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# AFRICAN SANITATION ACADEMY: MARKET AND FEASIBILITY STUDY IN WEST AFRICA

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## FOREWORD

Despite a growing body of evidence of the economic, health, social, and political impacts of fecally contaminated environments, sanitation remains a neglected service in Africa. There is chronic under-investment in sanitation infrastructure and management, and a general lack of strategic approaches for addressing sanitation on an area-wide or larger scale; lack of prioritization of preventive health by Ministries of Health; and lack of political leadership to address the sanitary revolution that could improve the lives of approximately 644 million Africans lacking sanitation.<sup>1</sup>

The United Nations (UN) designated a sanitation-specific global goal in Sustainable Development Goal (SDG) 6.2.<sup>2</sup> There is a consensus among the sanitation expert community that achieving progress against these ambitious goals will require significantly more effective institutions and leadership.<sup>3</sup> Leadership in the sub-sector is critical to overcome structural impediments (policy, legal, financial) and to make the significant and often difficult decisions needed to trigger the transformation of sanitation in Africa.

The USAID Water for Africa through Leadership and Institutional Support (WALIS) project<sup>4</sup> studied the feasibility of a sanitation training center with an Africa continent focus commonly called the “African Sanitation Academy” (ASA).<sup>5</sup> WALIS commissioned three regional ASA market assessment and feasibility studies in eastern, western, and southern Africa. Each study was meant to:

- Assess existing government frameworks and how local governments and sanitation providers are strengthening sanitation management and leadership.
- Analyze the demands of African utilities and governments for sanitation management.
- Identify what educational institutions are researching and/or teaching relevant to sanitation.
- Explore potential partnerships that should be developed and how they should be structured.
- Consider products appropriate to meet these demands.
- Examine what type of organizational framework would best suit ASA and how it should be financed, and the overall feasibility of the concept.

A feasibility report, summarizing the findings of individual regional studies was produced, addressing demand, products, costs, organizational partnerships, and financing. The findings of these studies will be used to seek financial and technical support from a range of prospective ASA investors and partners. This regional feasibility study focused on identifying and unpacking the target market, as well as current training and initiatives in West Africa. Its aim was to envisage an ASA and recommend models for its establishment based on the demand for and supply of relevant training in West Africa.

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<sup>1</sup> World Health Organization (WHO)/United Nations International Children’s Emergency Fund (UNICEF). (2012).

<sup>2</sup> By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

<sup>3</sup> For example, Gordon, B. (2016). *Lessons learnt from the MDG period in water and sanitation*.

<sup>4</sup> WALIS aims to support national and regional institutions and their development partners to improve the capacity of African water sectors to implement policies, strategies, and plans that will deliver sustainable water, sanitation, and hygiene services consistent with the SDGs.

<sup>5</sup> The term “academy” refers to an institution of higher learning, not in itself as extensive as a university, but one that draws together specialist expertise, gives its members the opportunity for in-depth learning, promotes analysis and the exchange of ideas, and encourages innovation. This distinguishes it from “training,” in which skills are improved according to established bodies of knowledge through courses or training modules.

## **ACKNOWLEDGMENTS**

The authors of this document and the WALIS team would like to thank all the people who generously took their time to be interviewed and who provided insights and incredible value to the report. A full list of names is available in Annex A.



## ABBREVIATIONS AND ACRONYMS

2iE	International Institute for Water and Environmental Engineering
AFD	French Development Agency
AfWA	African Water Association
AMCOW	African Ministers' Council on Water
ANAQSUP	National Quality Assurance Authority for Higher Education
ANGESEM	National Agency for the Management of Waste Water Treatment Plants (Mali)
ASA	African Sanitation Academy
ATPC	<i>Assainissement Total Piloté par la Communauté (CLTS)</i>
CAMES	African and Malagasy Council for Higher Education
CEMEAU	Water Trades Center
CLTS	community-led total sanitation
CTI	Engineering Titles Commission
DA	Direction d'assainissement (Burkina Faso and Senegal)
DNACPN	National Directorate of Sanitation, Pollution, and Nuisance Control
EAA	Water and Sanitation for Africa
EAWAG	Swiss Federal Institute of Aquatic Science and Technology
ECOWAS	Economic Community of West African States
EPAC	Polytechnic School of Abomey-Calavi (Benin)
EPT	Polytechnic School of Thiés (Senegal)
ESEBAT	Higher School of Electricity, Building, and Public Works
ESP	Higher Polytechnic School (Senegal)
ESTBR	High School of Buildings and Roads Technology
FAST	Faculty of Sciences and Technologies (Benin)
FSM	fecal sludge management
FSTP	fecal sludge treatment plant
GDP	gross domestic product
HRM	human resource management
INE	National Water Institute (Benin)
IUT	University Institute of Technology in Thiès (Senegal)
JMP	Joint Monitoring Programme
M&E	Monitoring and Evaluation

NGO	nongovernmental organization
ONAD	National Office of Sanitation and Drainage (Ivory Coast)
ONAS	National Sanitation Office of Senegal
ONEA	National Office for Water and Sanitation (Burkina Faso)
PEPAM	Millennium Drinking Water and Sanitation Program (Senegal)
SDG	Sustainable Development Goal
SONEB	National Water Corporation of Benin
UCAD	Cheikh Anta Diop University of Dakar (Senegal)
UEMOA	West African Economic and Monetary Union
UN	United Nations
UNICEF	United Nations International Children’s Emergency Fund
WALIS	Water for Africa through Leadership and Institutional Support
WASH	water, sanitation, and hygiene
WWTP	waste water treatment plant

## SUMMARY

There are still many people who do not have access to improved sanitation and hygiene facilities or services in West Africa. For cities and other areas throughout the region, a lack of core country systems for sanitation, and a weak enabling environment, means that the building blocks for sanitation management and leadership are absent. To make the situation more challenging, targeting and implementation of sanitation improvements are clearly not meeting the needs of lower-income areas. Tackling the problem of pro-poor urban sanitation requires vision and innovation, which are strongly linked to the capacity of staff within utilities and municipalities.

