FINAL
REPORT

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Current and Future Skills Required in WASH

CENTER FOR SUSTAINABLE WATER

+855 77 607 707

info@centerforsustainablewater.org

https://centerforsustainablewater.org/

Address : 2F, #225, St. 63 corner 334, Sangkat Boeng Keng Kang 1,
Khan Boeng Keng Kang, Phnom Penh

EXECUTIVE SUMMARY

The Royal Government of Cambodia (RGC) implemented the National Policy on Water and Sanitation in 2003 to ensure rural citizens have access to clean water, improved sanitation facilities, and hygienic living conditions by 2025. The SDG 6 Global Acceleration Framework was introduced in 2020 to accelerate progress towards achieving SDG 6 by 2030. The future rural WASH workforce development will be influenced by trends like the growing rural population and young people needing jobs. However, there is a mismatch between training providers and the WASH sector's skill needs, requiring a balance between practical fieldwork, soft skills development, and cutting-edge technologies. This preliminary study primarily focuses on three key sectors: the educational sector, employees/students, and employers, with a specific emphasis on assessing the "Current and Future Skills Required in WASH."

This study utilized mixed methods, including face-to-face surveys, online surveys, focus group discussions, and secondary data collection. It took place from October 2023 to March 2024, starting with training Young Research Fellows, defining the study plan, and forming the survey questionnaire. The education sector involved four higher educational institutions in Cambodia, while employees and students included 14 employees from NGOs, private companies, and institutions working on WASH-related issues and 74 final-year students whose majors are related to WASH. Employers included 21 institutions employing young people and professionals in WASH-related fields, and five governing bodies.

Cambodia's water, sanitation, and hygiene (WASH) sector offers numerous opportunities for young and professional individuals, including university lecturers, research positions, internships, employment positions, and capacity-building initiatives. NGOs, private companies, and institutions provide specific roles in administrative, finance, communication, and technical roles. The government also offers internships and other engagements, while students can seek opportunities through university networks, professional connections, external involvement, and engagement with relevant WASH institutions. Universities play a crucial role in developing skilled professionals in the WASH sector, offering a range of degrees and focusing on practical applications and soft skills. NGOs, private companies, and institutions contribute to skills development through training, volunteering, and internship opportunities. Collaborations between universities with government entities, NGOs, private companies, and other institutions can provide a broader range of opportunities for technical and soft skills development. However, challenges persist in developing both technical and soft skills in graduates, and collaboration between the educational and private sectors is needed to ensure graduates have both technical expertise and soft skills for professional success.

To ensure the quality and requirements of current and future skills in the WASH-related sector, the education sector, employees/students, and employers should collaborate. Schools should conduct exposure visits, integrate soft skills through digitalization, increase

internship opportunities, and encourage students to participate in soft skills training outside of school. Collaboration with professionals from diverse industries and government agencies, NGOs, and private sector entities can help manage WASH issues effectively. Employees/students should focus on developing hard and soft skills, gaining practical experience, enhancing technical knowledge, staying updated on trends, improving soft skills, demonstrating cultural competency, and strengthening language and computer skills. Employers should offer flexible internships, increase job announcements, support skill development, improve recruitment processes, address salary concerns, promote gender equality, and provide information and support to help students and employees navigate job opportunities, including relocation and working conditions in remote areas.

The survey findings from a diverse range of participants, including universities, employees, students, private sectors, and governmental organizations, provide a comprehensive understanding of the WASH sector in Cambodia. By exploring opportunities through universities, NGOs, private companies, and government initiatives, individuals can gain valuable experience and develop skills. Universities and the private sector should enhance educational programs, provide specialized training, and foster awareness of WASH-related careers to develop a larger pool of qualified professionals. Soft skills are crucial for personal and professional success.

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ABBREVIATION

ACU	ASEAN Cyber University
AFD	Agence Française de Développement (French Development Agency)
CA	Council Administration
CAPRED	Cambodia Australia Partnership for Resilient Economic Development
CSW	Center for Sustainable Water
CWA	Cambodian Water Supply Association
DWG	District Working Group
EMW	East Meets West
EWB	Engineers Without Borders
FGD	Focus Group Discussion
GPCC	General Population Census of Cambodia
ILO	International Labour Organization
ITC	Institute of Technology of Cambodia
IU	International University
KII	Key Informant Interview
MISTI	Ministry of Industry, Science, Technology and Innovation
MLVT	Ministry of Labour and Vocational Training
MOE	Ministry of Environment
MoEYS	Ministry of Education, Youth and Sport
MOH	Ministry of Health of Cambodia
MOWRAM	Ministry of Water Resources and Meteorology
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
NAP I	National Action Plan 2014-2018
NAP II	National Action Plan 2019-2023
NGOs	Non-governmental Organisation
NSDP	National Strategic Development Plan
NSP	National Strategic Plan
PAP	Provincial Action Plan
PDRD	Provincial Department of Rural Development
PPWSA	Phnom Penh Water Supply Authority
PUC	Pannasastra University of Cambodia
PWG	Provincial Working Group
PWO	Private Water Operator
RGC	Royal Government of Cambodia
RIC	Research and Innovation Center
RUPP	Royal University of Phnom Penh
RWSSH	Rural Water Supply, Sanitation, and Hygiene
RWST	Rural Water and Sanitation Team
S4C	Skills for Competitiveness
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
UP	University of Puthisastra
WASH	Water, Sanitation, and Hygiene

WASH SDO	WASH Skills Development Organization
YRF	Young Research Fellow

1. BACKGROUND

1.1. WASH Context in Cambodia

The Royal Government of Cambodia (RGC) instituted the National Policy on Water and Sanitation in 2003, aiming for universal access to safe water, enhanced sanitation services, and hygienic living conditions for all rural citizens by 2025. The National Strategy on Rural Water Supply, Sanitation, and Hygiene (RWSSH) 2011–2025, subsequently launched as the National Strategic Plan (NSP) RWSSH 2014–2025, seeks to support the RGC to fulfil its vision. The NSP outlines five strategic objectives: (i) improve water supply services; (ii) improve sanitation; (iii) hygiene behaviour change; (iv) institutional arrangements; and (v) financing. The technical working group (TWG) RWSSH was established in 2007 to ensure effective coordination of the RGC's response to rural water and sanitation challenges. The TWG is chaired by Ministry of Rural Development (MRD) and co-chaired by a development partner agency on a rotational basis.

The first phase of NSP implementation was guided by the 2014–2018 National Action Plan (NAP I), which was aligned with the 2014–2018 National Strategic Development Plan (NSDP III). Provincial action plans RWSSH 2014–2018 (PAPs I) were developed in each of the 25 provinces to provide more specific guidance for implementation at the sub-national level. Provincial working groups (PWGs) RWSSH were established during the 2014–2018 period to oversee the implementation of PAPs in each province which is chaired by the provincial government and co-chaired by Provincial Department of Rural Development (PDRD). Later, district working groups (DWGs) were also established to oversee the implementation of WASH activities at district level which is chaired by the district government.

The 2019 General Population Census of Cambodia (GPCC) – WASH thematic report reveals a significant improvement in access to basic drinking water services, with 82.6% of Cambodian households now having access compared to 46.8% in 2008. Similarly, access to basic sanitation services also saw a notable increase, with 82.8% of households having access in 2019, up from 33.7% in 2008.[1] Despite the considerable progress, there are numerous challenges, both persistent and new ones (i.e. inequality of services between rural and urban, institutional capacity, and climate change and disaster risks, to name a few), to overcome before the sector can fulfil its vision of ensuring all rural people have access to equitable and sustainable WASH services.

Cambodia's population is expected to grow from 16.08 million in 2019 to 18.74 million in 2030.[2] An additional 2.66 million people will require clean water supply service, and new and existing facilities will need to be maintained. This will require effective local institutional

[1] Ministry of Rural Development (MRD), 2022. Review of the 2014-2025 National Strategic Plan (NSP) and 2019-2023 National Action Plan (NAP II).
[2] General Population Census of Cambodia 2019. Series Thematic Report on Population Projection.

structures to be developed and long-term investment in human capital. Given the sector needs, the development of human resources at all levels and the inclusion of women and marginalized groups are at the core of the sector development in order to provide adequate, equitable, sustainable and inclusive services.

1.2. WASH Workforce

The SDG 6 Global Acceleration Framework, launched in 2020 as part of the UN Secretary-General's Decade of Action, seeks to expedite progress towards achieving SDG 6 – ensuring water and sanitation for all by 2030. Recognizing that traditional approaches won't suffice, the framework emphasizes the need for innovation and transformative ideas to address water-related challenges effectively. Among its key focuses are five interconnected accelerators, one of which is capacity development. This accelerator aims to enhance workforce skills in the water sector, thereby improving service levels and fostering job creation and retention.[3]

Future rural WASH workforce development will be influenced by a variety of trends, including the growing rural population and the increasing number of young people who will need jobs in the future.[4] As more individuals settle in rural areas, there will be a greater need for professionals who can design, implement, and manage sustainable water supply and sanitation infrastructure. Additionally, the increasing number of young people entering the job market will shape the future rural WASH workforce. To address this, it will be crucial to provide adequate training and education opportunities that equip young individuals with the necessary skills to excel in the WASH sector. By recognizing and responding to these trends, Cambodia can proactively develop a skilled and competent rural WASH workforce that can effectively meet the evolving needs of the communities they serve.

However, a limitation on workforce development occurs through a mismatch between what training providers offer and the alignment with the skill and proficiency needs of the WASH sector.[4] It is essential to bridge this gap by ensuring that the training and education provided to aspiring WASH professionals are in line with the industry's requirements. This includes incorporating practical fieldwork, soft skills development, and cutting-edge technologies into the curriculum. By addressing this limitation, Cambodia can enhance the quality and effectiveness of the rural WASH workforce, enabling them to effectively respond to the evolving challenges and demands of the sector.

The current state of the university curriculum in Cambodia reveals a disconnect between the education system and the needs of the Water, Sanitation, and Hygiene (WASH) sector, hence the curriculum offered by universities does not adequately align with the demands of the industry, resulting in a gap between the skills possessed by graduates and those

[3] SDG 6 Global Acceleration Framework | UN-Water (unwater.org).
[4] WaterAid Cambodia, 2020. Cambodia Water, Sanitation, and Hygiene Workforce Scoping.

required by employers, as a consequence, universities are failing to produce graduates who are equipped to meet the market's demands in the WASH sector.[4] This mismatch highlights the importance of updating and revising the curriculum to bridge the gap and ensure that graduates are well-prepared to address the challenges and requirements of the industry.

One crucial aspect that is often neglected in the school curriculum in Cambodia, characterized by intensive academic courses that consume students' time from morning till night, leaves little room for practical fieldwork and the development of soft skills. The educational focus in many institutions mainly revolves around imparting technical skills, leaving limited room for the fostering of essential interpersonal and communication abilities. Feedback from the private sector indicates that students often lack the necessary skills to effectively communicate and collaborate with others.[4] This failing in soft skills can hinder their professional growth and limit their ability to work in teams, adapt to diverse environments, and effectively engage with stakeholders. Recognizing the significance of these skills, the education system must incorporate comprehensive soft skills training into the curriculum to ensure that students are well-rounded and capable of thriving in the ever-evolving job market.

2. STUDY OBJECTIVES

This preliminary study primarily focuses on three key sectors: the educational sector, employees/students, and employers, with a specific emphasis on assessing the "Current and Future Skills Required in WASH." The study introduces three main objectives, which are as follows:

- To identify the current and future skills required (technical skills and soft skills) in Water, Sanitation, and Hygiene (WASH) from the governments, employers, development partners, and NGOs, and to determine their needs accurately.
- To identify the necessary components of the school curriculum that effectively addresses the skills needed in response to the identified requirements.
- To actively contribute to reducing the discrepancy between the skills imparted through education and those demanded by the job market in the field of Water Sanitation and Hygiene (WASH).

Within the sub objectives and research questions for the three sectors as follow:

- **Education sector:** Gaining a comprehensive understanding of the educational curricula (e.g., learning programs, and specialized soft skills training) offered by universities or institutions within the Water, Sanitation, and Hygiene (WASH) sector. The main research questions are:

1. What is the comprehensive structure and content of the school curriculum within each faculty of the university that is directly relevant to the Water, Sanitation, and Hygiene (WASH) sector?
2. How many courses within each faculty of the university are specifically dedicated to or directly related to the field of Water, Sanitation, and Hygiene (WASH)?
3. What specific soft skills are incorporated into the university's curriculum to enhance the overall development of students?

- **Employees/Students:** Aims to comprehensively investigate the root causes of skill mismatches within the WASH sector in Cambodia. By examining perspectives from both students and employees, the research seeks to identify the underlying factors contributing to the aforesaid causes. The main research questions are:

1. Do universities provide adequate support and resources for preparing students for careers in the WASH sector?
2. Does having prior experience in the WASH sector increase one's chances of securing a job in that field?

- **Employers:** Focus exclusively on the employer perspective to gain insight into the viewpoints of employers in the WASH (Water, Sanitation, and Hygiene) field concerning the present and projected skills shortage, explore any challenges they faced during recruitment and employment of young WASH staff as well as recommendations for bridging the skills gap to meet the evolving demands of the WASH industry. The main research questions are:

1. What skills and qualifications employers are looking for?
2. What challenges do they encounter when recruiting new employees?

3. METHODOLOGY

The overall methodology of this study was used mixed methods. Three different methods was used by three different sectors those include face-to-face paper based survey, online surveyed via Google Forms, focus group discussions (Validation/Consultation Workshop, and Dissemination Workshop), secondary data collection (e.g. policy, documents, school curriculum review).

The study take place from October 2023 to March 2024, which is start from the training Young Research Fellows (YRF), study plan designation and form the survey questionnaire, detail discussion between the mentors and the YRF of the study plan and survey questionnaire, survey interview and data collection, data analysis and preliminary results discussion (including validation/consultation workshop) and finally the dissemination workshop. (See Figure 1)

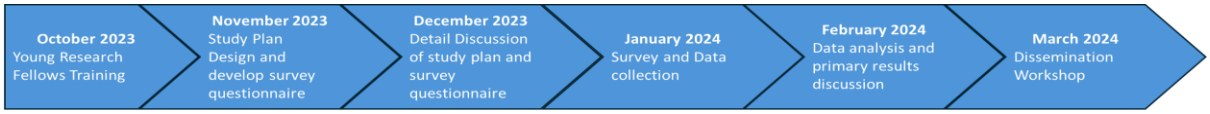

Figure 1: Study timeline and activities

Figure 2: Training of Young Research Fellows (YRF)

Figure 3: Study plan design and questionnaire development activities

Figure 4: Data collections of team students

Figure 5: Validation/Consultation workshop

Figure 6: Dissemination workshop

3.1. Education Sector

The findings in the study used mixed methods, which focused on both primary and secondary sources. Paper-based questionnaires were developed, and a team of five Young

Research Fellows was assigned to review existing policies, documents, and university curricula related to WASH. They also directly collected data and information from stakeholders through interviews, particularly from educational institutions. The study included the following activities:

- Policy, document, and school curriculum review:

There are numerous existing documents or reports related to WASH were reviewed including:

- Cambodia Socio-Economic Survey 2013
- Report of Cambodia Socio-Economic Survey 2019/2020
- National Strategic Development Framework for Cambodia (CDC 2009 - 2013)
- National Strategy for Rural Water Supply, Sanitation and Hygiene (2011 - 2025)
- Cambodian Sustainable Development Goals Framework (2016 - 2030)
- National Action Plan - Rural Water Supply, Sanitation and Hygiene (2019 - 2023) (NAP II)
- The studies by WaterAid on Accessible WASH in Cambodia (2014), Women's participation in WASH-related vocational and tertiary education, and as WASH professionals in Cambodia (2017), Cambodia Water, Sanitation, and Hygiene Workforce Scoping (2020).
- The school curricula of each faculty from the following universities and institutes are as follows: 1) the Faculty of Hydrology and Water Resources Engineering at the Institute of Technology of Cambodia (ITC) provided by the dean of faculty, 2) the Faculty of Science and Engineering at Pañ̃ñāsāstra University of Cambodia (PUC), 3) the Faculty of Science at the Royal University of Phnom Penh (RUPP) and 4) the Faculty of Health Sciences and Biotechnology at the University of Puthisastra (UP) obtained from official website page of the university. The review aims to comprehend the structure and content of the school curriculum within each faculty of the university that is directly relevant to the Water, Sanitation, and Hygiene (WASH) sector.

- Key informant interviews (KII): The interviews were conducted face-to-face with representatives from three universities and one institute in Phnom Penh, namely: 1) Institute of Technology of Cambodia (ITC), 2) Pañ̃ñāsāstra University of Cambodia (PUC), 3) Royal University of Phnom Penh (RUPP), and 4) University of Puthisastra (UP). Notably, the interviews involved key personnel from each university/institute, such as the Dean of faculty, Vice-Dean of faculty, and Program Manager of faculty, to ensure the collection of reliable and accurate information. The data collected from questionnaires were analysed using statistical software, such as Excel, to generate descriptive statistics and identify trends in WASH education practices.
- Validation/Consultation Workshop: The primary findings from this study were presented and disseminated during a workshop attended by 64 people from relevant

stakeholders, including 20 individuals from government agencies, NGOs, private companies, employees, students, and educational institutions. Participants shared their insightful comments and feedback during the workshop.

- Dissemination Workshop: The results have been presented including recommendations to gather feedback, and insights from participants for validating the findings of the study and to develop actionable recommendations based on the refined key findings that can be implemented by relevant stakeholders. The workshop was attended by 50 participants including (1) Government: MISTI, MOE, MPWT, MOH, MOWRAM, MoEYS, MLVT, and PPWSA. (2) Educational institutes; ITC, UP, and PUC. (3) International non-governmental organization: CAPRED, WaterAid, PSI, EWB, AFD, World Vision, Oxfam, Caritas Switzerland, Plan International, ILO, Habitat Cambodia, EMW, iDE and Gret. (4) Non-governmental organizations: WASHSDO, TEUK Saat 1001 NGO, and RainWater Cambodia. (5) Private Company: CWA, PWOS, RWST, SUDrain, and K&K Pipe.

