/district and KIIs – Employers (public/private, (I)NGOs)
What are the barriers and incentives to access recruit, promote, and retain existing workforce capacity?	
What are the overall barriers or incentives to attract, recruit, promote, and retain HR? Enabling environment (policies, reform, sector plans, and priorities [including priorities across sectors in country]), institutional mandates, responsibility, finances, etc. Organizational (staff identification, attracting, recruitment, promotion, retention, equal opportunities, job security, remuneration, opportunities, etc.) • Individual barriers/incentives to work in the sanitation sector (differences rural remote to urban, youth barriers, gender barriers, training courses/fees, etc.) • Civil society (pressure for sanitation/hygiene, CSO strength, perceptions on sanitation profession [culturally embedded?]), etc. Specific questions: • What are the typical career pathways in hygiene and sanitation (and are there differences in type of organizations)? • What are competing sectors (or potential sectors to attract workers from)?	Desk Review (e.g., strategies, budgets, HR policies, labor market, coordination across sectors) and KIIs KIIs (especially a few lower-level skilled staff) KIIs KIIs
What are the opportunities to reduce shortages/close gaps over the next 5–10 years? What is already happening at these four levels (to overcome the barriers)?	Desk review – what is happening in other sectors? KIIs, including with Labor Market specialists. KIIs with initiatives (e.g., skill-based initiatives, youth programs, retention efforts, or capacity development work in sector).

QUESTIONS	METHODS AND SOURCES
What are the recommended priority actions to address HR capacity gaps in the sanitation and hygiene sectors?	
Recommendations – short-term/long-term resulting from analysis: • Separated in four levels again.	

During the (validation) workshop, the consultants presented their desk review and or initial findings and performed a number of key exercises to collect missing data and validate findings and preliminary recommendations. Two key exercises were:

1. Signaling trends of shortages per function

- Sufficient HR to meet current demand/future demand (to reach SDG/national targets)
- 51–95 percent of HR to meet current demand/future demand (to reach SDG/national targets)
- Under 50 percent of what is needed to meet current demand/future demand (to reach SDG/national targets)

FUNCTIONS	SANITATION				HYGIENE			
	URBAN	PERI URBAN RURAL MIXED	RURAL ON ROAD	RURAL REMOTE	URBAN	PERI URBAN RURAL MIXED	RURAL ON ROAD	RURAL REMOTE
Policy, strategy, coordination								
Regulation (national)								
Monitoring (national)								
Regulation (district level)								
Monitoring (district)								
Management/oversight and external support (provincial, local government, municipality)								
Design and construction								
Sanitation only - Empty and transport								
O&M (includes treatment and reuse)								
Community engagement and mobilization								
Business development								
Research and design								

2. Qualitative competency gaps assessment per function and actor

	INSERT THE ACTORS (AS DEFINED DURING THE DESK REVIEW)	IDENTIFY (NEW) JOBS	COMPETENCY (TECHNICAL SKILLS/ KNOWLEDGE) NEEDED	COMPETENCY (FUNCTIONAL SKILLS/KNOWLEDGE – E.G., STAKEHOLDER ENGAGEMENT, PROJECT MANAGEMENT, INTERACTIVE SKILLS, BUDGET/ FIN MANAGEMENT, LEADERSHIP SKILLS [FOR LEADERS] PROBLEM SOLVING SKILLS)
Policy, strategy, coordination (national level)				
Regulation (national, provincial, local government)				
Monitoring (national, provincial, local government)				
Advocacy monitoring and hold to account				
Management/oversight and external support (provincial, local government, municipality				
Design and construction (in sanitation capture and contain)				
Sanitation only – empty and transport				
O&M (includes treatment and reuse) (household, municipality)				
Behavior change and community engagement and mobilization (national, local government, municipality level)				
Research and design (national level, local level)				
Business development (national level, local level)				

ANNEX 3. RECOMMENDATIONS AND PROPOSED ACTIONS

RECOMMENDATIONS AND PROPOSED ACTIONS	
INSTITUTIONS RESPONSIBLE FOR POLICY AND OVERSIGHT	
1. UNDERTAKE ROUTINE (SUB)NATIONAL HR SECTOR ASSESSMENTS AND MONITORING AND DEVELOP COORDINATED HR PLANS AND STANDARDS	
1.1 Undertake WASH sector-wide or sanitation and hygiene-specific HR assessments	Near term
1.2 Develop costed sanitation and hygiene HR strategies or plans linked to national plans and targets	Intermediary term
1.3 Work toward standardization of jobs, roles, position descriptions and needed qualifications, career pathways, salaries, and job conditions for all levels and across actors	Near, intermediary, and long term
1.4 Undertake transparent, disaggregated data collection across sector actors to monitor factors such as gender, ethnicity, education, salaries and attrition rates across the sanitation and hygiene workforce	Near and intermediary term
INSTITUTIONS RESPONSIBLE FOR POLICY AND OVERSIGHT IN CONJUNCTION WITH PRODUCT/ SERVICE DELIVERY AGENTS	
2. ADVOCATE AND COORDINATE TO PRIORITIZE SANITATION AND HYGIENE JOB CREATION AND FULFILLMENT OF THE REQUIRED FUNCTIONS	
2.1 Based on costed HR plans/strategies, undertake targeted advocacy for continued investment in (rural) sanitation and hygiene sectors and jobs	Near, intermediary, and long term
2.2 Coordinate across public sectors to attract, retain, and manage workload of rural workforce in sanitation and hygiene through cross-sectoral planning of programs and tasks, staffing, workload, and capacity development	Intermediary term
2.3 Develop incentive schemes and rewards for local government achievement of key performance indicators in sanitation and hygiene	Intermediary term
3. IMPROVE SANITATION AND HYGIENE SECTOR WORKFORCE CONDITIONS	
3.1 Work toward comparable working conditions and remuneration packages for staff in sanitation and hygiene sectors as in other public sectors (e.g., health) and explore policies that stimulate rural presence of senior staff	Intermediary term
3.2 Develop appropriate recruitment acts, policies, guidance, and allocations for local governments to enable them to build the required workforce	Near, intermediary term
3.3 Formalize volunteers or volunteer schemes by increasing access to capacity development opportunities, ensuring clear and fair incentive schemes, and establishing schemes to enable (talented) volunteers to transition into formal local government positions, including by recognizing work experience as qualification	Intermediate, long term
3.4 Develop and use GESI policies and national HR strategies/plans to build diversified (multidisciplinary, gender, and age-diverse) local and national government teams to carry out the sanitation and hygiene functions	Intermediary term
4. DIGNIFY SANITATION AND HYGIENE ROLES AND BREAK DOWN STIGMA AND BARRIERS	
4.1 Develop campaigns and advocacy efforts to eliminate barriers and stigma around sanitation and hygiene roles, curb discrimination and biases against sanitation workers, and remove caste/religious linkages to sanitation professions	Near, intermediary term