The ASA market and feasibility study in West Africa was based on interviews with 33 key informants<sup>6</sup> from 5 countries<sup>7</sup> in West Africa, which, together with limited desktop research covering 15 countries<sup>8</sup> of the sub-region, were conducted to gather and compile information, and explore the possibilities for sanitation leadership training in the region.

Upon review and analysis of the data, the main results of the feasibility study suggest that:

- The existing training programs provided by training institutions in West Africa are too basic and are combined with other types of training, which may not be relevant for the sanitation sector.
- There are no exclusive sanitation training programs for leaders and managers who need to strengthen their technical knowledge.
- The existing training institutions are not equipped to meet the capacity building needs expressed by sanitation leaders and managers.
- The budget for capacity building of the main sanitation services are not sufficient to cover all the training needs of leaders—training is not sufficiently prioritized.
- The organization and criteria for establishment of private training institutions (in addition to public ones) are already set in different countries; private institutions have more ability to tailor training courses to the needs of the sector.
- Nongovernmental organizations (NGOs) have developed and implemented capacity building systems for their employees in sanitation and these courses could be provided more widely or adapted for government and private sector participants.
- Financial and technical partners already contribute to funding of capacity building for leaders and managers of services in charge of sanitation, using training that is available, but not considered ideal. With better training available, it can be anticipated that they will continue to send their trainees.

From the interviews, published and unpublished literature reviews, and field visits, this study concludes that there is a real need for more quality training, specifically customized and targeted for leaders and

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<sup>6</sup> Managers and leaders of public institutions in charge of sanitation, public and private sanitation training facilities, and NGOs and development partners active in the sanitation sector.

<sup>7</sup> Benin, Burkina Faso, Gambia, Mali, and Senegal.

<sup>8</sup> Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea Bissau, Ivory Coast, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

managers in the sanitation sector. Current sector leaders and managers identify with the goals and objectives of ASA and support the need for such an institution.

This feasibility study recommends that the ASA be established independently from existing public or private institutions and universities to ensure that the focus for sanitation is not diverted and that the training content is relevant for what the sector needs. In addition, this study recommends that regional hubs for West, Central, Southern, and East Africa will be needed, given the size of the continent, the size of the job to be done in terms of the number of people to be trained, and because each region has some uniqueness, which may require that similar regional approaches are shared.

## **BACKGROUND**

### **INTRODUCTION**

Clarity on institutional leadership in sanitation is especially lacking in fast-growing African cities where responsibility for sanitation is typically highly fragmented (sewerage, pit-latrines, pit-emptying services, treatment, and sanitation in schools and health facilities are often managed by several different entities). Lead public sector figures lack the knowledge and experience on how to move from this fragmented patchwork of services to a comprehensive, viable, citywide approach.

The evidence seems to suggest that the few sanitation-related success stories in Africa have depended on exceptional leadership by sanitation leaders. Despite many different initiatives, which are beginning to address aspects of the neglect and poor performance of sanitation services in Africa, there is no initiative that focuses exclusively on nurturing leadership to trigger change in overall sanitation performance.

The vision of the ASA is the emergence of strong and distinct leadership for sanitation among utilities and local governments in Africa; leadership that can achieve sustainable and safely managed sanitation and sewerage services that can contribute to Pan-African achievement of the SDGs. Leadership would generate the resources, policy insights, management systems, and customer care capacity to improve services placing them on a path to be continuously upgraded to meet local demand.

This report is a detailed feasibility study of how the ASA could operate in West Africa.

### **STUDY METHODOLOGY**

Three feasibility studies covering East, West, and Southern Africa were undertaken in parallel. Each had a common goal, but each study's approach responded to the opportunities and context in each region.

The main purpose of each feasibility study was to assess the needs and demands of sanitation leadership and management in African utilities and local governments. The studies assessed current products that are either appropriate to meet these demands or have the potential to meet the needs. This study also addressed the overall feasibility of ASA and, if viable, how it might be organized and sustained in West Africa.

The methodology adopted for the West Africa study was a combination of a desk review of published and unpublished data, reports and evidence supplemented by key informant interviews, and information received in response to questionnaires.

The desk review focused on available published and unpublished data by:

- West African governments.
- Regional and international institutions working in sanitation.
- Regional and international training institutions.

Basic data were collected by interviewing respondents in West Africa. The countries were selected to include different country archetypes; for example, those with high and low sanitation coverage, weak and strong institutional arrangements, and stable and unstable political situations. Interviews were made by telephone, and questionnaires were sent by email, covering the following topics:

- Sanitation profile: The institutional, legislative, and organizational framework; the infrastructural, financial, and technical framework; the human resources; and the actors in sanitation services chain.
- Qualification and sanitation training needs of leaders and managers.
- Identification of public and private sanitation training establishments, types of training provided, and cost and sources of funding for training.
- Mechanisms for financing sanitation training.
- Identification of potential partners for ASA establishment in West Africa (training structures, donors, etc.).
- Identification of potential regional or sub-regional organizations favorable to the establishment of an ASA in West Africa.

## REGIONAL AND COUNTRY FOCUS

After basic data collection in 11 countries, the feasibility study focused more specifically on two countries: Senegal and Burkina Faso, which were selected for an in-depth study. The selection of these countries was based on the following criteria: Sanitation profiles (high level of sanitation coverage relative to the African average); supply and demand for sanitation training; political stability; sanitation financing mechanisms (e.g., the Government of Senegal has mobilized a lot of funds for the promotion of sanitation); quality of training institutes; and a strong overall sanitation sector that is increasing in size.

A semi-structured interview was conducted with managers and sanitation leaders for in-depth data.