3.2. Employees/Students

The study conducted in the employees/students utilized a mixed-method approach, employing an online survey administered through Google Forms. Purposive sampling technique has been used to select the participants due to select participants who possess specific characteristics or qualities that align with the objectives of the study. The selected participants encompassed final year students majoring in disciplines related to WASH, employees with a background in WASH, as well as employees whose backgrounds are unrelated to WASH but who are currently working in the WASH field.

- Policy, document, and online review:
- Water, Sanitation and Hygiene for energy child, a healthy environment[5] (UNICEF Cambodia, 2019)
- Cambodia Country Overview (UNICEF; Sanitation and Water for All, 2022)
- Water, Sanitation and Hygiene (WASH) situation and issues for urban poor people and vulnerable groups, Cambodia: A Review Paper (WaterAid, 2015)
- Key informant interviews (KII): The interview was conducted via Google Forms of the participated of 74 students and 14 employees in total of 88 participants. Those students are from national institutions and universities which are in Phnom Penh, Cambodia namely Institute of Technology of Cambodia (ITC), Royal University of Phnom Penh (RUPP), University of Puthisastra (UP) and International University (IU). The employees are from non-governmental organization, private companies, and institutions.

[5] https://www.unicef.org/cambodia/water-sanitation-and-hygiene

- Validation/Consultation Workshop: The primary findings from this study were presented and disseminated during a workshop attended by 64 people from relevant stakeholders, including 20 individuals from government agencies, NGOs, private companies, employees, students, and educational institutions. Participants shared their insightful comments and feedback during the workshop.
- Dissemination Workshop: The results have been presented including recommendation to gather feedback, and insights from participants for validating the findings of the study and to develop actionable recommendations based on the refined key findings that can be implemented by relevant stakeholders. The workshop was attended by 50 participants including (1) Government: MISTI, MOE, MPWT, MOH, MOWRAM, MoEYS, MLVT, and PPWSA. (2) Educational institutes; ITC, UP, and PUC. (3) International non-governmental organization: CAPRED, WaterAid, PSI, EWB, AFD, World Vision, Oxfam, Caritas Switzerland, Plan International, ILO, Habitat Cambodia, EMW, iDE and Gret. (4) Non-governmental organizations: WASHSDO, TEUK Saat 1001 NGO, and RainWater Cambodia. (5) Private Company: CWA, PWOS, RWST, SUDrain, and K&K Pipe.

3.3. Employers

The study conducted in the employers was conducted in mixed methods. The employers' participants are from non-governmental organizations and private companies. In total of 21 institutions represented of 21 participants and 5 governmental organizations. Purposive sampling technique has been used to select the participants due to select participants from institution who employing young employees and fresh graduate students.

- Policy, document, and online review:
- What is skills mismatch and why should we care? (ILO, 2020)[6]
- National Action Plan Rural Water Supply, Sanitation, and Hygiene 2019-2023 (MRD, 2019)
- National Strategic Development Plan (NSDP) 2019-2023 (RGC, 2019)
- Accessible WASH in Cambodia (WaterAid, 2014)
- Key informant interviews (KII): The employers are from governmental institutions (PPWSA, MRD, MOE, MPWT, MISTI), local private companies, international private companies, local NGOs and international NGOs.
- Validation/Consultation Workshop: The primary findings from this study were presented and disseminated during a workshop attended by 64 people from relevant stakeholders, including 20 individuals from government agencies, NGOs, private companies, employees, students, and educational institutions. Participants shared their insightful comments and feedback during the workshop.

[6] https://www.ilo.org/skills/Whatsnew/WCMS_740388/lang--en/index.htm

- Dissemination Workshop: The results have been presented including recommendation to gather feedback, and insights from participants for validating the findings of the study and to develop actionable recommendations based on the refined key findings that can be implemented by relevant stakeholders. The workshop was attended by 50 participants including (1) Government: MISTI, MOE, MPWT, MOH, MOWRAM, MoEYS, MLVT, and PPWSA. (2) Educational institutes; ITC, UP, and PUC. (3) International non-governmental organization: CAPRED, WaterAid, PSI, EWB, AFD, World Vision, Oxfam, Caritas Switzerland, Plan International, ILO, Habitat Cambodia, EMW, iDE and Gret. (4) Non-governmental organizations: WASHSDO, TEUK Saat 1001 NGO, and RainWater Cambodia. (5) Private Company: CWA, PWOS, RWST, SUDrain, and K&K Pipe.

4. LIMITATIONS

The main limitations of this study stem from various factors across stakeholders. Firstly, there's a constraint in the sample size of employers participating in the survey, potentially limiting the breadth of insights gathered. Additionally, the study's design was hindered by limited literature on skill gaps in WASH, affecting the questionnaire's formulation. Moreover, the involvement of only four universities in Cambodia restricted the diversity of perspectives from educational institutions. Another significant limitation was the restricted timeframe for data collection and analysis, leading to a constrained sample size and potentially limiting the generalizability of findings. Despite efforts to ensure validity and reliability, acknowledging these limitations is crucial for interpreting the study's results accurately. Future research with a broader range of stakeholders, extended timeframe, and larger sample size could offer a more comprehensive understanding of skill gaps in the WASH sector.

5. KEY FINDINGS

5.1. Education Sector

a) School Curriculum

- **Institute of Technology of Cambodia (ITC)**

The Institute of Technology of Cambodia (ITC) is a Cambodian Higher Education Institution founded in 1964 and supported by cooperation between Cambodia and the former Soviet Union. More than 15,000 students have graduated from ITC. Currently, ITC has four campuses, with the main campus located in Phnom Penh.

ITC consists of five faculties and 14 departments, a research and innovation center (RIC) comprising 5 research units, and a graduate school offering 8 master's programs and 5 doctoral programs. In the academic year 2021-2022, ITC employed 342 lecturers (87 of

whom are female), including full-time, trainee, and part-time lecturers, lecturer-researchers, and full-time researchers. Among these 342 lecturers, 95 hold a Ph.D., 180 hold a master's degree, and 69 hold other degrees.

ITC consists of four main boards, namely the Council Administration (CA), International Consortium Board, Scientific Board, and CEVU Board. These boards function effectively to ensure the quality of education and research at ITC. ITC offers seven-degree programs for technician degrees, 15 for engineering degrees, eight for master's degrees, and five for doctoral degrees. Currently, eight full-time master's programs are offered and operated under the Graduate School of ITC. The duration of study ranges from one to three years. Additionally, five full-time doctoral programs (first launched in 2017) are offered and operated under the Graduate School of ITC, with a duration of study ranging from three to six years.

The E-learning Center of ITC was established in June 2012. It features a multimedia studio room, a content development room, and an operation room in collaboration with the ASEAN Cyber University (ACU). The center supports faculties, other universities, and organizations in developing and managing e-learning courses through the learning management system (Moodle).

ITC is currently running the Skills for Competitiveness (S4C) project, aimed at enhancing the skills and competitiveness of Cambodia's industrial sector labor force. The project focuses on developing human resources to serve as a skilled workforce in four priority sectors: manufacturing, construction, electricity, and electronics.

Regarding Water, Sanitation, and Hygiene (WASH), ITC has two faculties, namely the Faculty of Chemical and Food Engineering and the Faculty of Hydrology and Water Resources Engineering. The first faculty comprises two departments: the Department of Chemical Engineering and the Department of Food Technology and Engineering. The second faculty also consists of two departments: the Department of Water Resources Engineering and Rural Infrastructure, and the Department of Water Environmental Engineering.

Table 1: Two faculties related to WASH courses identification, ITC

Institute of Technology of Cambodia (ITC)					
No.	Faculty	Department	Total Courses	WASH-Related	Soft Skills
1	Civil Engineering	Civil	-	-	-
		Architectural Engineering	-	-	-
		Infrastructure and Transportation	-	-	-
2	Chemical and Food Engineering	Chemical Engineering	32	6	5
		Food Technology and Engineering	34	15	4

3	Electrical Engineering	Electrical and Energy Engineering	-	-	-
		Industrial and Mechanical Engineering	-	-	-
		Information and Communication Engineering	-	-	-
		Telecommunication and Network Engineering	-	-	-
		Applied Mathematics and Statistics	-	-	-
4	Hydrology and Water Resources Engineering	Water Resources Engineering and Rural Infrastructure	52	26	4
		Water and Environmental Engineering	56	30	5
5	Geo-Resources and Geotechnical Engineering	Geotechnical Engineering	-	-	-
		Geo-resources and Petroleum	-	-	-

Note: Foundation year (1st and 2nd year) in ITC, engineering students take class together. Courses from Faculty of chemical and Food Engineering consider from 3rd to 5th year. Courses from Department of Water Resources Engineering and Rural Infrastructure consider from 1st year to 5th year. Coursed from Department of Water and Environmental Engineering consider from 1st to 5th year. (see Appendix)

In the Department of Water Resources and Rural Infrastructure, there are a total of 52 learning courses, which encompass both the academic year and specialized year. Out of these, 26 courses are related to WASH, while 4 of them focus on developing soft skills. On the other hand, the Department of Water and Environmental Engineering offers a total of 56 courses, specifically from the specialized years (1st to 5th year). Among these, 30 courses are dedicated to WASH, and include 5 soft skills components. The Department of chemical engineering has 32 courses, 6 WASH-related courses and 5 soft skills. The Department of Food Technology and Engineering has 34 courses, 15 WASH-related courses and 4 soft skills. Of the two facilities consist of entrepreneurship, internship, final year internship, project management, seminar, philosophy, management and finance, marketing.

Among the five research units at the Research and Innovation Center, there is a specific research unit called Water and Environment (WAE) that is related to WASH. Additionally, within the eight master's programs, there is a program specifically dedicated to Water and Environment Engineering (M-WEE). Furthermore, among the current doctoral programs, there is a program named Water and Environment (D-WAE).

The Master's program in Urban Water and Sanitation Engineering at ITC is funded by the European Union's grant under the Asian Investment Facility, administered by AFD. The program aims to provide high-quality training and produce highly qualified human resources

in the field of urban water supply and sanitation at the master's level. It fulfills the needs of agencies working in the water supply and sanitation sector by equipping students with the necessary skills and knowledge.

- **Royal University of Phnom Penh (RUPP)**

The Royal University of Phnom Penh (RUPP) is a national university in Cambodia, located in Phnom Penh. The university was founded in 1960 and currently has 1,080 staff members, with a total enrollment of 30,931 students (17,886 females). Among the students, there are 29,413 undergraduate students, 1,408 MA/MSc students, and 110 PhD students.

RUPP consists of five faculties and two institutes, namely the Faculty of Science, Faculty of Social Sciences and Humanities, Faculty of Engineering, Faculty of Development Studies, Faculty of Education, Institute of Foreign Languages, and Institute of International Studies and Public Policy. Within the Faculty of Science, there are six departments: Biology, Chemistry, Computer Science, Environmental Science, Mathematics, and Physics.

Department of Chemistry: (1) The Bachelor of Science in Chemistry program comprises 44 courses spanning from the 2nd to 4th year. Among these, 17 courses are WASH-related, and there are no soft skills courses. (2) The Bachelor of Biochemistry program consists of 26 courses from the 3rd to 4th year, with 11 courses focusing on WASH, and no soft skills courses. (3) The Bachelor of Food Technology program includes 38 courses from the 2nd to 4th year, with 28 courses related to WASH and no soft skills courses.

Department of Environmental Science: (1) The Bachelor of Science in Environmental Science (PUES) program offers 39 courses, out of which 23 are WASH-related, and there is one soft skills course. (2) The Bachelor of Science in Environmental Science (PUES) program also offers 39 courses, with 19 courses focused on WASH, and no soft skills courses.

A faculty of science from RUPP consists of one soft skill course known as project management, planning and implementation with environment consideration.

Table 2: One faculty related to WASH courses identification, RUPP

Royal University of Phnom Penh (RUPP)					
No.	Faculty/Institute	Department	Total Courses	WASH-Related	Soft Skills
1	Science	Biology	-	-	-
		Chemistry	108	56	0
		Computer Science	-	-	-
		Environmental Science	78	42	1
		Mathematics	-	-	-
		Physics	-	-	-
2	Social Science and Humanities	-	-	-	-

3	Engineering	-	-	-	-
4	Development Studies	-	-	-	-
5	Education	-	-	-	-
6	Foreign Languages	-	-	-	-
7	International Studies and Public Policy	-	-	-	-

Table 3: Two departments related to WASH, courses identification, RUPP

Royal University of Phnom Penh (RUPP)					
No.	Department	Bachelor	Total Courses	WASH-Related	Soft Skills
1	Chemistry	Science in Chemistry	44	17	0
		Science in Biochemistry	26	11	0
		Science in Food Technology	38	28	0
2	Environmental Science	Science in Environmental Science (PUES)	39	23	1
		Science in Environmental Science (NRM)	39	19	0
Noted: The courses consider from 2nd to 4th year for Bachelor of Science in environment science (PUES) and Bachelor of Science in environment science (PUES). Bachelor of Science in chemistry and Bachelor of Science in food technology, the courses consider from 2nd to 4th year. Bachelor of Science in Biochemistry, the courses consider from 3rd to 4th year. (see Appendix)					

- **Pannasastra University of Cambodia (PUC)**

The Pannasastra University of Cambodia (PUC) is a private university located in Phnom Penh. The university was founded in 1997 and officially opened in 2000. PUC comprises nine faculties, namely the Faculty of Arts, Letters, and Humanities; Faculty of Business and Economics; Faculty of Law and Public Affairs; Faculty of Education; Faculty of Mathematics, Science, and Engineering (FMSE); Faculty of Communication and Media Arts; Faculty of Social Science and International Relations; Faculty of Graduate School of Management and Economics; and Faculty of Architecture and Design.

Within the Faculty of Mathematics, Sciences, and Engineering (FMSE), there are four departments: Civil Engineering, Computer Science, Science, and Electrical Engineering and Applied Mathematics. The university offers programs ranging from associate to doctoral level. Associate programs include degrees in accounting, business administration, cybersecurity, finance and banking, and tourism and hospitality. Bachelor's programs include Bachelor of Arts in Accounting, Business Administration, Business Information Systems, Digital Economics, Data Science, Entrepreneurship, Finance and Banking, FinTech, Marketing, Tourism and Hospitality Management, and Global Business Study.

Table 4: One faculty related to WASH courses identification, PUC

Pannasastra University of Cambodia (PUC)					
No.	Faculty	Department	Total Courses	WASH-Related	Soft Skills
1	Arts, Letters & Humanities	-	-	-	-
2	Business & Economics	-	-	-	-
3	Law & Public Affairs	-	-	-	-
4	Education	-	-	-	-
5	Mathematics, Sciences and Engineering (FMSE)	Civil Engineering	-	-	-
		Computer Science	-	-	-
		Science	33	16	1
		Electrical Engineering and Applied Mathematics	-	-	-
6	Communication & Media Arts	-	-	-	-
7	Social Sciences & International Relations	-	-	-	-
8	Graduate School of Management & Economics	-	-	-	-
9	Architecture & Design	-	-	-	-
Noted: The courses consider from 1st year. (see Appendix)					

The MBA programs include Executive Master of Business Administration (EMBA), MBA in Economics, Entrepreneurship and Innovation, Finance, Human Resource Management, International Business, Marketing, and Management. The doctoral programs include Doctor of Business Administration (DBA), Doctor of Philosophy (Ph.D.) in Economics, Philosophy (Ph.D.) in Finance, and Philosophy (Ph.D.) in Management.

In the Faculty of Mathematics, Sciences and Engineering (FMSE), departments Science has 33 courses, WASH-related courses 16 and 1 soft skills course. In the Faculty of Mathematics, Sciences, and Engineering (FMSE), the Science department offers a total of 33 courses. Out of these, 16 courses are related to WASH, and there is one soft skills course included in the curriculum.

A faculty of Mathematics, Science, and Engineering (FMSE) from PUC consists of only one soft skill called personal growth and development.

- **University of Puthisastra (UP)**

The University of Puthisastra (UP) is a private university located in Phnom Penh, founded in 2017. UP's Foundation Year offers a comprehensive learning experience that includes online coursework, project-based education, and creative workshops. This program prepares students for success in high-level classes in health sciences and information and computer technology. Subjects covered include physics, chemistry, biology, biochemistry, anatomy,

embryology, demography, mathematics, psychology, and philosophy. The program also focuses on developing PC skills, while ICT students delve into computer science, covering application development, web development, programming languages, software, hardware, and terminology. UP comprises seven faculties: Pharmacy, Medicine, Dentistry, Nursing & Midwifery, English & Employability, Health Sciences & Biotechnology, and Business Entrepreneurship & Technology

The Bachelor's degree consists of four programs: Doctor of Dental Surgery (DDS), Doctor of Medicine in General Medicine, Doctor of Pharmacy, and Nursing. The Doctor of Dental Surgery is a 7-year program, with an intermediate BSc degree awarded at the end of the fifth year. The Doctor of Medicine in General Medicine is an 8-year program designed to produce graduates with the clinical skills and knowledge necessary for treating patients at public and private hospitals and clinics at all levels within Cambodia. The Doctor of Pharmacy is a 5-year program that provides students with fundamental and compulsory knowledge related to community pharmacy, hospital pharmacy, industrial pharmacy, biological sciences, basic pharmaceutical sciences, environment, and foreign languages. These skills are essential for pharmaceutical research and the management of private or hospital pharmacies, medical laboratories, and pharmaceutical enterprises. Nursing is a 4-year program covering sciences, nursing theory and skills, nursing education and health promotion, legal and ethical issues in nursing, hospital and community nursing, and specialty areas of nursing practice.