RECOMMENDATIONS AND PROPOSED ACTIONS	
4.2 Identify and continue to break down barriers for female and youth engagement in the workforce, including through structured engagement in local programs	Intermediary
4.3 Facilitate increased and improved private sector engagement in sanitation and hygiene by improving the business environment and working conditions, including through increased focus on regulation and health and safety	Near, intermediary term
4.4 Examine the channels, implications, and (unintended) consequences of formalization of informal service providers (e.g., around taxation and registration)	Near term
INSTITUTIONS RESPONSIBLE FOR TRAINING IN CONJUNCTION WITH PRODUCT/SERVICE DELIVERY AGENTS	
5. STRENGTHEN AND IMPROVE COORDINATION AND SUPPLY OF SANITATION AND HYGIENE CAPACITY DEVELOPMENT	
5.1 Develop a national government-led and/or DP coordination mechanism of capacity development providers (universities, TVETs, DPs, others) to coordinate filling of HR capacity and skills gaps, address barriers, and plan the partners' capacity development efforts, including across geographies	Intermediary term
5.2 Strengthen national capacity development structures such as TVETs to address the need for formal education and continuous professional development for low and mid-level professionals in sanitation and hygiene	Intermediary, long term
5.3 Develop or strengthen diversified ways of practical, continued, or on-the-job learning, including through certification schemes, internships, and peer-to-peer learning initiatives	Near, intermediary term
5.4 Review curricula, collaborate, and share open-source materials to ensure an up- to- date, appropriate, and interdisciplinary offering of courses and subjects, including on appropriate sanitation and hygiene systems and technologies, and transferable skills and competencies	Near term
5.5 Develop and undertake impact monitoring of capacity development initiatives to inform and continuously strengthen the offerings	Intermediary term

ANNEX 4. LIST OF GLOBAL KEY INFORMANTS

GLOBAL KEY INFORMANTS	
INSTITUTION	**NAME**
1. WEDC	Rebecca Scott
2. IHE – Delft	Damir Brdjanovic
3. International Water Centre (IWC)	Lachlan Guthrie and Bronwyn Powel
4. CAWST	Laura Kohler
5. EAWAG	Fabian Suter
6. BORDA	Stanzin Tsephel
7. Institute for Development Studies	Jamie Myers
8. London School of Hygiene and Tropical Medicine	Sian White
9. WaterAid	Andres Hueso, Khairul Islam, Om Prasad Gautum
10. World Bank	Irma Magdalena Setiono, Raghava Neti, Hang Diem Nguyen
11. Bill & Melinda Gates Foundation	Alyse Schrecongost, Roshan Shrestra
12. UNICEF	Mike Gnilo
13. USAID WALIS	Richard Rapier
14. USAID TRANSFORM WASH	Monte Achenbach
15. 2iE Burkina Faso	Harinaivo Andrianisa
16. ITN-BUET	Tanvir Ahmed
17. SMART Centres	Henk Holtslag/Reinier Veldman/Jim Mcgill
18. SNV	Gabrielle Halcrow
19. UN Office for Project Services (and past Key Resource Centers)	Vinod Mishra
20. AUDA-NEPAD Centers for Excellence	Nico Elema
21. FSM Alliance	Jennifer Williams
22. African Water Association	Mbaye Mbeguere (Sanitation Coordinator)
23. Skills Initiative Africa	Sarah Ferdjane
24. End of Poverty Coordinator – and expert public governance and public sector capacity assessment national level (South Africa)	Alana Potter
INFORMAL CONVERSATIONS	**NAME**
1. Center of Science and Environment India	Suresh Rohilla
2. CWIS Expert	Martin Gambrill
3. Sanitation Specialist	Dennis Mwanza
4. IWA Non-Sewered Sanitation Specialist Group	Mei Wee Yan and Jay Baghwan

GLOBAL KEY INFORMANTS	
5. African Civil Society Network on Water and Sanitation (ANEW) or its national networks Uganda Water and Sanitation Network (UWASNET), Tanzania Water and Sanitation Network (TAWASNET), and World Educare Network (WENET)	Sareen Malik
6. ESAWAS	Yvonne Magawa
7. NWASCO	Chola Mbilima
8. IRC	Digbijoy Dey, Ingeborg Krukkert, Shiny Ruchika
9. WaterAid	Maya Igarasi and Khairul Islam, Olutayo Bankole-Bolawole, Abdul-Nashiru Mohammed, Robert Kampala, Rob Fuller

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