## OVERVIEW OF SANITATION STATUS IN THE REGION

The West and Central Africa sub-region, as defined by UNICEF, has 480 million people, of which 20.5 percent have unimproved access to clean water and a more alarming figure of 122 million (22 percent of the population) people still practice open defecation.<sup>9</sup> Poor sanitation underpins a lack of progress in

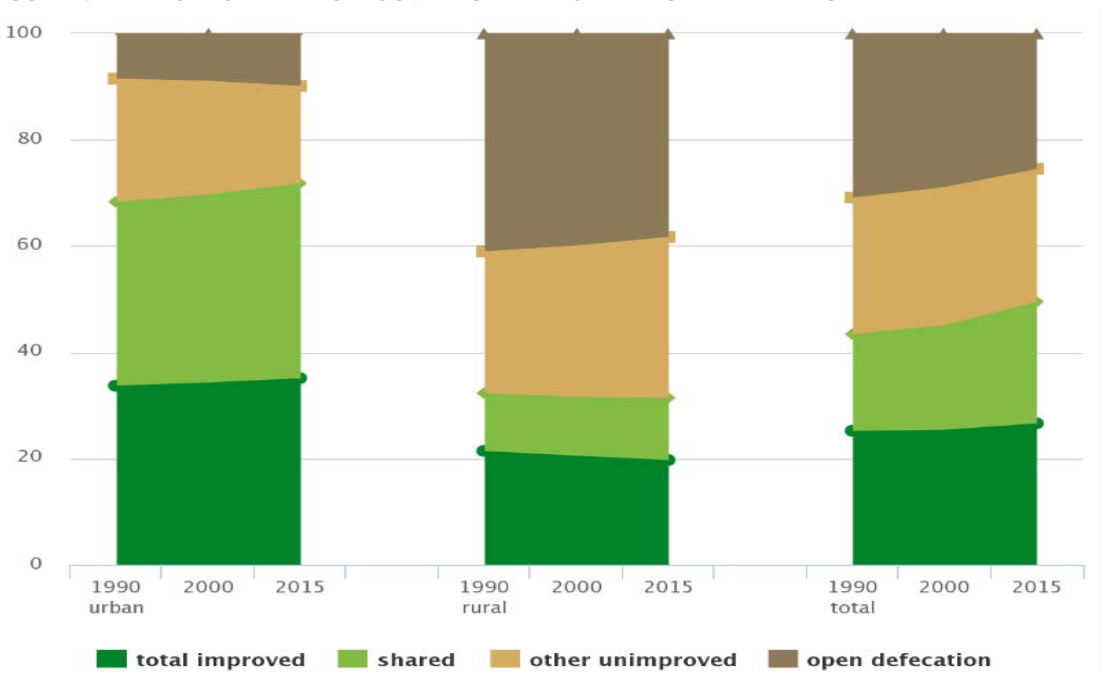
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<sup>9</sup> WHO/UNICEF. (2015).

financial and economic development insofar as they annually absorb as much as 5 percent of the countries' gross domestic product (GDP) (WaterAid and World Vision).<sup>10</sup> The water and sanitation position in West Africa is particularly poor, and the region has the highest under-five mortality rate of all developing regions: 169 child deaths per 1,000 live births. Evidence shows that poor hygiene, lack of access to sanitation, and unsafe drinking water together contribute to about 88 percent of diarrhea deaths, the second leading cause of under-five deaths. Recurrent outbreaks of cholera in both urban and rural areas underline the poor state of this region's basic living conditions. West Africa was also the region that had the deadly Ebola outbreak in 2013–2015. World Bank estimates that the short-term impact on output is in the order of 2.1 percentage points of GDP in Guinea (reducing economic growth from 4.5 to 2.4 percent); 3.4 percentage points of GDP in Liberia (reducing growth from 5.9 to 2.5 percent), and 3.3 percentage points of GDP in Sierra Leone (reducing growth from 11.3 to 8.0 percent). This forgone output for these three countries corresponds to US\$359 million in 2013 prices.<sup>11</sup> The estimated loss in GDP for the sub-region in 2014 due to all the financial and economic losses associated with Ebola is US\$2.2 billion in 2014.

Figure 1 shows that there has been very little progress in the region over the past 25 years, and rates of improved sanitation have been decreasing in rural areas, as population growth overtakes gains in access to sanitation.

FIGURE 1: TRENDS IN SANITATION COVERAGE IN WEST AND CENTRAL AFRICA



SOURCE: JOINT MONITORING PROGRAMME (JMP) DATA, 2015.

<sup>10</sup> Matin Libre. (2015). *Selon WaterAid et World Vision Afrique de l'ouest : L'accès universel à l'eau et l'assainissement dans nos communautés est réalisable.*

<sup>11</sup> World Bank Group. (2014). *The economic impact of the 2014 Ebola epidemic: Short and medium-term estimates for West Africa.*

## INSTITUTIONAL ARRANGEMENT OF THE SANITATION SECTOR

Table I presents the institutional arrangement of the sanitation sector for each country included in this feasibility study, organized by urban and rural areas (in many countries different organizations are responsible for different sub-sectors).