The Associate Degree program includes three programs: nursing, medical laboratory technology, and midwifery. The nursing program, which spans three years, provides an overview of nursing sciences, sociology, psychology, nursing theory and skills, legal and ethical issues in nursing, training in hospital and community nursing, and an introduction to some specialty areas of nursing. The medical laboratory technology program involves practical training and theoretical knowledge under the guidance of lecturers, including clerkship within hospital laboratories and medical laboratory institutes. The midwifery program focuses on technical practice and theory related to various areas such as Birth Spacing, Antenatal Care (ANC), Baby Delivery, Postnatal Care (PNC), Integrated Management of Child Illness (IMCI), sexually transmitted diseases (STD), community health care, and more.

On the other hand, the Diploma program offers dental implantology, which is delivered part-time over 18 months. The course includes four two-week blocks of lectures, seminars, and clinical training, totaling eight weeks.

Table 5: One faculty related to WASH courses identification, UP

University of Puthisastra (UP)				
No.	Faculty	Total Courses	WASH-Related	Soft Skills

1	Faculty of Pharmacy	-	-	-
2	Faculty of Medicine	-	-	-
3	Faculty of Dentistry	-	-	-
4	Faculty of Nursing and Midwifery	-	-	-
5	Faculty of English Excellence and Employability	-	-	-
6	Faculty of Health Sciences and Biotechnology	50	10	5
7	Faculty of Business and Entrepreneurship and Technology	-	-	-
Noted: There is no department in each faculty in UP.				

The Faculty of Health Sciences and Biotechnology offers a total of 50 courses. Among these, 10 courses are specifically related to WASH, while an additional 5 courses focus on developing soft skills.

A faculty of Health Science and Biotechnology of UP consists of 5 soft skills known as research project (thesis), work integrated learning (WIL) 2nd year, work integrated learning (WIL) 3rd year, work integrated learning (WIL) 4th year, and workshop practices and OHS.

b) Information of Participants

There are four universities that participated in the face-to-face survey conducted by the Young Research Fellow (YRF) team with support from the Center for Sustainable Water (CSW). There are two public universities namely the Institute of Technology of Cambodia (ITC), and the Royal University of Phnom Penh (RUPP) and two private universities namely Panasastra University of Cambodia (PUC), and the University of Puthisastra (UP) (see Figure 7).

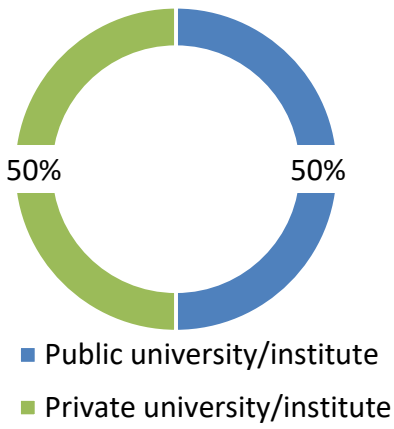

Figure 7: Status of the university

Within the group of four respected individuals, there is a balanced representation in terms of gender, with one female and three males. These individuals possess diverse backgrounds, positions, and educational qualifications, adding to the richness of perspectives and expertise (see Figure 8). Among the group, there is one dean of faculty who holds a

leadership position within one of the participating universities. Additionally, there are two vice-deans within the group, both of whom hold PhD degrees. As a program manager, this individual likely plays a crucial role in organizing the programs (see Table 6).

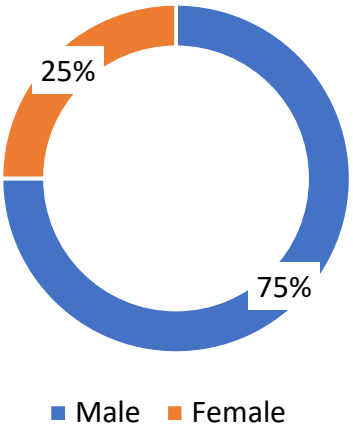

Figure 8: Participation gender

Table 6: Level of degree and position of the participants

Level of degree/Position	Dean of faculty	Vice-dean of faculty	Program manager
Master's degree	0	0	1
PhD degree	1	2	0

c) Information on Educational Level and Offered Program

In the Water, Sanitation, and Hygiene (WASH) sector, educational programs play a crucial role in producing skilled professionals who can address the challenges and complexities of water and sanitation management. The results from the survey are represented as follows (see Figure 9):

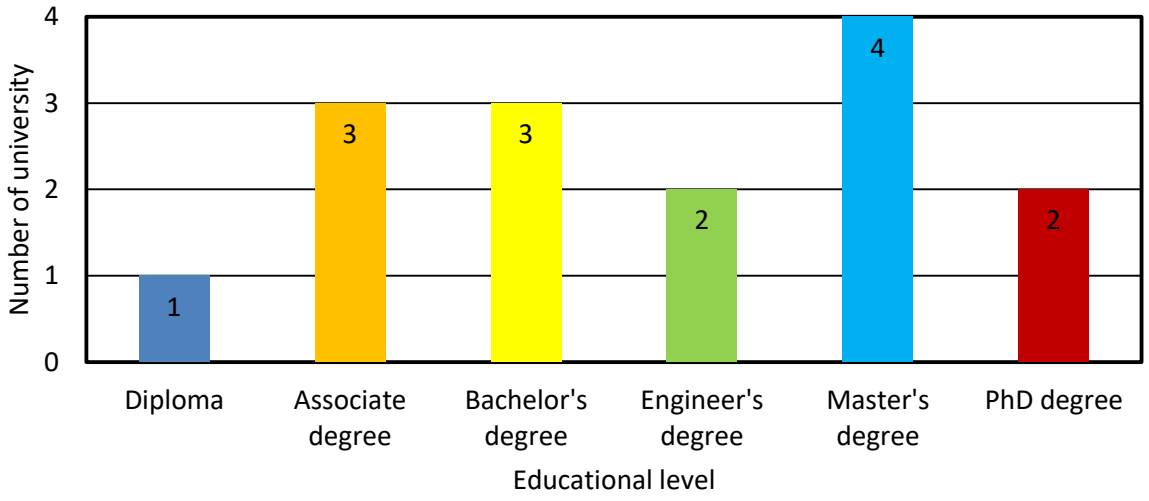

Figure 9: Educational level that the university can provide

The study also found the diversity of gender equality, disability, and social inclusion in the surveyed universities (see Figure 10). The results show the existence of disabled students in three different universities. Only one university has minority students, while two universities have students from remote areas and poor families pursuing their studies at the university.

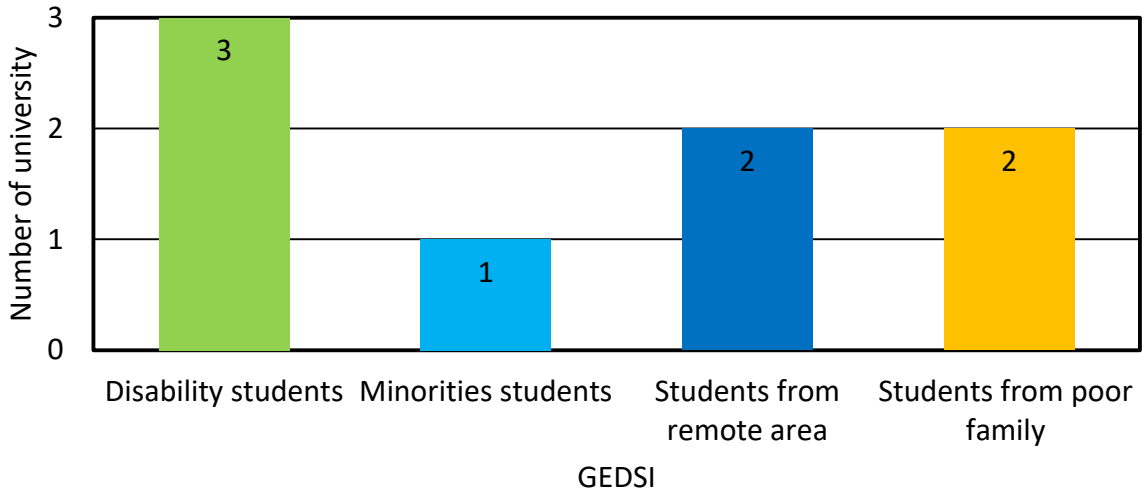

Figure 10: The variety of gender equality, disability, and social inclusion in the university

In addition to offering bachelor's and engineering degrees, the surveyed universities also provide other educational options in the WASH sector, such as technician courses (associate degrees) and master's programs (see Table 7). The study found that two of the participating universities offer technician courses in the WASH sector. A technician course typically requires 2 to 3 years to complete, and it provides a more practical and skill-oriented approach to learning. These programs often include internship requirements, allowing students to gain hands-on experience in real-world WASH settings. Three of the surveyed universities offer master's programs related to WASH. A master's program in the WASH sector is a postgraduate course that allows students to specialize in a specific area of interest, conduct advanced research, and develop expertise in various aspects of water, sanitation, and hygiene. The duration of these master's programs is typically 1 to 2 years, depending on the university and the specific program requirements.

Table 7: Offered program related to WASH

Offered program related to WASH	Number of universities	Duration [Year]	Internship requirement
Technician course	2	2,3	Yes
Master program	3	1,2	-

As a developing country, research plays a crucial role in accelerating educational and national development. The following results highlight the presence of research and laboratory facilities in the surveyed universities, particularly in relation to the WASH sector (see Table 8). Among the surveyed universities, only one faculty possesses a research

laboratory. This indicates that research infrastructure may be limited in these institutions. However, it's encouraging to note that this faculty has six research laboratories specifically dedicated to the WASH sector. These research laboratories likely serve as important spaces for conducting studies, experiments, and investigations related to water, sanitation, and hygiene. All of the surveyed universities have experimental laboratories. Experimental laboratories are essential for conducting practical experiments, testing hypotheses, and gathering empirical data. However, it is unfortunate that only three of the universities have laboratory data available. Among the available data from these three universities, there are a total of 38 experimental laboratories. Notably, 24 of these laboratories are specifically focused on the WASH sector.

Table 8: The availability of the laboratory in the faculty

Laboratory	Number of universities	Total number of laboratories	Number of laboratories related to WASH
Research laboratory	1	6	6
Experimental laboratory	4(3)	38	24

d) Internal Training Provided by the School

Universities play a critical role in providing comprehensive training to students in both technical and soft skills, particularly in sectors such as WASH (Water, Sanitation, and Hygiene) (see Table 9). In the context of technical training, universities offer a range of opportunities for students to gain practical experience through fieldwork, laboratory experiments, and project-based learning. Alongside technical training, universities recognize the importance of soft skills in the WASH sector that are crucial for successful WASH intervention.

Table 9: WASH-related and soft skills training provided by the school

WASH-related and soft skills training	Number of universities
Technical training	4
Soft skills training	3

Table 10: Soft skills training provided by the school from direct learning courses and indirect activities inside the school

Soft skills training	Number of universities
Communication skills	3
Emotional intelligence	2
Time management	2
Creativity	3
Problem-solving	2
Interpersonal skills	3

Public speaking	3
Adaptability	2
Teamwork	3
Critical thinking	2
Leadership	1
Negotiation skills	1
Analytical skills	2

e) External Training Provided by School Partnership or Connection

The statement highlights the collaborative nature of universities and their involvement with various entities. According to the information provided, three out of four universities have established partnerships or connections with other universities, organizations, NGOs, government entities, and private companies. This indicates that universities recognize the importance of working together with external stakeholders to enhance their academic programs and research initiatives.

Among the partnerships mentioned, the Center for Sustainable Water (CSW) and the Ministry of Rural Development (MDR) stand out as the sole providers of WASH-related (Water, Sanitation, and Hygiene) training to the surveyed universities. This implies that these universities have specifically collaborated with CSW and MDR to deliver training programs related to sustainable water management and rural development.

Overall, the information suggests that universities actively seek partnerships with various entities to expand their networks, enrich academic experiences, and provide students with valuable opportunities for growth and development. The collaborations with CSW and MDR further demonstrate the universities' commitment to addressing critical issues such as water sustainability and rural development through specialized training programs.

Table 11: Soft skills training provided by the school partnership or connection

Soft skills training	Number of universities
Communication skills	3
Emotional intelligence	2
Time management	2
Creativity	2
Problem-solving	3
Interpersonal skills	1
Public speaking	2
Adaptability	1
Teamwork	2
Critical thinking	3
Leadership	2
Negotiation skills	1

Analytical skills	3

f) The Importance of Specific Soft Skills Vote by School

Based on the survey conducted, the final results indicate the participants' perceptions regarding the importance of soft skills that students should possess. Upon reviewing the results, it is evident that there were no indications of voting for soft skills being slightly important or not important. Instead, the majority of participants rated the soft skills as important to very important (see Table 12).

The results reveal that each participant considered leadership and negotiation skills to be moderately important. Interestingly, only one participant emphasized the significance of adaptability, leadership, and negotiation skills. Out of the four participants, two of them regarded critical thinking, public speaking, and analytical skills as very important. Additionally, three participants emphasized the importance of communication skills, including emotional intelligence and critical thinking.

Moreover, time management, problem-solving, interpersonal skills, and teamwork were unanimously regarded as highly important by the participants. These skills were favoured by all participants as essential qualities that students should possess.

Table 12: The importance of specific soft skills from participants perception

Soft skills	Very important	Important	Moderately important	Slightly important	Not important
Communication skills	3	1	0	0	0
Emotional intelligence	3	1	0	0	0
Time management	4	0	0	0	0
Creativity	2	2	0	0	0
Problem-solving	4	0	0	0	0
Interpersonal skills	4	0	0	0	0
Public speaking	2	2	0	0	0
Adaptability	1	3	0	0	0
Teamwork	4	0	0	0	0
Critical thinking	3	1	0	0	0
Leadership	1	2	1	0	0
Negotiation skills	1	2	1	0	0
Analytical skills	2	2	0	0	0

*The numbers within the table represent the count of participants who voted, indicating their perception regarding the significance of soft skills for students.

5.2. Employees/Students

a) Employees

- **General Information of the Employees**

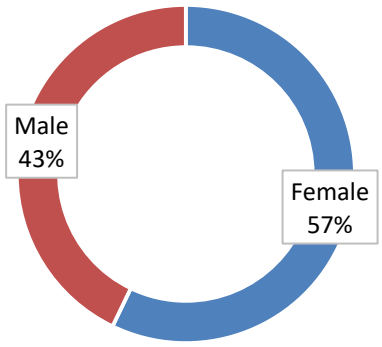

Figure 11. Employees gender

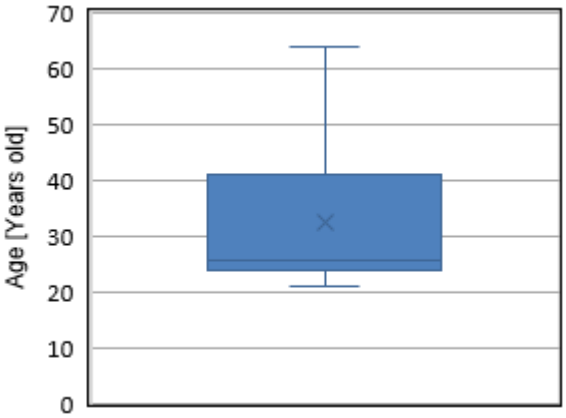

Figure 12. Employees age

In the study conducted, a group of 14 employees participated. Among these participants, 57% were female, while the remaining 43% were male (see Figure 11). The age range of the participants varied, with the youngest being 21 years old and the oldest being 64 years old. On average, the participants' ages hovered around 32 years old (see Figure 12).

Out of the entire group of employee participants, approximately 7% belonged to the disabled, marginalized, or vulnerable category (see Figure 13). These individuals mostly hailed from provincial backgrounds, comprising 71% of the total, while the remaining 29% were born and raised in Phnom Penh (see Figure 14).

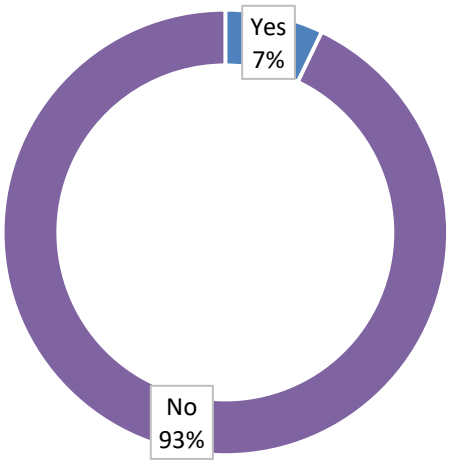

Figure 13. The disable, marginalized, or

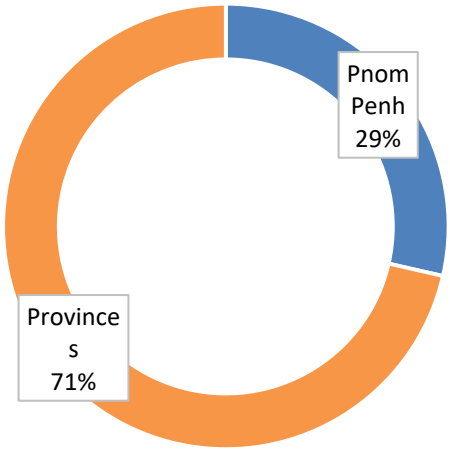

Figure 14. Participants place of birth

vulnerable group participants

The study included participants with diverse educational backgrounds, encompassing engineering, bachelor's degrees, and master's degrees. The number of participants in each category was 1, 9, and 4, respectively. In terms of their current workplace positions, the participants consisted of 2 technicians, 1 engineer, 2 assistants, 6 officers, 1 manager, and 1 administrator (see Figure 15).

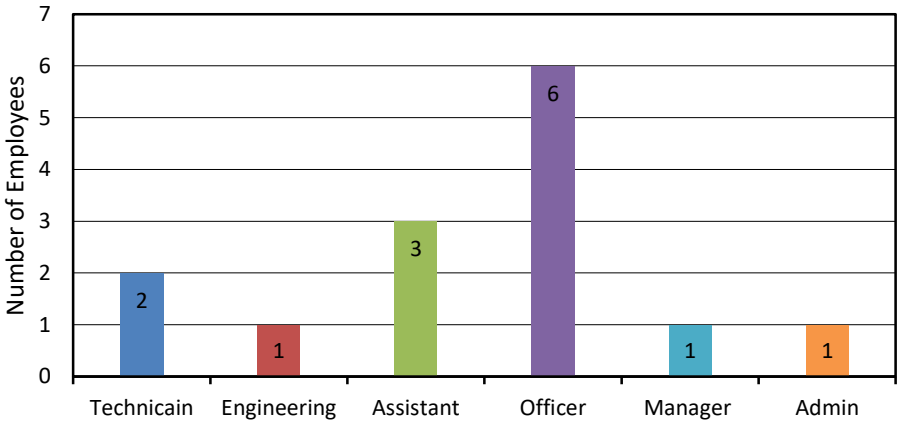

Figure 15. Current position in working place

Regarding their experience in WASH-related work, 5 participants had less than 1 year of experience, 6 participants had 1 to 3 years of experience, and 3 participants had more than 3 years of experience. Furthermore, an overwhelming majority of the participants (86%) had an academic background related to WASH.

- **WASH-related Job Opportunities and Skills**

The majority of employee participants utilized various channels to search for job opportunities. Specifically, 10 participants relied on job websites, 5 participants utilized social media and professional or personal networking, and 3 participants sought job opportunities through their lecturers or university connections (see Figure 16).

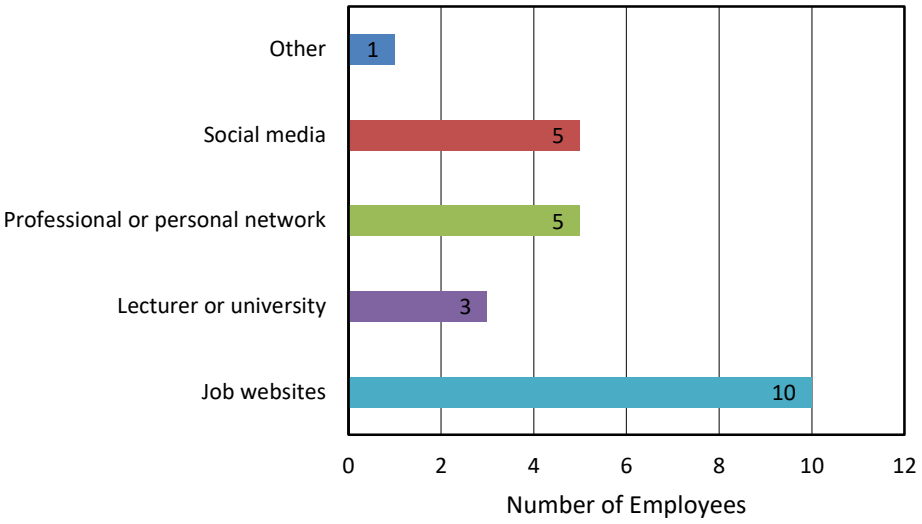

Figure 16. Job opportunities in WASH-related search platforms

Among the participants, there was a range of opinions regarding the support and resources offered by the academic program for careers in the WASH sector. Five participants agreed that the program provided sufficient support, while four expressed a neutral stance. Interestingly, one participant disagreed, while two participants strongly agreed with the level of support (see Figure 17).

When considering the participants' current level of hard and soft skills, taking into account their academic education and additional training, six of them had an average level of hard skills, and another six possessed a good level of hard skills. In terms of soft skills, four participants had an average level, while seven participants demonstrated a good level. Surprisingly, one participant excelled in soft skills.

From the employees' perspective, regarding the skills that educational institutions should prioritize to better prepare individuals for future careers in the WASH sector, 12 participants preferred an emphasis on soft skills, while 10 participants favored a focus on hard skills (see Figure 18).

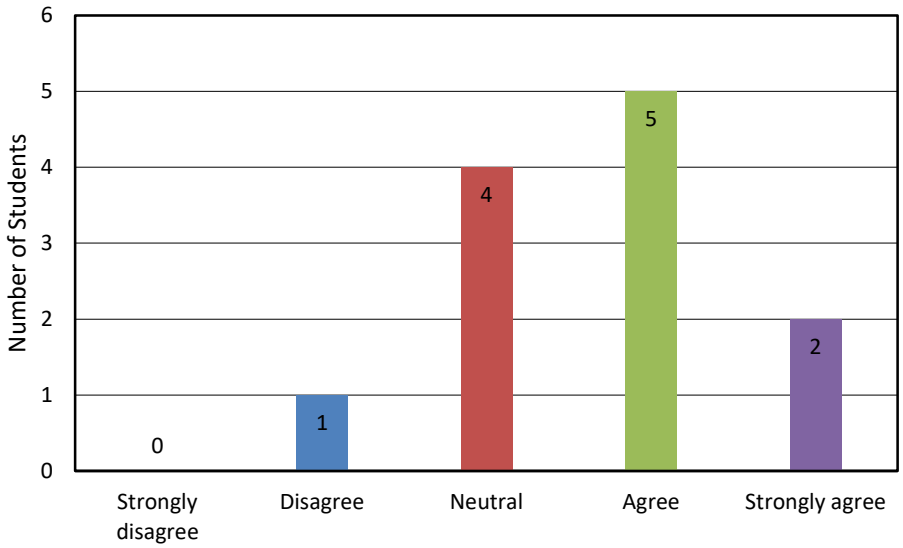

Figure 17. Agreement from the participants on academic program offers enough support or resources for careers in the WASH sector

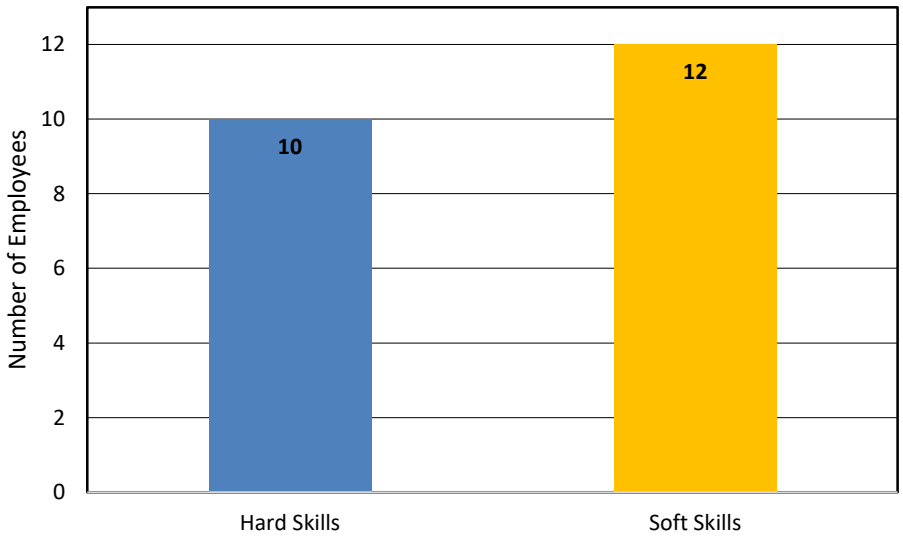

Figure 18. Skills that educational institute should focus on more to better prepare for future careers in WASH

- **Important of Soft Skills Voted by the Employees**

Among the total participants, there was a consensus on the importance of certain skills. Nine participants voted that leadership skills were highly significant, closely followed by communication and analytical skills, which received votes from eight participants. Additionally, seven participants recognized the importance of time management and teamwork skills. (see Table 13)

Table 13. The important soft skills that employees vote for current and future career in WASH

Soft skills	Very important	Important	Moderately important	Slightly important	Not important
Communication skills	8	4	0	0	0
Emotional intelligence	3	7	2	0	0
Time management	7	5	0	0	0
Creativity	5	7	0	0	0
Problem-solving	6	5	1	0	0
Interpersonal skills	6	5	1	0	0
Public speaking	4	6	2	0	0
Adaptability	4	7	1	0	0
Teamwork	7	5	0	0	0
Critical thinking	6	5	1	0	0
Leadership	9	3	0	0	0
Negotiation skills	6	6	0	0	0
Analytical skills	8	3	1	0	0

Total participants are 14 employees.
*The numbers within the table represent the count of participants who voted, indicating their perception regarding the significance of soft skills vote by employees.

b) Students

- **General Information of the Students**

Of the total 74 students, the participants comprised 67% females, 31% males, and 2% individuals representing other genders (see Figure 19). The age range of the participants varied, with the youngest being 19 years old and the oldest being 25 years old. On average, the participants' ages were approximately 22 years old (see Figure 20).

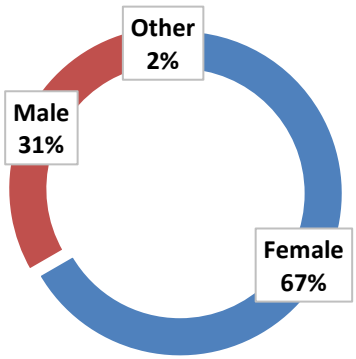

Figure 19. Participants gender

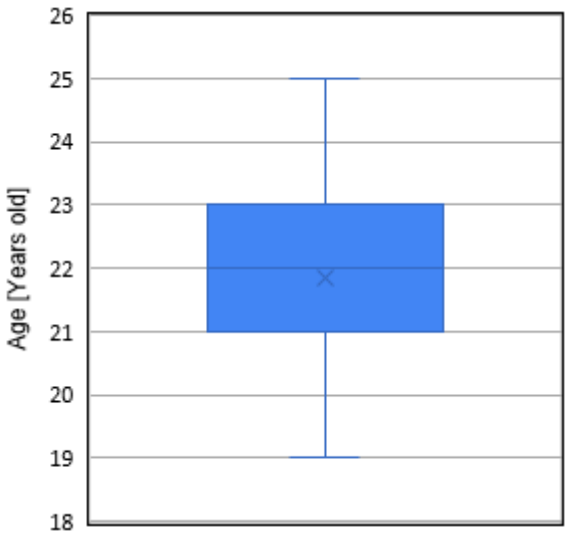

Figure 20. Participant ages

It was observed that a minority of participants, comprising only 20%, were born in Phnom Penh, while the majority, accounting for 80%, originated from various provinces (see Figure 18). Additionally, the study identified that 4% of the total participants belonged to the disability, marginalized, or vulnerable group (see Figure 22).

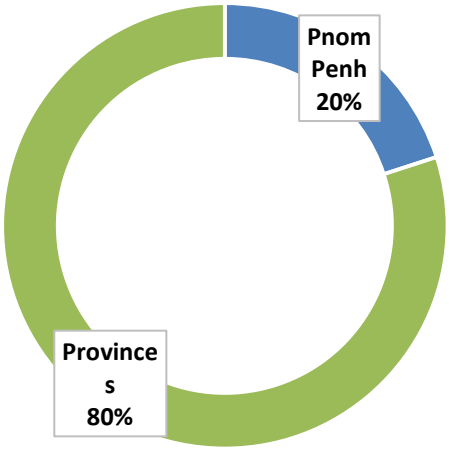

Figure 21. Participants place of birth

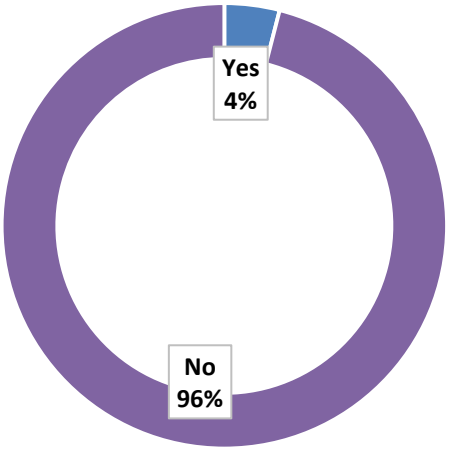

Figure 22. The disability, marginalized, or vulnerable group participants

The participants surveyed in this study were enrolled in four prestigious higher educational institutions in Cambodia: the Institute of Technology of Cambodia (ITC), Royal University of Phnom Penh (RUPP), University of Puthisastra (UP), and the International University (IU). These participants represented diverse academic disciplines, including majors such as chemical engineering, food science engineering, bio-engineering, water and environmental engineering (WEE), water resource engineering and rural infrastructure (WRI), and research science (see Figure 23).

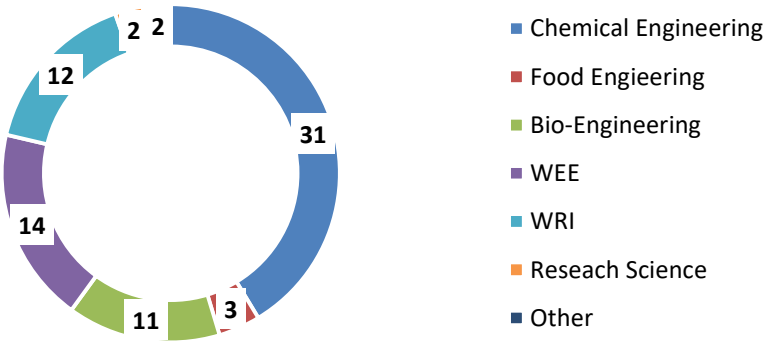

Figure 23. Students major

A total of 74 participants took part in the survey, with the majority consisting of 60 individuals from the fifth year of their respective programs. There were 13 participants from the fourth year, and only one participant from the second year.

- **Awareness of the Students in WASH sector and Job Opportunities**

When participants were asked about the methods through which they acquired knowledge about WASH, 65 of them stated that they learned about WASH through their university education. Additionally, 36 participants gained knowledge about WASH from relevant WASH institutions such as ministries, NGOs, and private companies. Furthermore, 27 participants acquired knowledge about WASH through external involvement, such as attending training programs, seminars, or participating in competition programs. Finally, 24 participants obtained information about WASH through professional or personal networking (see Figure 24).

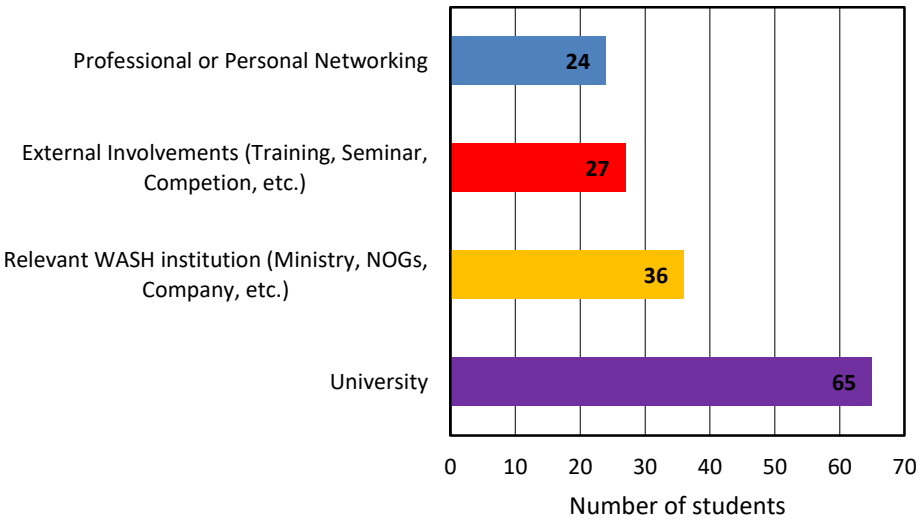

Figure 24. Way to know WASH sector

Regarding their frequency of seeking additional information to enhance their understanding of WASH, 41 participants indicated that they sometimes sought more information, while 25 participants stated that they often sought additional information related to WASH.

When participants were asked to rate their level of understanding in the WASH sector, the majority of them (36 students) reported having a good understanding of WASH. Around 30 participants indicated an average level of understanding, while less than 10 participants acknowledged being at a poor level of understanding in relation to WASH (see Figure 25).

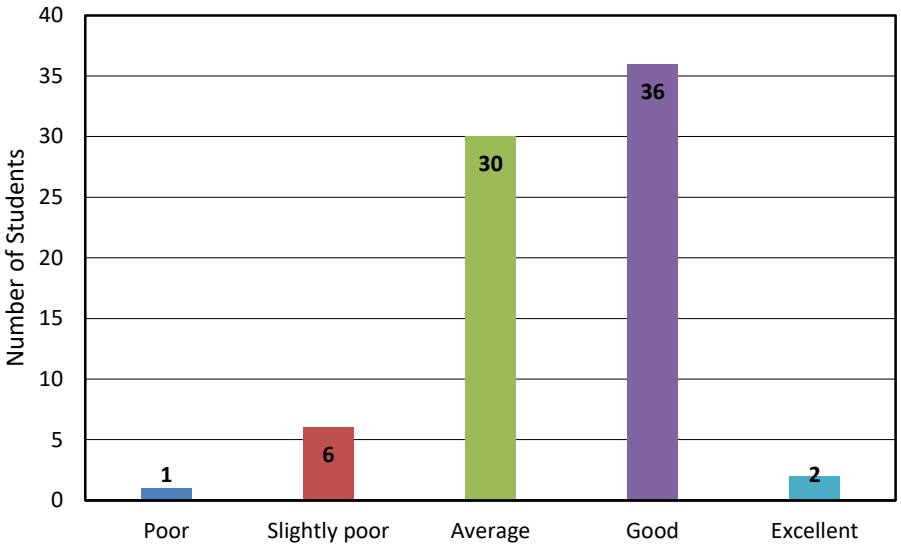

Figure 25. Level of understanding for student related to WASH sector

Given that the majority of participants are in their final year and belong to the digital era, they possess the knowledge and skills required to prepare for and search for job opportunities. Out of the total participants, 39 individuals reported occasionally searching for jobs related to the WASH sector, while 15 participants stated that they often seek such job opportunities. On the other hand, 11 participants indicated that they rarely search for jobs in this field, and less than 10 participants mentioned that they never seek job opportunities in the WASH sector.