TABLE I: INSTITUTIONAL ARRANGEMENT OF THE SANITATION SECTOR

COUNTRY	URBAN AREA	RURAL AREA
Benin	<ul style="list-style-type: none"> <li>Ministry of Urban Development, Housing, and Sanitation.</li> <li>National Water Corporation of Benin (SONEB) is responsible for the collection, treatment, and disposal of waste water in urban and peri-urban areas throughout the national territory.</li> </ul>	In rural areas, the Directorate of Hygiene and Basic Sanitation, which is part of the Ministry of Health, provides sanitation services to institutions, such as schools, health centers, markets, and government facilities.
Burkina Faso	<ul style="list-style-type: none"> <li>Ministry of Water and Sanitation.</li> <li>National Office for Water and Sanitation (ONEA) is a public company responsible for urban sanitation.</li> </ul>	General Directorate of Sanitation is in charge of rural sanitation.
Ivory Coast	<ul style="list-style-type: none"> <li>Ministry of Construction, Housing, Sanitation, and Urban Planning.</li> <li>National Office of Sanitation and Drainage (ONAD).</li> </ul>	<i>Office National de l'Eau Potable, République de Cote d'Ivoire.</i>
Gambia	<ul style="list-style-type: none"> <li>Ministry of Health has been defined as the leadership for sanitation portfolio and to this effect, the water, sanitation, and hygiene (WASH) coordination unit has been established under Directorate of Health Promotion and Education. However, sanitation component is fragmented as the Ministry of Health &amp; Social Welfare is implementing the software of sanitation, while the department of Community Development is implementing the hardware, which is VIP latrine constructions and slabs, and National Environment Agency is implementing controlling the liquid waste and solid waste management component.</li> </ul>	Same as for urban.
Guinea	<ul style="list-style-type: none"> <li><i>Ministère de l'Environnement, des Eaux et Forêt</i> for sanitation, and <i>Ministère de la santé et de l'hygiène Publique</i> for sanitation and hygiene promotion.</li> <li>The sanitation component is fragmented between Ministry Delegate for Environment, Water, and Forests (National Directorate of Sanitation and Living Environment) that develops and oversees implementation of government policy in the sanitation sector.</li> <li>The Ministry of Health and Public Health, and the Ministry of Town Planning and Housing are also involved in the sub-sector.</li> </ul>	Same as for urban.
Guinea Bissau	<ul style="list-style-type: none"> <li>Ministry of Education.</li> <li>Ministry of Health.</li> <li>Ministry of Justice.</li> </ul>	Ministry of Health.
Mali	<ul style="list-style-type: none"> <li>Minister of Environment and Sanitation.</li> <li>National Directorate of Sanitation, Pollution, and Nuisance Control (DNACPN) is responsible for urban sanitation.</li> <li><i>Agence nationale de gestion des stations d'épuration du Mali</i> is attached to the Ministry of Environment and Sanitation. Its mission is to ensure the sustainable management of sewage treatment plants and related works.</li> </ul>	DNACPN is responsible to rural sanitation

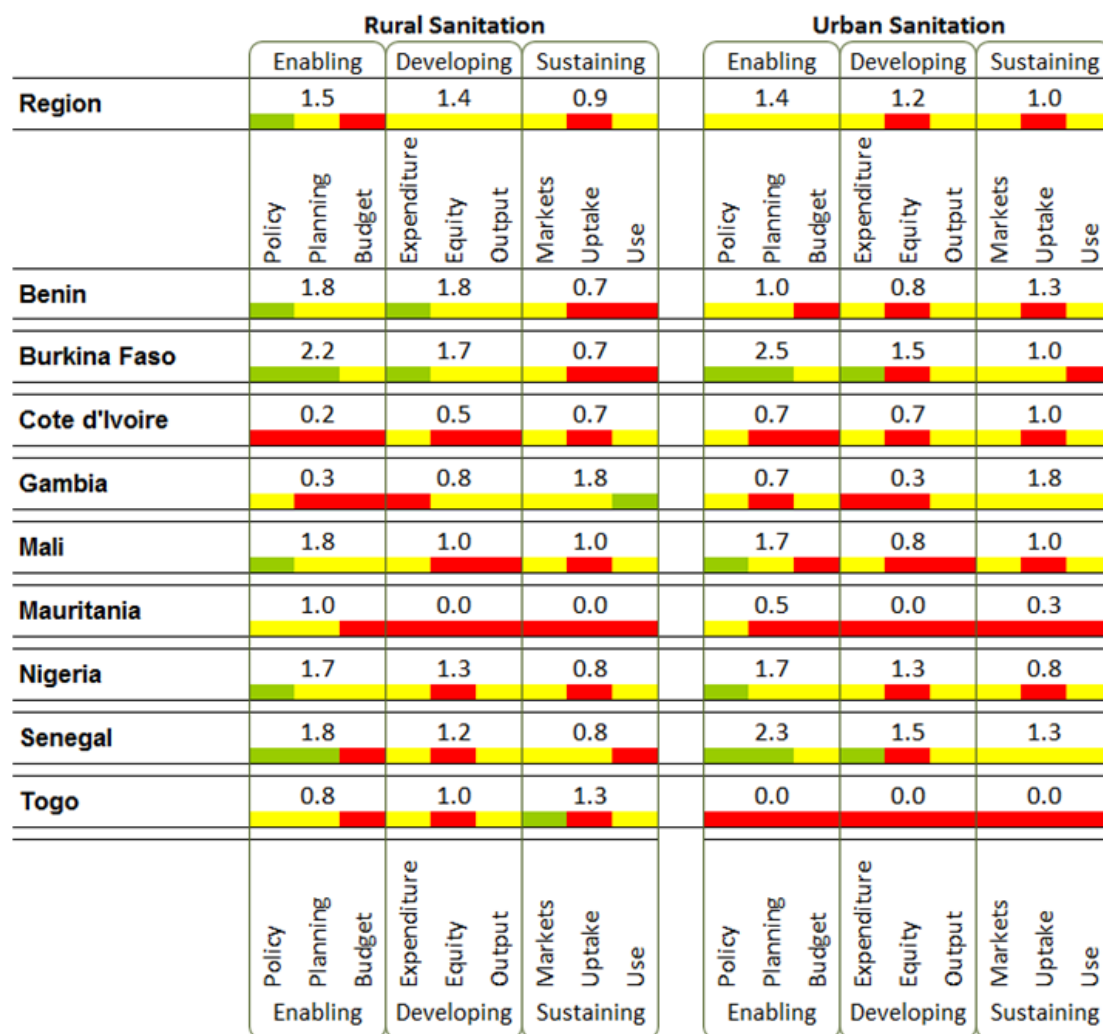
COUNTRY	URBAN AREA	RURAL AREA
Mauritania	<ul style="list-style-type: none"> <li>Ministry of Water and Sanitation.</li> <li>National Directorate of Sanitation is in charge of urban sanitation.</li> <li>National Office of Sanitation.</li> </ul>	National Directorate of Sanitation is in charge of rural sanitation.
Nigeria	<ul style="list-style-type: none"> <li>Federal Ministry of Water Resources (FMWR) is the lead agency for WASH activities in Nigeria. It works in collaboration with the National Task Group on Sanitation and development partners on sanitation and hygiene issues. The national standards and targets being followed are as stated in the Water Sector Road Map of 2010, the Vision 20:2020.</li> </ul>	<p>Same as for urban.</p> <p>Nigeria has developed a human resource strategy for sanitation.</p>
Senegal	<ul style="list-style-type: none"> <li>Ministry of Water and Sanitation.</li> <li>National Sanitation Office of Senegal (ONAS) is the agency charged with investing in and operating the (domestic and industrial) waste water and rain water treatment facilities in those urban centers within its contract scope on behalf of the state.</li> </ul>	Directorate of Sanitation is a department of the Ministry of Water and Sanitation and oversees rural sanitation.
Togo	<ul style="list-style-type: none"> <li>No specific department dedicated to sanitation for urban areas.</li> <li>Several departments are interested in sanitation: <ul style="list-style-type: none"> <li>Ministry of Agriculture, Animal Husbandry, and Water Resources.</li> <li>Ministry of Health and Social Protection.</li> <li>Ministry of Urban Development, Housing, and Living Conditions.</li> <li>Ministry of Environment and Forest Resources.</li> </ul> </li> </ul>	Ministry of Rural Infrastructure currently leads sanitation.