When it comes to the platforms they use for job searching, the participants primarily rely on social media, lectures or universities, job websites, and professional or personal networking. These platforms play a crucial role in their job search process (see Figure 26).

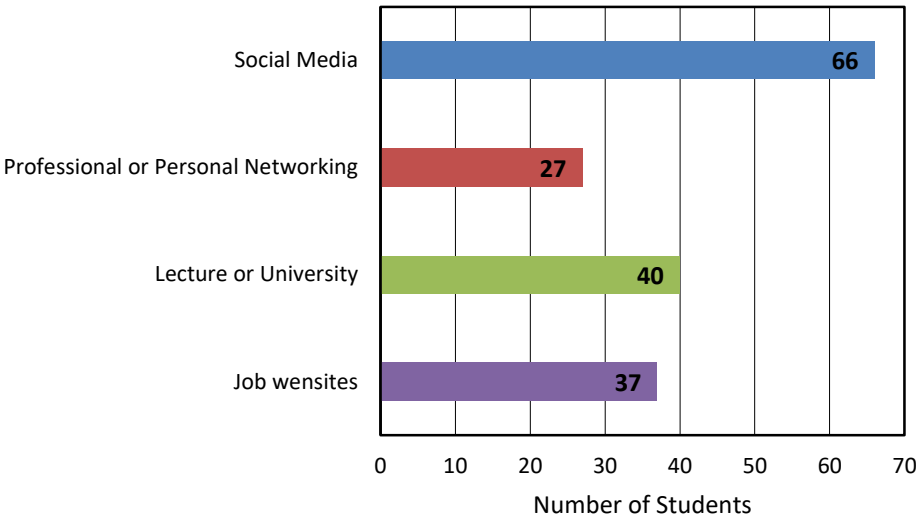

Figure 26. Platforms to search for job opportunities in WASH sector

- **Challenges for Jobs Securing in The WASH sector (Students Perspective)**

While the participants have not yet entered the working stage, they anticipate doing so in the near future. When asked about their perspective on the challenges they may face in securing a job, 57 participants expressed concerns about limited job opportunities. Additionally, 53 participants identified a lack of relevant skills as a potential challenge. Another factor mentioned by 40 participants was inadequate salary or benefits. Furthermore, 35 participants considered relocation as a potential challenge. However, cultural barriers were mentioned by only a few participants as a potential obstacle in job securing. (see Figure 27)

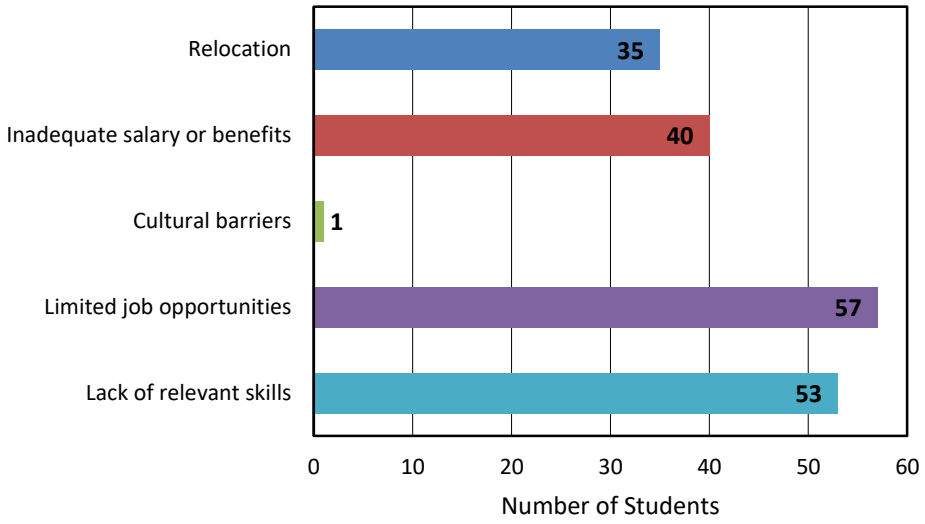

Figure 27. Challenges for jobs securing in the WASH sector

- **Relevant Skills in WASH Sector**

When it comes to the agreement among students regarding whether their university provides adequate support and resources for preparing them for careers in the WASH sector, 40 participants expressed their agreement, indicating that their university does indeed provide them with the necessary support and resources. On the other hand, 19 participants remained neutral on the matter. Furthermore, 8 participants strongly agreed that their university offers substantial support and resources. Only a few participants voiced their disagreement with this statement. (see Figure 28)

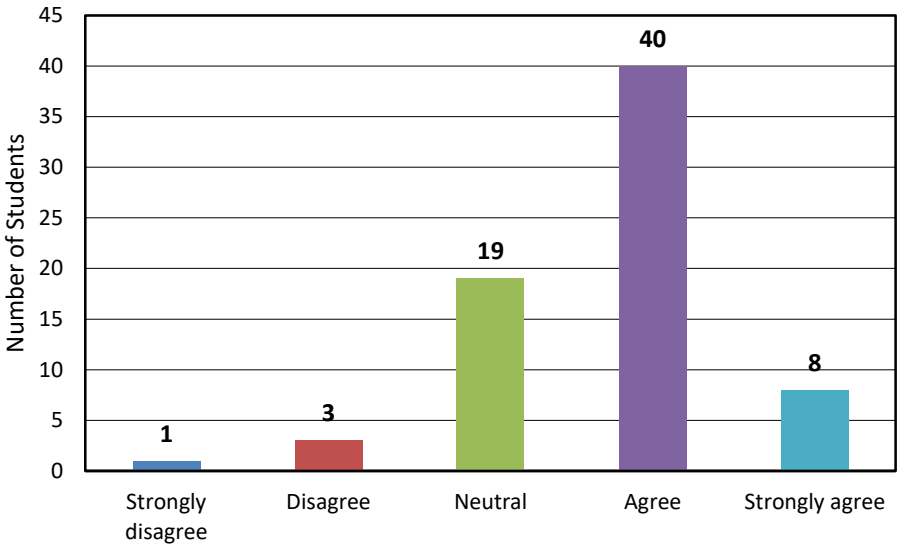

Figure 28. Agreement of the provided adequate support and resources in the WASH sector from the university

When assessing the participants' self-perceived proficiency in hard and soft skills, considering their academic education and any additional training, 35 participants considered themselves to be at an average level in terms of hard skills, and an equal number of 36 participants also perceived their soft skills to be at an average level. Additionally, 34 participants believed they possessed good hard skills, while 30 participants believed they had good soft skills. There were less than 10 participants who expressed a lack of confidence in both hard and soft skills.

Regarding their belief regarding the skills that educational institutions should prioritize to better prepare students for future careers in the WASH sector, 66 participants emphasized the importance of soft skills, while 48 participants emphasized the significance of hard skills (see Figure 29).

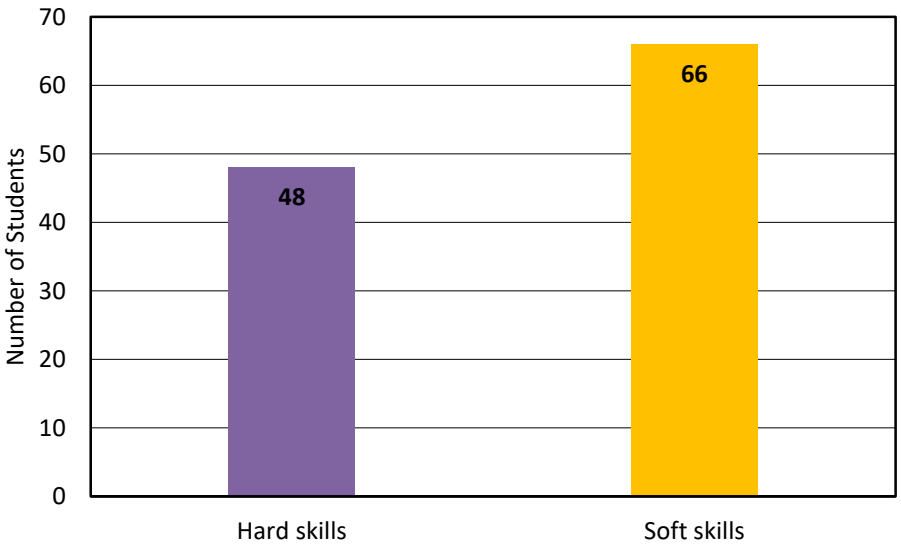

Figure 29. Skills that educational institutes should focus more

- **Important of Soft Skills Voted by the Students**

Table 14. The important soft skills that students vote for future career in WASH

Soft skills	Very important	Important	Moderately important	Slightly important	Not important
Communication skills	39	23	7	6	0
Emotional intelligence	12	38	14	11	0
Time management	33	29	6	7	0
Creativity	25	32	10	8	0
Problem-solving	37	23	10	5	0
Interpersonal skills	20	33	14	8	0
Public speaking	15	38	14	7	1
Adaptability	21	35	10	9	0
Teamwork	34	28	7	6	0
Critical thinking	26	30	12	7	0
Leadership	21	32	15	7	0
Negotiation skills	24	29	15	6	1
Analytical skills	27	30	13	5	0

Total participants are 75 students.
*The numbers within the table represent the count of participants who voted, indicating their perception regarding the significance of soft skills vote by students.

According to the students' votes on the importance of soft skills, several skills stood out as very important. Communication skills received the highest number of votes, with 39 students emphasizing its significance. Problem-solving closely followed, with 37 students recognizing its importance. Teamwork and time management were also highly regarded, with 34 and 33 students respectively voting them as very important skills.

In terms of important soft skills, emotional intelligence and public speaking received equal votes from 38 students. Adaptability was also considered important by 35 students, while interpersonal skills garnered 33 votes. These soft skills were recognized as valuable assets by the participating students. (see Table 14)

5.3. Employers

a) Non-governmental organizations, private companies, and institutions

- **General Information**

This survey study also involved employers from a total of 21 institutions, including non-governmental organizations (NGOs) and private companies. Among the employers, 43% were female and 57% were male (see Figure 30). Their age distribution revealed that 52% fell within the range of 25-35 years old, while the remaining 48% were 35 years old or above (see Figure 31).

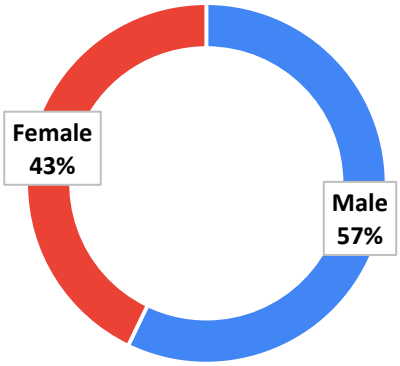

Figure 30. Gender of participants

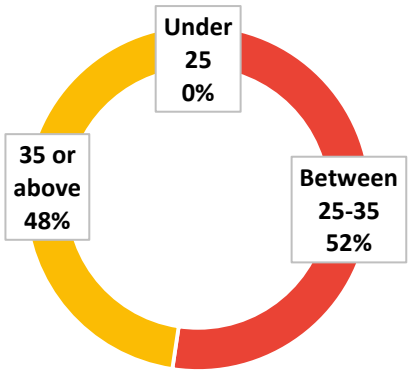

Figure 31. Age range of employers

Regarding their current positions, two employers held the position of CEO, three were Directors, six were Managers, one was an Officer, two were Team Leaders, two were Assistants, and five were Engineers (see Figure 32).

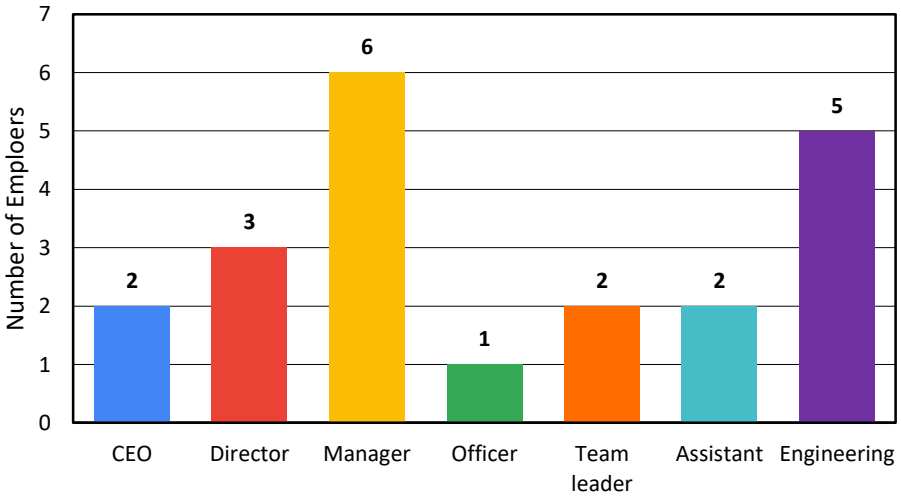

Figure 32. Current position of surveyed employers

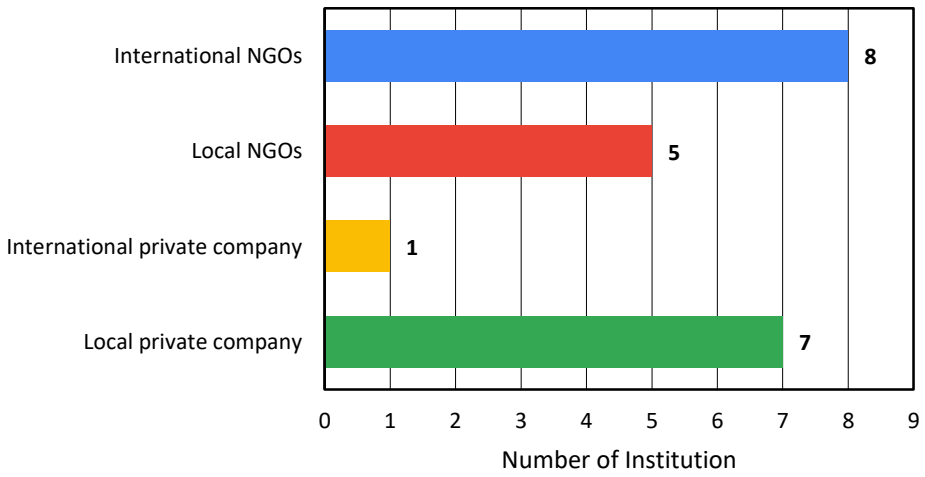

Figure 33. Type of organization

The employers represented various organizations, with eight of them working in international NGOs, five in local NGOs, one in an international private company, and seven in local private companies (see Figure 33).

Among the total number of institutions mentioned above, 14% of them have been actively engaged in work related to WASH for less than 5 years. A significant portion, 38% of the institutions, have been involved in WASH-related activities for a duration ranging from 5 to 10 years. The majority, comprising 48% of the institutions, have been working in the WASH sector for over 10 years, demonstrating their long-term commitment (see Figure 34).

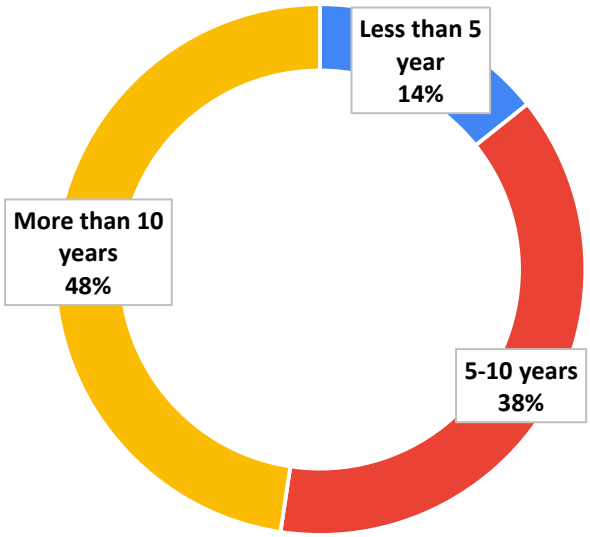

Figure 34. Year of experiences working in WASH-related

In terms of the geographical distribution of these institutions, 12 of them are located in Phnom Penh, the capital city. Six institutions have a presence in both Phnom Penh and provinces, indicating a combination of centralized and decentralized operations. Three institutions are exclusively located in the provinces, focusing on addressing WASH-related issues in specific regional areas (see Figure 35).

Considering the size of the institutions based on their number of employees, two institutions have fewer than 5 employees. Three institutions have between 5 to 10 employees. Two institutions employ between 10 to 20 individuals, while three institutions have a workforce ranging from 20 to 30 employees. One institution employs between 30 to 50 individuals, and a notable eight institutions have over 50 employees, signifying their larger size and scope of operations (see Figure 36).