Figure 2 provides information on how the financial resources allocated to the sanitation service delivery pathway are converted into outputs. It reveals that different countries are experiencing different challenges, and that the region struggles to develop and sustain sanitation services, despite many having the policy, regulation, and institutional arrangements in place. For both rural and urban sanitation, blockages appear all along the service pathway, indicating that considerable improvements are required to achieve sustainable services<sup>12</sup> as shown by the African Ministers' Council on Water (AMCOW) Country Status Overview scorecards.

<sup>12</sup> Green building blocks are those that are largely in place, acting as a driver on service delivery; yellow building blocks act as a drag on service delivery and require attention; and red building blocks are inadequate and constitute a barrier to service delivery and are a priority for reform.



FIGURE 2: AMCOW COUNTRY STATUS OVERVIEW SCORECARDS (SELECTED COUNTRIES) IN WEST AFRICA



Source: AMCOW CSO2

Key: ■ Barrier ■ Drag ■ Driver

## URBAN SANITATION

As noted in the previous section, the JMP data in Figure 1 shows that there has only been a marginal change in the number of people gaining access to improved sanitation in urban areas over the past 25 years.

Overall, the fecal sludge management (FSM) sector is particularly poor in West Africa. Private pit-emptiers are not organized and most truck fleets are old. Despite this, most municipal authorities in West Africa are grappling with the problems of FSM, although there are two main problems—lack of experience in this field and weak human and financial resources to carry out the necessary actions.

Table 2 presents the organizational arrangement of the urban sanitation sector in terms of FSM and managing waste water in different countries in the region.

TABLE 2: ORGANIZATIONAL ARRANGEMENT FOR FECAL SLUDGE AND WASTE WATER

COUNTRY	FECAL SLUDGE MANAGEMENT	MANAGING THE COLLECTIVE WASTE WATER TREATMENT
Benin	<ul style="list-style-type: none"> <li>FSM is assured by private operators:                             <ul style="list-style-type: none"> <li>Collection and transportation are conducted by emptying association.</li> <li>Fecal sludge dumping site is not developed. It belongs to a private operator who oversees the management. Dumping fees are paid to the owner.</li> </ul> </li> <li>The institutional framework being put in place plans to entrust:                             <ul style="list-style-type: none"> <li>Fecal sludge collection and transportation to the private sector, with better organization of the emptiers association.</li> <li>Fecal sludge treatment and waste water management (sewage treatment plant and network) to SONEB, which is a state company.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>In Parakou, the sewer system and waste water treatment plant (WWTP) are managed by municipalities.</li> <li>In Cotonou, it is the residents' associations that are responsible for management of the sewer system (with intervention by the municipality), while the lagoon WWTP is managed by an NGO under a project of the university, with the collaboration of the municipality.</li> </ul>
Burkina Faso	<ul style="list-style-type: none"> <li>Private operators organized an association of emptiers (which grouped mechanical and manual emptiers) that ensures collection and transport of fecal sludge.</li> <li>Centralized state management (ONEA).</li> </ul>	<ul style="list-style-type: none"> <li>Centralized state management (ONEA).</li> </ul>
Ivory Coast	<ul style="list-style-type: none"> <li>The fecal sludge sector is managed by the private sector.</li> <li>Collection and transportation of fecal sludge is done by private operators.</li> <li>Fecal sludge treatment plants (FSTPs) are directly managed by ONAD (national utility).</li> </ul>	<ul style="list-style-type: none"> <li>The private sector manages the sewer system and treatment plants on behalf of the national utility (through contracts).</li> </ul>
Gambia	<ul style="list-style-type: none"> <li>Collection and transportation: Private enterprises.</li> <li>FSTPs: No information.</li> </ul>	<ul style="list-style-type: none"> <li>Sewer system: Centralized state management.</li> <li>Treatment plant: Centralized state management.</li> </ul>
Guinea	<ul style="list-style-type: none"> <li>Collection and transportation: Private companies.</li> <li>Dumping sites: Private enterprises through service contracts.</li> </ul>	<ul style="list-style-type: none"> <li>Sewer networks: Private enterprises through service contracts.</li> <li>Treatment plant: Private enterprises through service contracts.</li> </ul>
Mali	<ul style="list-style-type: none"> <li>Collection and transportation: Private companies.</li> <li>FSTPs: Private companies.</li> </ul>	<ul style="list-style-type: none"> <li>Sewer: Centralized state management.</li> <li>Waste water treatment plant: Centralized state management.</li> </ul>
Mauritania	<ul style="list-style-type: none"> <li>Management of fecal sludge and collection and transportation are provided by private emptiers.</li> <li>Dumping is done in the open, without any control.</li> </ul>	<ul style="list-style-type: none"> <li>Both sewage network and treatment plant in Nouakchott are managed in-house by the national utility.</li> </ul>
Nigeria	<ul style="list-style-type: none"> <li>A private operator provides fecal sludge collection and transportation.</li> <li>Government and private operators manage fecal sludge dumping sites.</li> </ul>	<ul style="list-style-type: none"> <li>The government manages the sewer system.</li> <li>WWTPs are run by the government or private operators.</li> </ul>
Senegal	<ul style="list-style-type: none"> <li>Private operators provide fecal sludge collection and transportation.</li> </ul>	<ul style="list-style-type: none"> <li>Management of sewer systems is the responsibility of the national utility (ONAS).</li> </ul>

COUNTRY	FECAL SLUDGE MANAGEMENT	MANAGING THE COLLECTIVE WASTE WATER TREATMENT
	<ul style="list-style-type: none"> <li>The national utility (ONAS) is responsible for all fecal sludge dumping sites.</li> <li>However, a process was initiated in 2013 to delegate the FSTPs to private operators. Currently, three FSTPs in Dakar are managed by a private company (DELVIC Sanitation Initiatives).</li> </ul>	<ul style="list-style-type: none"> <li>However, sewer system maintenance (pipelines and pumping stations) is delegated to private operators in two cities (Dakar and Saly).</li> </ul>
Togo	<ul style="list-style-type: none"> <li>Fecal sludge collection and transportation are carried out by private companies.</li> <li>Authorized dumping sites are managed by government.</li> </ul>	<ul style="list-style-type: none"> <li>Centralized state management for sewer network.</li> </ul>

## IDENTIFYING PROBLEMS AND ISSUES THAT THE ASA SEEKS TO ADDRESS

West African authorities have long neglected the sanitation sector compared to the water sector as outlined in the previous section. Therefore, few resources are being invested in sanitation, including human resources, capacity building and training. It creates a vicious cycle, without strong leaders with the necessary skills and qualities needed to mobilize and advocate for more resources for sanitation, the sector remains under-funded. When the sector is under-funded there are not sufficient resources to train and strengthen leadership and management capacity.

FIGURE 3: CYCLE OF NEGLECT IN THE SANITATION SECTOR

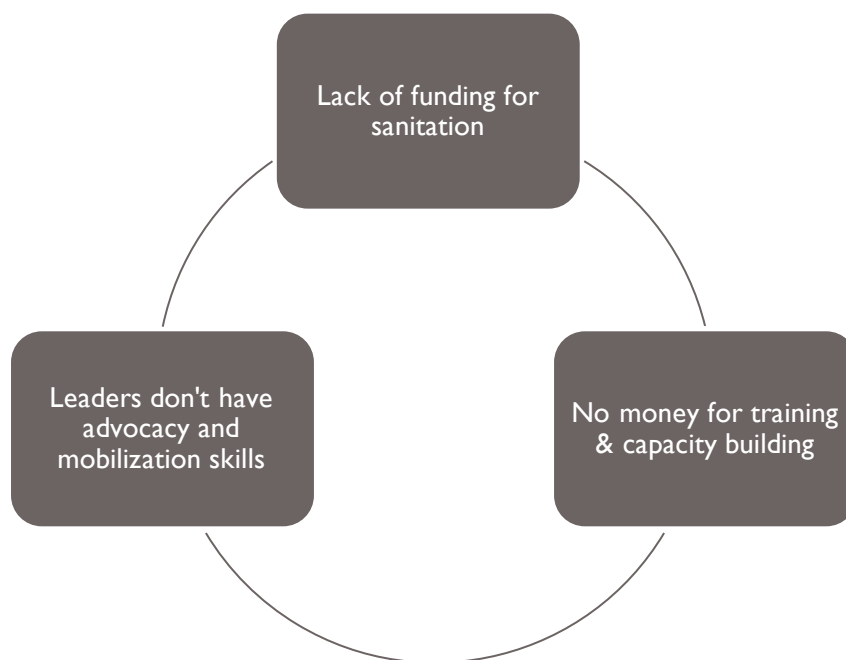


Table 3 presents capacity building needs as expressed by leaders and managers of urban sanitation services in Benin (SONEB); Burkina Faso (Ministère de l'Eau et de l'Assainissement, Direction d'assainissement (DA), ONEA, municipality of Ouagadougou); Gambia (Department of Water Resources); Mali (National Agency for the Management of Waste Water Treatment Plants

[ANGESEM]); and Senegal (Ministry of Water and Sanitation, DA, Millennium Drinking Water and Sanitation Program [PEPAM], and ONAS).

TABLE 3: CAPACITY BUILDING NEEDS FOR LEADERS AND MANAGERS

COUNTRY	ORGANIZATION	TRAINING NEEDS FOR LEADERS	
		LEADERSHIP/MANAGEMENT SKILLS	TECHNICAL SKILLS
Benin	SONEB	<ul style="list-style-type: none"> <li>Sanitation project management and M&amp;E.</li> <li>Software applied to the sanitation sector.</li> <li>Planning and regulation.</li> <li>Finance research.</li> <li>Procurement procedures.</li> <li>Human resource management (HRM).</li> </ul>	<ul style="list-style-type: none"> <li>Treatment of fecal sludge.</li> <li>Treatment of waste water.</li> <li>Preservation of the environment.</li> </ul>
Burkina Faso	Ministère de l'Eau et de l'Assainissement	<ul style="list-style-type: none"> <li>HRM.</li> <li>Project management and M&amp;E.</li> <li>Communication.</li> </ul>	<ul style="list-style-type: none"> <li>Preservation of the environment.</li> </ul>
Burkina Faso	DA	<ul style="list-style-type: none"> <li>HRM.</li> <li>Administration.</li> <li>Project management and M&amp;E.</li> <li>Communication.</li> <li>Planning.</li> <li>Political science.</li> </ul>	<ul style="list-style-type: none"> <li>Treatment of waste water and fecal sludge.</li> <li>Preservation of the environment.</li> </ul>
Burkina Faso	ONEA	<ul style="list-style-type: none"> <li>HRM.</li> <li>Planning.</li> <li>Procurement procedures.</li> <li>Fundraising techniques.</li> <li>Project management and M&amp;E.</li> <li>Communication.</li> <li>Business and marketing.</li> <li>Finance.</li> </ul>	<ul style="list-style-type: none"> <li>Preservation of the environment.</li> </ul>
Burkina Faso	Municipality Ouagadougou	<ul style="list-style-type: none"> <li>HRM.</li> <li>Sanitation project management and M&amp;E.</li> <li>Software applied to the sanitation sector.</li> <li>Participatory communication.</li> <li>Finance research.</li> <li>Techniques for recovery of by-products of sanitation.</li> </ul>	<ul style="list-style-type: none"> <li>Preservation of the environment.</li> </ul>
Gambia	Department of Water Resources	<ul style="list-style-type: none"> <li>Planning and regulation.</li> <li>Sanitation project management and M&amp;E.</li> <li>Finance mobilization.</li> <li>HRM.</li> </ul>	<ul style="list-style-type: none"> <li>Waste water treatment.</li> <li>Civil engineering.</li> </ul>