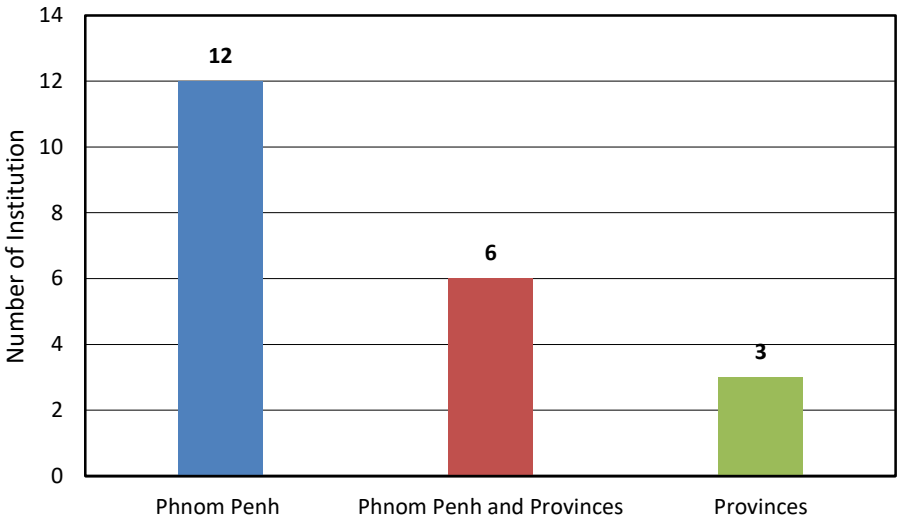

Figure 35. Institution's location based

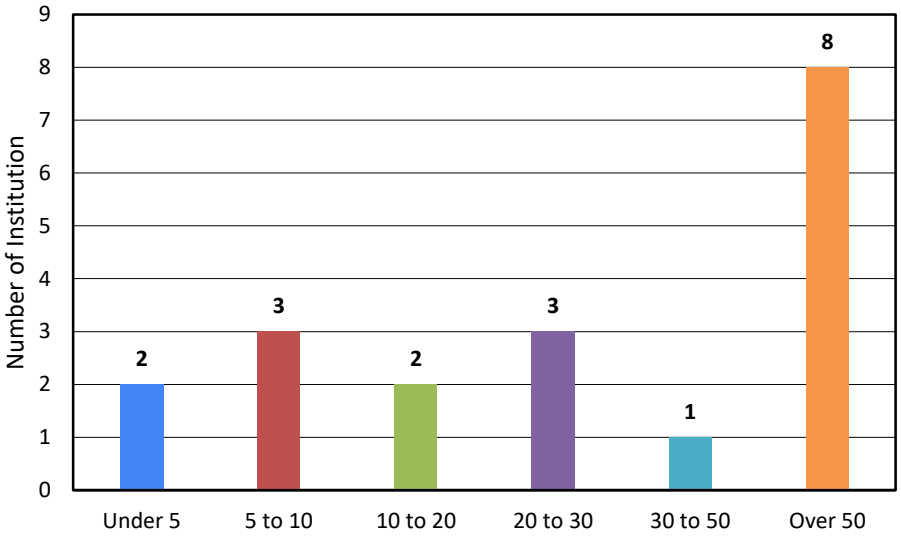

Figure 36. Current number of employees in the institutions

- **Young People/Professional Requirement and Skills Required**

When it comes to providing opportunities for young people in terms of recruitment and skills development, out of the 21 institutions surveyed, 14 of them offer specific programs that cater to young individuals in general. Additionally, 6 institutions focus specifically on providing opportunities for fresh graduates, while 4 institutions offer programs exclusively for students, such as internships or volunteering programs (see Figure 37).

In terms of recruitment and skills development, these institutions provide various job opportunities and resources. These include internship or volunteering programs, on-the-job training, study tours within the organization or company, mentoring or coaching support, and capacity building initiatives. These opportunities are designed to help young individuals

and professionals acquire the necessary skills and experiences to excel in the WASH sector (see Figure 38).

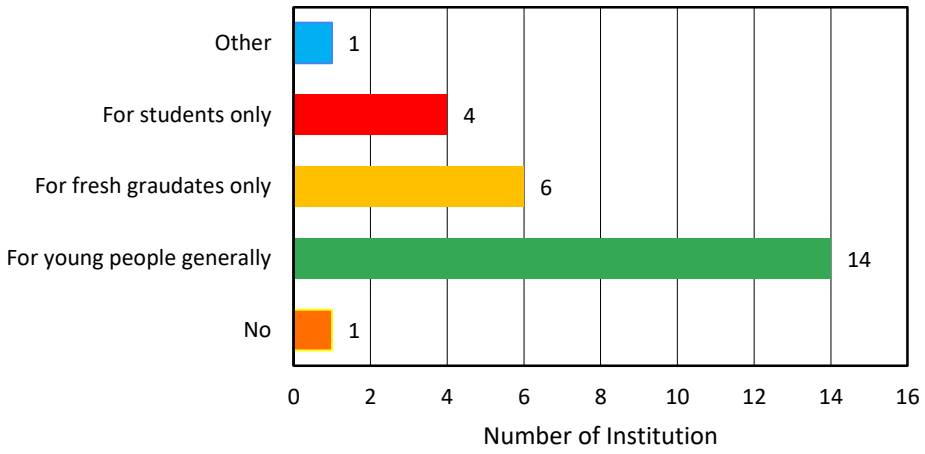

Figure 37. Specific program for recruitment

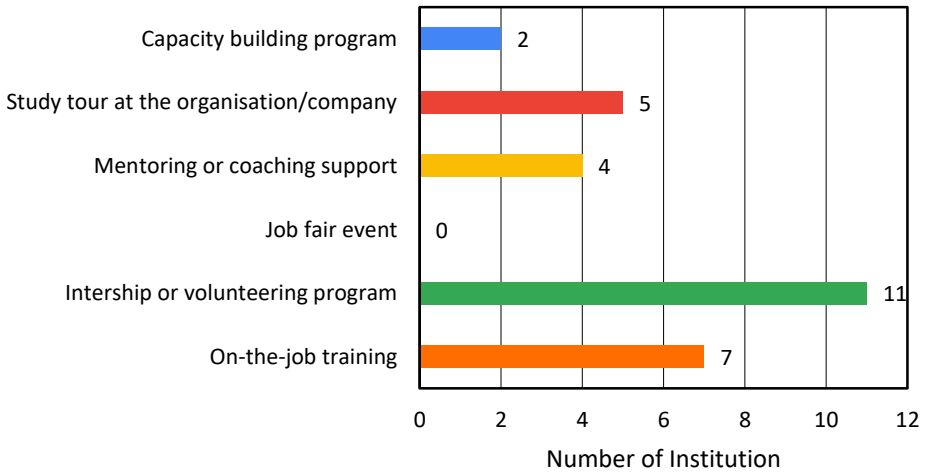

Figure 38. Programs that the organization have for recruiting young people

These institutions play various roles in employing young recruits across different positions. The roles available include administrative/financial positions, communication roles, social/community development roles, data analysis positions, coordination and managerial positions, program assistant/officer roles, project assistant/officer positions, technical roles in the broader field (not specific to WASH), as well as technical roles specifically focused on WASH (see Figure 39).

In terms of recruitment strategies, these institutions utilize different platforms to attract candidates. Seventeen of the institutions recruit through their organization's social media channels, while 15 institutions rely on recruitment agencies to assist in the hiring process. Additionally, 12 institutions utilize their organization's website as a recruitment platform,

while 11 institutions leverage professional and personal networks to reach potential candidates. Furthermore, nine institutions engage with lectures and universities to tap into the pool of candidates seeking job opportunities. These various recruitment channels help these institutions connect with qualified individuals who are interested in contributing to their respective organizations (see Figure 40).

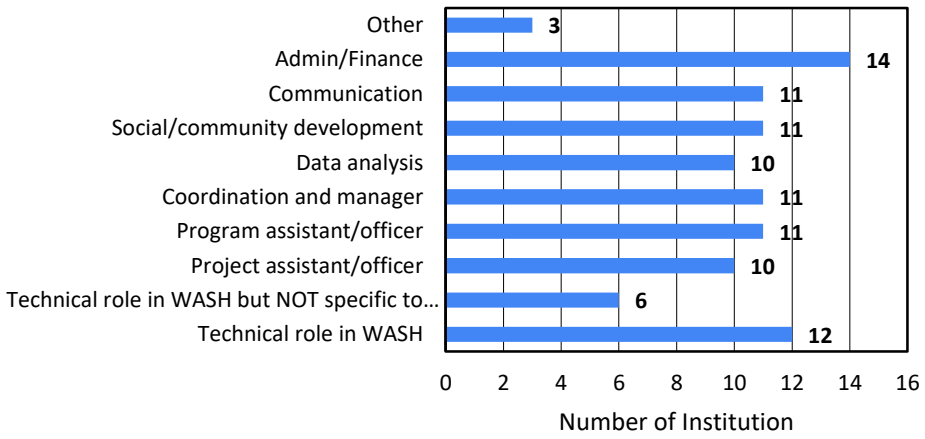

Figure 39. Roles to young recruitment people

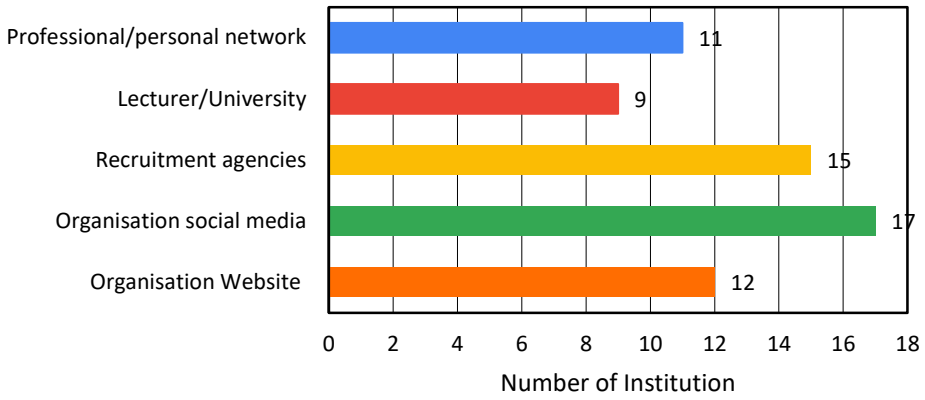

Figure 40. Recruitment platform

When it comes to the number of employees hired annually for entry-level positions (including internships and volunteering), the distribution among the institutions is as follows: Seven institutions employ 1 to 2 employees per year, two institutions hire 3 to 5 employees, and one institution each hires 6 to 10, 11 to 20, and more than 20 employees per year. Additionally, nine institutions base their hiring decisions on specific programs or projects, resulting in varying employment figures (see Figure 41).

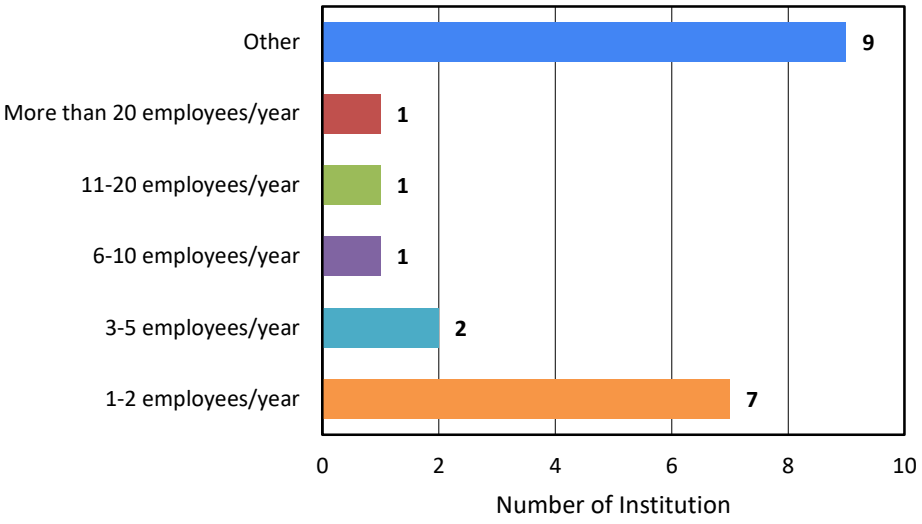

Figure 41. Employment per year for entry level (including internship and volunteer)

Regarding the salary rates for entry-level employees, the range spans from less than $200 to more than $600. This indicates that the remuneration varies across the surveyed institutions, with some offering lower salaries and others providing higher compensation (see Figure 32).

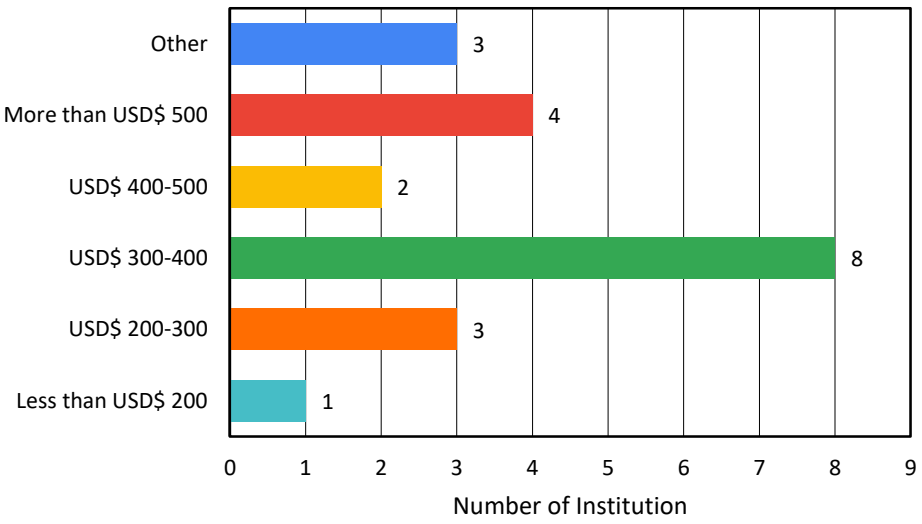

Figure 42. Salary range for the entry level

Furthermore, a significant majority of 67% of the institutions reported difficulties in finding suitable candidates for WASH-related positions. This suggests that there is a perceived challenge in recruiting individuals with the necessary qualifications and skills for these roles (see Figure 43).

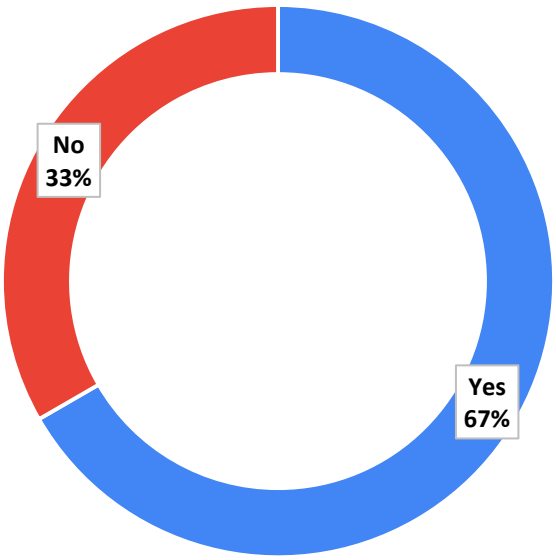

Figure 43. Difficulty for the employer to find people for WASH-related position

Employers generally prefer to recruit young individuals who possess both educational backgrounds and experience in the WASH-related sector. However, candidates with an educational background in the WASH sector, even without direct experience in that field, are also considered favorable for employment by employers (see Table 15).

Table 15. Mostly like to recruit candidate

WASH-related	Very high	Above high	Average	Below average	Very low
Education background AND experience in WASH-related sector	7	6	5	2	1
Education background in WASH-related sector BUT experience in another sector	2	8	7	4	0
Education background in other sector BUT experience in WASH	2	4	11	3	1
Education background AND experience in another sector	1	4	9	4	3

When it comes to the candidate's level of education and working experience, employers show a preference for individuals with the following qualifications (see Table 16):

1. Bachelor's degrees or engineering degrees: Candidates with these degrees, whether or not they have prior experience, are often preferred by employers.

2. Master's degrees: Candidates with master's degrees, with or without prior experience, are also sought after by employers.
3. PhD degrees: Individuals with PhD degrees, regardless of prior experience, are considered attractive candidates by employers.

For candidates with an associate degree, employers typically require at least one year of relevant work experience to be considered for recruitment.

Table 16. Level of education with working experience for recruitment

Level of Education/Working experience	No experience required	1 year of experience	2-3 years of experience	Above 3 years of experience	Not hiring
High school	4	1	0	1	15
Associate degree	3	7	3	2	1
Bachelor's degree	10	5	4	2	0
Master's degree	7	5	4	3	1
PhD degree	8	3	3	4	3

- **Important of Soft Skills Voted by the Employers**

Table 17. The important of specific soft skills that employees should have rate by employers

Soft skills	Very important	Important	Moderately important	Slightly important	Not important
Communication skills	8	10	3	0	0
Emotional intelligence	8	8	4	1	0
Time management	10	9	2	0	0
Creativity	8	11	2	0	0
Problem-solving	9	11	1	0	0
Interpersonal skills	5	14	2	0	0
Public speaking	6	10	4	1	0
Adaptability	8	8	5	0	0
Teamwork	9	10	2	0	0
Critical thinking	10	9	2	0	0
Leadership	9	10	2	0	0
Negotiation skills	8	11	2	0	0
Analytical skills	7	13	1	0	0

*The numbers within the table represent the count of participants who voted, indicating their perception regarding the significance of soft skills for employees.

In contrast to other sectors such as education, employees, and students, employers across various institutions overwhelmingly express that almost all soft skills are important when it comes to hiring and working within their organizations (see Table 17). These employers recognize the significance of soft skills in the workplace and believe that employees should possess a wide range of these skills to thrive and succeed in their respective institutions.

b) Governmental Organizations

- **General Information of the Governmental Organizations**

This study encompasses five additional governmental organizations, namely PPWSA, MRD, MPWT, MISTI, and MOE. The table below provides an overview of the overall information related to these organizations (see Table 18):

Table 18. General information of the governmental institutions

No	Institution	Establish Year	Total Employees	[%] Employees Age Under 35 yrs	Position of Employees Age Under 35 yrs
1	PPWSA	1985	1368	50%	In every position.
2	MRD	1993	110	-	- 35% work in the department of Water. - 50% work in the department of Hygiene.
3	MPWT	1996	-	50%	85% mostly technical employee.
4	MISTI	2011	-	-	-
5	MOE	1993	400	70%	-

In terms of recruitment for young employees, the PPWSA follows a master plan and specific criteria to guide their selection process. Similarly, the MRD takes into consideration the specific needs of each position when recruiting candidates. The MPWT primarily offers internship programs, and the MOE has a human resource institution that focuses on recruiting young individuals with IT and digital skills.

Regarding educational qualifications, the MPWT requires candidates to hold at least an engineering or bachelor's degree. MISTI specifically seeks candidates with an engineering degree. On the other hand, the MOE places a preference on candidates with higher education.

The technical skills sought by these organizations vary. The PPWSA looks for candidates with technical skills in IT and electrical fields. The MRD values candidates who possess technical skills in areas such as observation and evaluation, as well as computer proficiency.

Table 19. Recruitment criteria from the governmental organization

No	Institution	Young employees Recruitment (Base on Program)	Educational Level (Degree)	Qualification Skills	Hiring Per Year (Including internship and volunteer)	Hiring Media	GEDSI During Hiring
1	PPWSA	According to master plan and criteria.	-	Technical skills: IT, Electrical	100	Institution's website	Yes
2	MRD	Depending on the position's need.	-	- Technical skills: Observe and evaluate, computer skills - Any soft skills	-	-	Yes
3	MPWT	Internship	- Engineering - Bachelor	Technical skills: AutoCAD, GIS, mapping drawing, Microsoft excel.	-	-	Yes
4	MISTI	-	Engineering	- Technical skills: Civil engineering, hydraulic, chemical - engineering, 1electronic engineering, English language. - Soft skills: Project management, admin.	-	-	Yes
Yes5	MOE	- Base on human resource institution - IT and digital skills (to train for new employees)	Higher education	If have higher education is qualify.	1	-	Yes

Table 20. Challenging on hiring employees and preferable to recruit related to skills

No	Institution	Challenging for Hired Young Employees (Technical Position)	Important Skills but Hard to Find	Future Require Skills	Important Soft Skills Required
1	PPWSA	Available with hard skills but need time to train for soft kills.	Technical skills: Water management, electrical engineering, mechanical engineering, financial.	- Technical skills: Climate resilient, underground water, water treatment, risk management - WASH-related	-
2	MRD	-	- Major study seem to not suitable for the job Technical skills: Irrigation, geography, modeling ground water, data analysis, and data collection.	Technical skills: Climate resilient, water engineering, construction policy	Leadership, communication, negotiation
3	MPWT	- Need time to learn for new things - Challenging for big project	Language skills	-	Not required
4	MISTI	Need technical skills related to water pressure, law, and public administration	Technical skills: Electrical and mechanical engineering.	- English language - Soft skills: General knowledge	-
5	MOE	-	Technical skills: Science and technology skills	Technical skills: Proposal writing, Research science	Not require

The MPWT requires technical skills in AutoCAD, GIS mapping drawing, and Microsoft Excel. MISTI looks for candidates with technical skills in civil engineering, hydraulic engineering, chemical engineering, electronic engineering, as well as proficiency in English. In addition, MISTI emphasizes the importance of soft skills in project management and administration. Surprisingly, the MOE places a higher emphasis on higher education qualifications without specifying specific technical skills.

The five governmental organizations only three encounter various challenges when it comes to hiring and developing young employees. These challenges include (see Table 20):

1. PPWSA: PPWSA faces difficulties in finding young employees with the necessary hard skills, but they are willing to invest time and resources in training them in soft skills.
2. MPWT: MPWT struggles with the readiness of young employees when it comes to handling larger projects. It seems that they may require more preparation and experience to handle such projects effectively.
3. MISTI: MISTI encounters challenges in hiring young employees who possess technical skills related to water pressure, law, and public administration. Finding candidates with these specific skills can be a hurdle for the organization.

MRD: MRD is the only organization among the five that explicitly emphasizes the importance of soft skills for young employees. They recognize the need for skills such as leadership, communication, and negotiation in their workforce.

6. DISCUSSION

a) Participations

The inclusion of both public and private universities in the survey helps ensure a comprehensive representation of different perspectives and experiences within the higher education sector. Public universities like ITC and RUPP often play a significant role in shaping national policies and contributing to research and development initiatives. On the other hand, private universities like PUC and UP can provide valuable insights into the challenges faced by non-governmental educational institutions and contribute unique perspectives to the survey findings. By involving these four universities, the YRF team and the CSW aim to gather a diverse range of data and opinions on the topic under investigation. This approach helps ensure the robustness and reliability of the survey results, as well as the applicability of any subsequent recommendations or interventions.

In the conducted of a group of 14 employees participated. The information provides insights into the demographics and characteristics of the employee participants in the study, highlighting the gender distribution, age range, representation of vulnerable groups, and the regional backgrounds of the participants.

A total of 74 students participated. The information about the gender distribution and age range of the student participants provides valuable insights into the composition of the student sample in the study. It indicates the gender balance among the participants and the age distribution, which can be relevant factors when analyzing the findings and drawing conclusions from the study.

Employers from a total of 21 institutions participated provide valuable insights into the composition of the employer participants in terms of gender representation, age distribution, and their current positions within their institutions. These factors can influence the perspectives and experiences of the employers, which are important considerations when interpreting the study's findings and drawing conclusions.

Including the five governmental organizations in the study indicates a broader scope and involvement of various sectors and government bodies. It suggests that the study sought to gather insights and perspectives from different domains, such as water supply management, rural development, public works and transportation, industry and technology, and education. By including these organizations, the study can provide a more comprehensive understanding of the research topic and its implications within the context of government policies and practices.

b) WASH-related Opportunities

Although the water, sanitation, and hygiene (WASH) sector is relatively new in Cambodia, there are abundant opportunities available for young and professional individuals. These opportunities extend beyond the university setting and encompass various avenues such as NGOs, private companies, and other institutions.

In universities, opportunities exist for individuals to contribute as lecturers, researchers, or full-time staff members. This allows them to engage in the academic and research aspects of the WASH sector, sharing knowledge and conducting studies.

NGOs, private companies, and institutions also offer specific opportunities within the WASH sector. These may include internships or volunteering programs, on-the-job training, study tours at organizations or companies, mentoring or coaching support, and capacity building initiatives. Such opportunities enable individuals to gain practical experience, enhance their skills, and contribute to WASH projects and initiatives.

In terms of specific roles within these institutions, there are various positions available for young recruits. These roles can encompass administrative and finance functions, communication, social and community development, data analysis, coordination and management, program assistance or officer, project assistance or officer, and technical roles related to WASH. The technical roles can extend beyond WASH to encompass other relevant fields.

The government also provides opportunities based on their master plans and criteria. These opportunities can include internships and other forms of engagement. Students, too, can actively seek out opportunities through their university networks, professional connections, external involvements, and engagement with relevant WASH institutions.

c) WASH-related Skills

Educational programs within the Water, Sanitation, and Hygiene (WASH) sector play a vital role in cultivating skilled professionals capable of tackling the intricate challenges associated with water and sanitation management. Universities offer a comprehensive range of educational degrees, including diplomas, associate degrees, bachelor's degrees, engineer's degrees, master's degrees, and PhD degrees.

Technical training in the WASH field extends beyond theoretical knowledge, emphasizing practical applications through hands-on experimentation and fieldwork. This approach enhances students' learning outcomes by providing them with opportunities to apply their knowledge in real-world scenarios. Engaging in hands-on activities allows students to develop a deeper understanding of the principles and theories they have learned while fostering essential problem-solving and critical thinking skills.

Recognizing the importance of well-rounded development, universities also prioritize the cultivation of soft skills in their students. Soft skills encompass personal attributes and abilities that enable individuals to effectively interact and communicate with others. Among the various soft skills, communication skills, creativity, interpersonal skills, public speaking, and teamwork are emphasized by the surveyed universities. These skills are considered vital for success in professional environments.

NGOs, private companies, and institutions actively contribute to skills development in the WASH sector by providing training, volunteering, and internship opportunities. These initiatives enable employees and students to acquire both hard and soft skills, fostering their professional growth and preparing them for successful careers in the field. By engaging with these organizations, individuals can gain practical experience, expand their networks, and make meaningful contributions to water, sanitation, and hygiene initiatives.

Students also enhance themselves for WASH-related by joining training, seminar, competition, but his might not be enough need to provide more wider range from university in collaboration with government, NOGs, private company, institutions for opportunities both related to technical and soft skills.

In addition to formal educational programs, students in the WASH sector can further enhance their skills and knowledge by actively participating in various extracurricular activities such as training sessions, seminars, and competitions. These engagements offer valuable opportunities to deepen their understanding, expand their networks, and

showcase their abilities. However, while these activities provide valuable experiences, they may not be sufficient on their own.

To ensure a more comprehensive and diverse skill set, it is essential for universities to collaborate with government entities, NGOs, private companies, and other institutions to provide a wider range of opportunities for students. These collaborations can offer a broader spectrum of technical and soft skills development.

Regarding soft skills, universities can collaborate with external partners to organize workshops, mentorship programs, and networking events. These initiatives can focus on enhancing communication skills, leadership abilities, project management, teamwork, and other interpersonal competencies. By engaging with experienced professionals from different sectors, students can learn from their expertise and gain valuable insights into effective collaboration and professional conduct.

By expanding the range of opportunities through collaborations, universities can better equip students with the necessary technical expertise and soft skills required for successful careers in the WASH sector.

d) Challenges

Universities are committed to producing a high-quality workforce that meets the needs of society. To achieve this, they have been gradually updating their school curricula to align with the evolving demands of the job market. However, challenges persist in ensuring the development of both technical and soft skills in graduates. Some skills taught in universities may not align perfectly with the requirements of the job market, highlighting the need for stronger collaboration between the educational and private sectors.

By bridging the gap between educational institutions and the private sector, universities can produce a highly skilled workforce that meets the evolving demands of the job market. Collaborative efforts can ensure that graduates are equipped not only with technical expertise but also with the soft skills necessary for professional success in a rapidly changing world.

The responses indicate a range of perspectives among the students surveyed regarding their university's support and resources for WASH career preparation. While a significant number agree or strongly agree with the statement, the presence of neutral and disagreeing responses highlights the need for further investigation or improvement in certain areas to meet the expectations of all students.

Institutions, including governments, NGOs, and private companies, have encountered challenges in finding suitable candidates for WASH-related positions. The scarcity of qualified individuals in this field has been a persistent issue. Consequently, when candidates

are hired, their work performance often falls short of expectations, necessitating additional training in both technical skills and soft skills.

The demand for professionals in the WASH sector has outpaced the available pool of candidates. This scarcity can be attributed to various factors, such as limited awareness and interest in WASH-related careers, inadequate educational programs, and a lack of specialized training opportunities. As a result, institutions often struggle to find individuals who possess the necessary qualifications and expertise to excel in these positions.

e) Important of Specific Soft Skills

The university recognizes the significance of soft skills and incorporates them into learning courses and academic activities. According to the university's assessment, time management, problem-solving, interpersonal skills, and teamwork are considered highly important soft skills for students to develop.

When it comes to the perspective of employees, they prioritize communication skills, time management, leadership, analytical skills, and teamwork as crucial soft skills. These skills are seen as essential for effective job performance and collaboration in the workplace.

Similarly, students also recognize the importance of soft skills. According to their votes, communication skills, problem-solving, teamwork, and time management are highly valued. These skills enable students to excel academically, engage in group projects, and prepare themselves for future professional endeavours.

In contrast to the education sector, employees, and students, the employers' perspective differs slightly. Employers across various sectors emphasize the importance of almost all soft skills for their organizations. They recognize the value of a well-rounded skill set and believe that employees should possess a wide range of soft skills to thrive in their institutions.

However, it is worth noting that the government sector places less emphasis on a broad spectrum of soft skills. Instead, they primarily emphasize leadership, communication, and negotiation skills as particularly important for their employees. This perspective may be driven by the specific nature of government roles, which often involve decision-making, public interaction, and policy development.

7. CONCLUSION AND RECOMMENDATIONS

The diverse participation from universities, employees, students, private sectors and governmental organizations enhances the credibility and applicability of the survey findings. The data and insights gathered from this broad range of participants contribute to a more comprehensive understanding of the research topic and can inform future recommendations and interventions.

The WASH sector in Cambodia offers a wide range of opportunities for individuals to contribute and grow professionally. By exploring these opportunities through universities, NGOs, private companies, and government initiatives, individuals can gain valuable experience, develop their skills, and actively contribute to the advancement of water, sanitation, and hygiene in the country.

By expanding opportunities through collaborations, universities can better equip students with the necessary technical expertise and soft skills required for successful careers in the WASH sector.

To address the challenges, it is crucial for universities, in collaboration with the private sector, to enhance educational programs, provide specialized training opportunities, and foster awareness and interest in WASH-related careers. By doing so, a larger pool of qualified professionals can be developed to meet the demands of the WASH sector and contribute effectively to addressing water, sanitation, and hygiene challenges.

The various stakeholders hold different views on which soft skills are most important. However, there is a general consensus that soft skills play a vital role in personal and professional success. The university, employees, students, and employers all recognize the significance of developing these skills to enhance individual performance, collaboration, and overall organizational effectiveness.

To ensure the quality, requirements of the current and future skills required in WASH-related sector the education sector, employees/students, and employers should:

a) Education Sector

(a) Enhance WASH-related school curricula – Exposure visits should be conducted to provide real-life practice experiences. Soft skills can be integrated through digitalization, with some courses being taught via e-learning. Additionally, internship opportunities in the field should be increased, and students should be encouraged to participate in soft skills training outside of school.

(b) Integrate soft-skills program into school curriculum – By offering regular workshops and extra-curricular activities, schools can provide students with opportunities to develop and apply soft skills in real-world contexts. Here are some additional points to consider when implementing such a program:

- Identify key soft skills such as communication, teamwork, problem-solving, leadership, adaptability, time management, and emotional intelligence for students to effectively design a program, ensuring they are relevant and beneficial.

- Develop a comprehensive plan for workshops and activities focusing on identified soft skills, ensuring interactive, engaging, and practical sessions. Incorporate group projects,

role-playing, case studies, and simulations to provide students with real-world scenarios to apply their skills.

- Collaborate with professionals from diverse industries to share their expertise and experiences with students. Invite guest speakers or organize field trips to businesses and organizations to expose students to different working environments and understand the importance of soft skills in the professional world.

- Embracing soft skills across subjects is crucial, not only through dedicated workshops and activities but also through regular academic curriculum. Teachers can incorporate group projects, class discussions, and presentations that encourage students to apply their soft skills while learning subject-specific content, reinforcing their relevance in various contexts.

(c) Strengthen collaboration – Seek more collaboration with government agencies, NGOs, and private sector entities that work in WASH sector through joint research projects, workshops, and knowledge-sharing platforms.

- To effectively manage WASH issues, it is crucial to identify key stakeholders such as government agencies, NGOs, and private sector entities, such as water resources ministries, health departments, international development organizations, local NGOs, and water and sanitation companies.

- The collaboration should clearly define common goals, such as improving access to clean water and sanitation facilities, promoting hygiene practices, addressing water scarcity or pollution, or enhancing WASH infrastructure.

- Joint research projects are being initiated to tackle significant issues in WASH sector, such as water quality, sanitation practices, water management strategies, and the impact of WASH interventions.

- Organize workshops and capacity-building programs to facilitate knowledge exchange and skill development, covering topics which promote knowledge exchange and skill development.

b) Employee/Students

- **Develop Hard and Soft Skills:** Focus on acquiring both hard skills and technical expertise, as well as soft skills like effective communication, leadership, and problem-solving skills.

- **Gain Practical Experience:** Seek opportunities to gain practical experience through internships, projects, or part-time positions to supplement theoretical knowledge and develop real-world skills.

- **Enhance Technical Knowledge:** Considering additional training or courses to enhance technical knowledge in areas such as water treatment processes, sustainable WASH technology, and software design, which are in high demand but challenging to find.

- **Stay Updated on Future Skills:** Stay informed about emerging trends and future skills needed in the industry, particularly in areas like climate resilience, AI, and programming languages, to remain competitive in the job market.

- **Improving Soft Skills:** Work on improving soft skills such as facilitation, critical thinking, time management, and interpersonal skills, as these are highly valued by employers and essential for success in the workplace.

- **Cultural Competency and Diversity Awareness:** Demonstrate an understanding of appreciation of diversity, gender sensitivity, and community development principles, as employers emphasize the importance of attitudes towards gender, disability, safeguarding, and community engagement.

- **Language and Computer Skills:** Strengthen language proficiency and computer skills, as these are considered essential by employers and can enhance employability in various roles within the WASH sector.

c) Employers

- **Offer Internship Opportunities:** Provide flexible internship options that accommodate students' schedules to address the difficulty in finding internship opportunities while studying.

- **Enhance Job Announcements:** Increase the dissemination of job announcements in the WASH sector address the perception of limited job opportunities.

- **Support Skill Development:** Offer training programs or initiatives to bridge the gap between students' education and the job market's skill requirements, addressing concern about limited knowledge and skills.

- **Improve Recruitment Processes:** Ensure recruiters have a thorough understanding of candidates' skills and competencies to mitigate challenges with recruitment processes.

- **Address Salary Concerns:** Address concerns about low salary offerings by offering competitive compensation packages or opportunities for career advancement.

- **Promote Gender Equality:** Implement policies and practices that promote gender equality in the workplace to address concerns about potential gender biases.

- **Provide Information and Support:** Offer resources and support to help students and employees navigate job opportunities in the WASH sector, including information about relocation and working conditions in remote areas.