COUNTRY	ORGANIZATION	TRAINING NEEDS FOR LEADERS	
		LEADERSHIP/MANAGEMENT SKILLS	TECHNICAL SKILLS
		<ul style="list-style-type: none"> <li>• Procurement procedures.</li> <li>• Administration/finance/accounting.</li> <li>• Preservation of the environment.</li> <li>• Computer skills.</li> <li>• Communication.</li> <li>• Business and marketing.</li> <li>• Software applied to the sanitation sector.</li> </ul>	<ul style="list-style-type: none"> <li>• Electromechanical Engineering.</li> <li>• FSM.</li> </ul>
Mali	ANGESEM	<ul style="list-style-type: none"> <li>• Software applied to the sanitation sector.</li> <li>• Sanitation project management and M&amp;E.</li> <li>• Finance research.</li> <li>• Communication.</li> <li>• Business and marketing.</li> </ul>	<ul style="list-style-type: none"> <li>• Sanitary engineering.</li> <li>• Waste water treatment.</li> <li>• Fecal sludge treatment.</li> <li>• Civil engineering.</li> </ul>
Senegal	Ministry of Water and Sanitation	<ul style="list-style-type: none"> <li>• HRM.</li> <li>• Administration.</li> <li>• Management of administration projects.</li> <li>• Communication.</li> <li>• Business and marketing.</li> <li>• Sanitation project M&amp;E.</li> <li>• Planning.</li> <li>• Procurement procedures.</li> <li>• Research funding.</li> <li>• Recovery of sanitation by-products.</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental preservation.</li> <li>• Waste water treatment.</li> <li>• Fecal sludge treatment.</li> </ul>
Senegal	DA	<ul style="list-style-type: none"> <li>• Institutional, mass, and local communication.</li> <li>• Marketing.</li> <li>• Regulation and technical supervision.</li> <li>• M&amp;E.</li> <li>• Research funding.</li> </ul>	
Senegal	PEPAM	<ul style="list-style-type: none"> <li>• HRM.</li> <li>• Administration.</li> <li>• Sanitation project management and M&amp;E.</li> <li>• Communication.</li> <li>• Business and marketing.</li> <li>• Planning.</li> <li>• Procurement procedures.</li> <li>• Research funding.</li> <li>• Recovery of sanitation by-products.</li> <li>• Social sciences related to the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental preservation.</li> <li>• Waste water treatment.</li> <li>• Fecal sludge treatment.</li> <li>• Topography.</li> <li>• Hydraulics.</li> </ul>

COUNTRY	ORGANIZATION	TRAINING NEEDS FOR LEADERS	
		LEADERSHIP/MANAGEMENT SKILLS	TECHNICAL SKILLS
Senegal	ONAS	<ul style="list-style-type: none"> <li>• HRM.</li> <li>• Planning.</li> <li>• Procurement procedures.</li> <li>• Administration.</li> <li>• Sanitation project management and M&amp;E.</li> <li>• Communication.</li> <li>• Business and marketing.</li> <li>• Finance.</li> </ul>	<ul style="list-style-type: none"> <li>• Preservation of the environment.</li> <li>• Topography.</li> </ul>

### TYPES OF TRAINING NEEDS

The capacity building needs expressed by the respondents to the questionnaire can be divided into two main groups: 1) technical issues; and 2) management/leadership issues. Note that these responses were to a closed question; it is possible that there are other needs that respondents may have had if the question had been open-ended.

Human resource management (HRM) issues were particularly highlighted by sanitation leaders. Respondents feel that they need to maximize the performance of their employees and they need to attract and retain key staff. Planning—in its broadest sense—was also highlighted by many respondents; they feel they need better skills to plan service delivery and to mobilize the requisite resources to implement those plans. Overall, respondents want management and leadership skills—what might be referred to as “soft skills” as compared to sanitation technical skills. There is a need for some technical skills, as well, but these were not given the same importance as leadership/management skills.

### TRAINING DURATION

Responses to the questionnaire showed that respondents’ preference is for face-to-face training courses of short duration (maximum of two weeks). Some respondents expressed a wish for online training, but raised an issue with motivation to complete it. Respondents do not want long training courses, they were looking for an opportunity to interact with other people from the sector on their courses.

Respondents also indicated that it is unlikely they will be allowed to be absent from their workplace for training courses that are longer than a few weeks. Other respondents mentioned that the cost of training will also be a factor. Longer courses are more expensive, incurring higher costs associated with travel, accommodations, and per diem.

### EXISTING TRAINING PROGRAMS

Public universities and private institutions offer different types of training programs at the country level. Table 4 shows the programs that are offered by different institutions regarding sanitation training in Benin, Burkina Faso, Mali, and Senegal.

Respondents feel that the sanitation training programs organized in public universities and private institutions are too general for their needs. Most current training programs for sanitation are offered as part of more general training programs. Consequently, the graduated students do not have the necessary skills required for direct employability, and must supplement this training with other training to equip them with the competencies they need for their jobs. Thus, this feasibility study found that most of the existing training institutions are not keeping pace with the sector’s needs with regard to core competencies and skills that graduates need in the job market.

There is also a lack of teachers/lecturers who have specialized knowledge on sanitation. Some of the teachers who do lecture on sanitation are not currently working in the sector and may not be up to date with newer approaches and technologies.

Most of the management programs and leadership programs that are offered in these countries are also too general or they focus on other areas not relevant to the sanitation sector. This means that if a person from the sanitation sector attends these courses they have to sit through a lot of content that is not directly relevant.