8. APPENDIX

Table 21: Courses curriculum at the foundation years (year 1 and 2) of the Institute of Technology of Cambodia (ITC)[7]

	Semester I		Semester II	
	Course	**Credit**	**Course**	**Credit**
1st Year	French	3	French	3
	Geometry	2	Calculus 1	3
	Mechanics I	3	Thermodynamic	3
	Management and Accounting	3	Technical Drawing	2
	Philosophy	2	Marketing	2
	Environment	2	Informatic	2
			History	2

	Semester I		Semester II	
	Course	**Credit**	**Course**	**Credit**
2nd Year	French	3	French	2
	English	2	English	3
	Calculus 2	3	Probability	3
	Mechanics II	3	Differential Equations	3
	Electricity	3	Vibration and Wave	3
	Chemistry	3		

Table 22: Courses curriculum at the Faculty of Hydrology and Water Resources Engineering, Institute of Technology of Cambodia (ITC)[6]

Engineer's Degree in Water Resources Engineering and Rural Infrastructure (WRI)

	Semester I		Semester II	
	Course	**Credit**	**Course**	**Credit**
3rd Year	French	2	French	1
	English	1	English	2
	Statistics	2	Computer-aided Design (AutoCAD)	1
	Fluid Mechanics	3	Hydrology	3
	Soil Science	2	Soil Mechanics and Foundations	3
	Strength of Materials	2	MATLAB	1.5
	Meteorology	1	Surveying	3
	Hydrometeorology	1.5	Introduction to Environmental Engineering	1
	Geology and Hydrology	1.5		

[7] https://itc.edu.kh/engineers-degree-hre/

4th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
French I	1	French II	1
English I	1	English II	1
Earth Dam Design & Construction	2	Construction of Rural Roads	3
GIS and Remote Sensing	3	Groundwater Exploration	2
Structural Analysis	3	Irrigation and Drainage Systems	3
Water-induced Disaster Risk Assessment	2	On-site Safety Management	1
Construction Materials	2	Introduction to Integrated Water Resources Management	1
Hydraulics	2	Hydropower Development and Pumping Station	3
		Reinforced Concrete Design	3

5th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
Module d 'Insertion Profession Nelle (MIP)	1	Final Year Internship	9
English for Work and Career: Engineering Skills	1		
Land Management	2		
Climate Change Impacts and Adaptation	2		
Hydraulic Structures	4		
Water Resources Economics	2		
Cost Estimating and Contracting	1		
Project Management	2		
Multi-Disciplinary Design Project	3		
Internship I4	2		

Engineering's Degree in Water and Environmental Engineering

3rd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
French	2	French	1
English	1	English	2
Statistics	2	Computer-aided Design (AutoCAD)	1
Fluid Mechanics	3	Hydrology	3
Soil Science	2	Soil Mechanics and	3

		Foundations	
Strength of Materials	2	MATLAB	1.5
Meteorology	1	Surveying	3
Hydrometeorology	1.5	Introduction to Environmental Engineering	1
Geology and Hydrogeology	1.5		

4th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
French	1	French	1
English	1	English	1
Chemistry for Environmental Engineering	2	Water Quality Analysis and Management	2
Biology for Environmental Engineering	3	Water Treatment Process and Design	3
Unit Operations and Processes for Environmental Engineering	3	Water Supply Engineering	3
Environmental Engineering Laboratory	1	Building Sanitation/Plumbing Design	4
GIS and Remote Sensing	3	Hydro-informatics	2
Environmental Hydraulics	2	Introduction to Integrated Water Resources management	1
		Environmental Pollution Control	2

5th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
French	1	Final Year Internship	9
English	1		
Design Wastewater Treatment and Collection System	4		
Solid Waste Management	2		
Urban Drainage and Sewage System	2		
Environmental Impact Assessment	2		
Sustainable and Green Energy Systems	2		
Work Safety	1		
Research Methodology	2		
Internship I4	2		

Table 23: Courses curriculum at the Faculty of Chemical and Food Engineering, Institute of Technology of Cambodia (ITC)[8]

Engineering Program of Food Science and Technology (FST)

3rd Year

Semester I		Semester II	
Cours	**Credit**	**Cours**	**Credit**
French	2	French	1
English	1	English	2
Statistics	2	Analytical Chemistry	3
Fundamental Chemistry	4	Fluid Mechanics	3
Physical Chemistry	2	Numerical Method	2
Heat and Mass Transfer	4	General Microbiology	2
Unit Operation I	1	Unit Operation II	4

4th Year

Semester I		Semester II	
Cours	**Credit**	**Cours**	**Credit**
French	1	French	1
English	1	English	1
Food Microbiology	3	Biotechnology	4
Biochemistry	3	Food Processing I	4
Nutrition and Health	2	Packaging and Packing	2
Food Preservation I	4	Food Preservation II	2
Food Chemistry	3	Food Safety	3
Genetics	2	Water Chemistry	2
Internship	2		

5th Year

Semester I		Semester II	
Cours	**Credit**	**Cours**	**Credit**
French	1	Final Year Internship	9
English	1		
Agro-Food Industry Management	2		
Sensory Evaluation	2		
Project Management	2		
Food Processing II	6		
Entrepreneurship	2		
Quality Assurance	2		
Automation and Control	2		
Production Development	4		

[8] https://itcgca.wixsite.com/my-site-1/copy-of-academic-program

Engineering Program of Chemical Engineering (Che)

3rd Year

Semester I		Semester II	
Cours	**Credit**	**Cours**	**Credit**
French	2	French	1
English	1	English	2
Statistics	2	Analytical Chemistry	3
Fundamental Chemistry	4	Fluid Mechanics	3
Physical Chemistry	2	Numerical Method	2
Heat and Mass Transfer	4	General Microbiology	2
Unit Operation I	1	Unit Operation II	4

4th Year

Semester I		Semester II	
Cours	**Credit**	**Cours**	**Credit**
French	1	French	1
English	1	English	1
Chemical Reaction and Kinetics	3	Transport Phenomena II	4
Chemical Thermodynamics	3	Material Science II	3
Transport Phenomena I	3	Analytical and Instrument Chemistry	4
Material Science	3	Fundamental Catalyze Reaction	2
Petroleum Chemistry	4	Water Chemistry	2
Biochemical Process	2		
Internship	2		

5th Year

Semester I		Semester II	
Cours	**Credit**	**Cours**	**Credit**
French	1	Final Year Internship	9
English	1		
Industrial Chemical Process	7		
Computing Software for Chemical Reaction	3		
Project Management	2		
Chemical Plant Safety	2		
Entrepreneurship	2		
Automation and Control	2		
Seminar	2		

Table 24: Courses curriculum at the Faculty of Science, Royal University of Phnom Penh (RUPP)

Bachelor of Science in Environmental Science (PUES)

2nd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language III*	2	English Language IV*	2
Introduction to the Environment	3	Environmental Economics	3
Environmental Chemistry I	3	Environmental Chemistry II	3
Economic and Marketing Economy	3	Environment and Sustainable Development	3
Statistics I	3	Statistics II and SPSS Application	3
Ecosystems: Structures and functions	3	Urban Infrastructure and Service	3
Urban Geography	3	Urban environment	3

3rd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language V*	2	English Language VI*	2
Fundamentals of GIS	3	Research Methodology	3
Environmental Ethics	3	System Dynamics Modeling	3
Environmental Policy and Regulation	3	Environmental Impact Assessment	3
Fundamentals of Air Pollution	3	Environmental Pollution & Public Health	3
Solid Waste Management	3	Energy and Environment	3
Environmental Equality Management	3	Waste Water Pollution Controls	3
		Water Quality Management	3
		Vacation Internship Program	1

4th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
Problem Based Learning	3	Population, Environment and Development	3
Gender, Development and Environment	3	Water Resource Systems and Management	3
Project Management, Planning and	3	Group Research	9

Implementation with Environmental Considerations				
Thesis/Research Proposal Development	2	**OR**		
Waste Economy	3			
Introduction to Cleaner Production	3	Thesis (Outstanding Students)	15	

Bachelor of Science in Environmental Science (NRM)

2nd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language III*	2	English Language IV*	2
Introduction to the Environment	3	Environmental Economics	3
Environmental Chemistry I	3	Environmental Chemistry II	3
Economic and Marketing Economy	3	Environment and Sustainable Development	3
Statistics I	3	Statistics II and SPSS Application	3
Ecosystems: Structures and functions	3	Marin Ecology	2
Biogeography	2	Agricultural Environment	3

3rd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language V*	2	English Language VI*	2
Fundamentals of GIS	3	Research Methodology	3
Environmental Ethics	3	System Dynamics: An Introduction to Models of Complex Systems	3
Environmental Policy and Regulation	3	Environmental Impact Assessment	3
Aquatic Resource Management	3	Marine Resource Management	3
Sustainable Land Management	3	Concepts of Sustainable Forest Management	3
NRM Global Issues and Challenges	3	Biodiversity Conservation	3
		Special Study (Summer Internship Program	1

4th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
Problem Based Learning	3	Population,	3

		Environment and Development	
Gender, Development and Environment	3	Water Resource Systems and Management	3
Project Management, Planning and Implementation with Environmental Considerations	3	Group Research	9
Thesis/Research Proposal Development	2	**OR**	
Integrated Natural Resources Management & Planing	3		
Protected Area Management	3	Thesis (Outstanding Students)	15

Bachelor of Science in Chemistry

2nd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language III*	2	English Language IV*	2
Organic Chemistry I	4	Organic Chemistry II	4
Analytical Chemistry I	3	Analytical Chemistry II	3
Analytical Chemistry Lab. I	1	Analytical Chemistry Lab. II	1
Quantum Chemistry	3	Physical Chemistry I	3
Elementary Statistics	3	General Biology	2
Inorganic Chemistry I	3	Inorganic Chemistry II	3
Inorganic Chemistry Lab.	1	Organic Chemistry Lab. I	1

3rd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language V*	2	English Language VI*	2
Biochemistry I	4	Biochemistry II	4
Advanced Organic Chemistry	5	Visual Basic Programming	2
Physical Chemistry II	4	Physical Inorganic Chemistry	3
Instrumental Methods of Chemical Analysis	4	Polymer Chemistry I	3
Sustainable Land Management	3	Structure and Energetics	4
NRM Global Issues and Challenges	3	Research Method in Chemistry	2

	Semester I		Semester II	
	Course	Credit	Course	Credit
4th Year	Natural Compounds	2	Food Chemistry	3
	Catalysis	2	Laboratory Management	2
	Physical organic Chemistry	3	Inorganic Synthesis	2
	Heterocyclic Aromatic Chemistry	2	Organic Synthesis	2
	Surface Chemistry	3	Chemistry of Color	3
	Agro-Chemistry	2	Aquatic Chemistry	2
	Environmental Chemistry	4	Seminar in Chemistry	2
	Polymer Chemistry II	2	Thesis	16

Bachelor of Science in Biochemistry

	Semester I		Semester II	
	Course	Credit	Course	Credit
3rd Year	English Language III*	2	English Language IV*	2
	Biochemistry I	4	Biochemistry II	4
	Advanced Organic Chemistry	5	Techniques in Biochemistry	2
	Physical Chemistry II	4	Plant and Animal Physiology I	2
	General Microbiology	3	Plant and Animal Physiology II	2
	Cytology	2	Food Microbiology I	3
			Instrument Methods of Chemical Analysis	4

	Semester I		Semester II	
	Course	Credit	Course	Credit
4th Year	Enzyme Kinetics & Metabolic Control	3	Food Chemistry I	3
	Bioenergetics	3	Carbohydrate & protein Technology	3
	Biochemical Genetics	3	DNA	2
	Fermentation Technology	3	Bioinorganic Chemistry	2
	Enzyme Biotechnology	3	General Toxicology	2
	Nutrition	3	Seminar in Biochemistry	2
			Thesis	16

Bachelor of Science in Food Technology

	Semester I		Semester II	
	Course	Credit	Course	Credit
2nd Year	English Language III*	2	English Language IV*	2
	Nutrition I	3	Nutrition II	3
	General Chemistry II	5	Food Technology I	3
	General Biology	4	General Microbiology	3

Organic Chemistry I	4	Organic Chemistry II	4
Statistics I	3	Statistics II	4

3rd Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
English Language V*	2	English Language VI*	2
Food Technology II	3	Food Engineering principles	3
Food Microbiology I	3	Food Microbiology II	3
Environmental Microbiology	3	Food Chemistry I	3
Introduction to Food Process Engineering	3	Cereal Technology	2
Organic Lab. II	1	Carbohydrate Technology	2
Quality Assurance	3	Protein Technology	2
Food Technology Project Proposal	2	Biochemistry of Flavors & Aromas	2

4th Year

Semester I		Semester II	
Course	**Credit**	**Course**	**Credit**
Fermentation Technology	4	Industrial Microbiology	3
Food Laws and Regulations	3	Industrial Microbiology	3
Sensory Evaluation	3	Food toxicology	3
Food packaging Technology	3	Food Chemistry III	3
Integrated Natural Resources Management & Planing	3	Food Technology Project	4
Food Technology Project	4		

Table 25: Courses curriculum at the Faculty of Health Science & Biotechnology, University of Puthisastra (UP)[9]

Program Outline for Bachelor of Science Research

	Semester 1	Credits	Semester 2	Credits
Year 1 Foundation Year	Academic Skills Development	2	Introduction to Research Methodology	2
	Computer Applications	2	English Composition: Informative writing	3
	Core English I	3	Anatomy	3
	English Composition: Fundamentals of Writing	3	Embryology	2
	Khmer History and Culture	2	Core English II	3
	English Intensive I*	1	Mathematics**	2
	Biology	2	First Aid	2
	Biochemistry	2	English Intensive II*	1
	Fundamental chemistry	3	English Medical Terminology	3
	Total Credits per semester:	**20**		**21**

	Semester 1	Credits	Semester 2	Credits
Year 2	English III	3	English IV	3
	Laboratory Fundamentals	3	Biological Systems	3
	Research Techniques in Chemistry	3	Math for Natural Scientists/ Data Collection & Analysis	6
	Workplace Practices and OHS	6	General Microbiology	3
			Work Integrated Learning (WIL) (2nd year)	2
	Total Credits per semester:	**15**		**17**

	Semester 1						Credits
Year 3	Specified Sub-units	Forensics	Bioscience	Chemistry	Food Quality	Environment and Sustainability	
	English V	✓	✓	✓	✓	✓	3
	Cell and Molecular Genetics	✓	✓	✓	✓		3
	Laboratory testing	✓		✓			2
	Complex Instrumentation	✓	✓	✓	✓	✓	1.5

[9] https://www.puthisastra.edu.kh/faculty-of-health-sciences-and-biotechnology/

	Analytical Chemistry	✓	✓	✓	✓		1.5
	Tissue Culture		✓				3
	Using DNA	✓	✓		✓	✓	1.5
	Biotechnology	✓	✓	✓	✓	✓	1.5
	Food analysis	✓		✓	✓	✓	1.5
	Environmental Surveys					✓	1.5
	Environmental Lab Technique			✓	✓	✓	1.5
	Sustainability Policy					✓	3
	Total Credits per Semester:	**15.5**	**15**	**15.5**	**15**	**15**	

	Semester 1	Credits	Semester 2	Credits
Year 4	English VII	3	English VIII	3
	Advanced Scientific Techniques	3	Research Project (Thesis)	6
	Scientific Writing	6	Work Integrated (WIL) 4th Year	5
	Research Protocol & Ethics	6		
	Research Proposal	2		
	Total Credits per semester:	**20**		**14**

Table 26: Courses curriculum of the Environmental Program of the Faculty of Science and Engineering, Paññāsāstra University of Cambodia

Year One: Foundation Year Courses			
Course code	**Course title**	**Credits**	**Priority**
POL101	Introduction to Political Science	3	Required
ANTH102	Cultural Anthropology	3	Required
NATS102	Introduction to Environmental Science	3	Required
ENGL110	English I: Reading and Composition	3	Required
COMP110	Introduction to Computer	4	Required
KHMR110	Khmer Studies	3	Required
SOC110	Gender Studies	3	Required
ENGL120	English II: Reading and Composition	3	Required
Oriented Courses by Faculty Requirements			
Course code	**Course title**	**Credits**	**Priority**
BIO101	Introduction to biology	3	Required
CHEM101	Chemistry I	3	Required
	Subtotal	**31**	

Year Two: Functional Skills Courses			
Course code	**Course title**	**Credits**	**Priority**
HFT201	Health Education and Fitness	3	Required
MATH201	College Algebra	3	Required
STAT201	Introduction to Statistics and Its Applications	3	Required
ARIL210	Academic Research: Information Literacy	3	Required
PHIL212	Introduction to Ethics	3	Required
PSYC212	Personal Growth and Development	3	Required
BIO201	General Ecology	3	Required
NATS201	Environment Geology	3	Required
Institutional Skills Courses			
Course code	**Course title**	**Credits**	**Priority**
HIST230	History of Cambodia	3	Required
	Subtotal	***27***	

Year Three: Basic Major Courses			
Course code	**Course title**	**Credits**	**Priority**
BIO301	Principles of Biology +Lab	3+1	Required
CHEM301	Chemistry-II + Lab	3+1	Required
NATS301	Environmental Dynamics/Physical process	3	Required
NATS302	Environmental Pollution & Management +Site visit	3+1	Required
NATS303	Introduction to Environmental Economics	3	Required
LAW420	Introduction to Environmental Law	3	Required
NATS304	Geographic Information System-I	3	Required
STAT385	Statistics for Science & Engineering	3	Required
	Electives courses	12	Required
	Subtotal	**39**	

Year Four: Major Courses			
Course code	**Course title**	**Credits**	**Priority**
NATS401	Environmental Field Techniques and Applications	3+1	Required
NATS402	Environmental Impact Assessment & Sustainable Development +Site Visit	3+1	Required
NATS403	Natural Resource Management	3	Required
NATS405	Climate Change	3	Required
NATS406	Research Methods in Science & Engineering	3	Required
	Elective courses	9	Required
	Subtotal	**26**	

Graduation Path (3 credit)

Course code	**Course title**	**Credits**	**Priority**
NATS 489	Senior Project or Exit Exam	3	Required
	Subtotal	**3**	
	Total	**126**	