TABLE 4: EXISTING COURSES AT TRAINING INSTITUTIONS

COUNTRY	ORGANIZATION	EXISTING COURSES	
		MANAGEMENT/LEADERSHIP	TECHNICAL
Benin	Polytechnic School of Abomey-Calavi (EPAC)		<ul style="list-style-type: none"> <li>Design Engineering in Water Science and Technology.</li> </ul>
Benin	National Water Institute (INE)		<ul style="list-style-type: none"> <li>Bachelor’s degree in water and sanitation.</li> <li>Master’s degree in water and sanitation.</li> </ul>
Benin	Faculty of Sciences and Technologies (FAST).		<ul style="list-style-type: none"> <li>Master’s degree in sanitation of waste water.</li> </ul>
Benin	Verechogaine (Private)		<ul style="list-style-type: none"> <li>Bachelor’s degree in water and sanitation.</li> </ul>
Benin	Lycée Technique		<ul style="list-style-type: none"> <li>Bachelor’s degree in water and sanitation.</li> </ul>
Benin	High School of Buildings and Roads Technology (ESTBR) (Private)		<ul style="list-style-type: none"> <li>Professional bachelor’s degree in sanitation.</li> </ul>
Burkina Faso	International Institute for Water and Environmental Engineering (2iE) (Private)	<ul style="list-style-type: none"> <li>Management and entrepreneurship.</li> </ul>	<ul style="list-style-type: none"> <li>Water and sanitation.</li> <li>Energy and electricity.</li> <li>Environment and sustainable development.</li> <li>Civil engineering and mine engineering.</li> </ul>
Burkina Faso	Water Trades Center (CEMEAU) (Private)	<ul style="list-style-type: none"> <li>Water and sanitation services management.</li> <li>Heritage management.</li> </ul>	<ul style="list-style-type: none"> <li>Approvisionnement en au potable et assainissement (construction, operations and maintenance).</li> <li>Drinking water production.</li> </ul>

COUNTRY	ORGANIZATION	EXISTING COURSES	
		MANAGEMENT/LEADERSHIP	TECHNICAL
		<ul style="list-style-type: none"> <li>• Water and sanitation services governance.</li> <li>• Municipal project manager.</li> <li>• Delegation of public service.</li> <li>• Quality environmental hygiene.</li> <li>• Promotion of hygiene and sanitation.</li> </ul>	<ul style="list-style-type: none"> <li>• Drinking water distribution system.</li> <li>• Collective sanitation network.</li> <li>• Autonomous sanitation network.</li> <li>• Energy.</li> <li>• Pump and pumping station.</li> <li>• Trade discoveries.</li> </ul>
Senegal	Cheikh Anta Diop University of Dakar (UCAD) (Public)	<ul style="list-style-type: none"> <li>• Professional master's degree in management science option (HRM).</li> <li>• Professional master's degree in management science option (marketing and commercial management).</li> <li>• Professional master's degree in management science option (company creation and project management).</li> <li>• Master's degree in management and regulations for public procurement.</li> </ul>	<ul style="list-style-type: none"> <li>• Master's degree in environmental sciences.</li> <li>• Research master's degree in engineering sciences.</li> <li>• Research master's degree.</li> <li>• Master's degree in resources, environment, and development.</li> <li>• Ph.D. thesis in environment.</li> <li>• Ph.D. thesis in water, quality, and uses of water.</li> </ul>
Senegal	Higher School of Electricity, Building, and Public Works (ESEBAT) (Private)	<ul style="list-style-type: none"> <li>• Environmental management and sustainable development strategies.</li> <li>• Computers.</li> <li>• Hygiene quality safety environment.</li> <li>• Management and procurement.</li> </ul>	<ul style="list-style-type: none"> <li>• Civil engineering and construction.</li> <li>• Electrical engineering.</li> <li>• Electromechanical and automated systems.</li> <li>• Geotechnics and roads.</li> <li>• Geometry.</li> <li>• Topography.</li> <li>• Hydraulics and sanitation.</li> <li>• Renewable energy.</li> </ul>
Senegal	Polytechnic School of Thiés (EPT) (Public)	<ul style="list-style-type: none"> <li>• Software applied in water science.</li> <li>• Sanitation projects.</li> <li>• Drinking water supply projects.</li> </ul>	<ul style="list-style-type: none"> <li>• Sanitation.</li> <li>• Urban and rural hydraulics.</li> <li>• Hydrology.</li> <li>• Dams.</li> </ul>

## STATUS OF TRAINING INSTITUTIONS

Training institutions are either public or private, and as such they tend to have different emphases, structures, and organization. Private universities have been developing in West Africa faster than other regions of Africa.<sup>13</sup> World Bank estimates that private enrollments account for 24 percent of all tertiary

<sup>13</sup> Matin Libre. (2015). *Selon WaterAid et World Vision Afrique de l'ouest : L'accès universel à l'eau et l'assainissement dans nos communautés est réalisable.*



enrollments in the region: 19 percent in Francophone countries, and 32 percent in Anglophone countries.<sup>14</sup>

“All nine of the African universities that appear in the Times Higher Education World University Rankings 2015–2016 are public—complaints that their courses do not prepare students for the demands of industry are common.”

—Chris Havergal, *Times Higher Education*<sup>15</sup>

Public universities are financed from the state budget. Therefore, the state covers the costs of staff salaries, construction, equipment, and maintenance of the infrastructure. The conditions for recruiting teachers are very restrictive and do not allow for qualified sector professionals or experts from the sector to contribute to courses.

However, private institutions are financed by private developers who invest in the education and training sector. These investors are only looking for profit. That is why the training programs developed are very flexible and are usually adapted according to the needs expressed by the learners and potential employers. However, not all private universities have been through government accreditation procedures and it is important that they do, so that both students and employers know that quality assurance standards have been met.

The major advantage of private institutions is the managerial capacity to mobilize resources through the diversification of their products and sources of financing. The other major asset of private institutions is freedom to recruit professionals and experts from the sector. This ensures that they have the necessary competencies to teach different parts of the training program.

Private universities tend to have more flexibility in the organization of training programs and when classes take place, which is appreciated by students. For example, they offer day classes, evening classes, seminars, and workshops, which can allow students to work and still participate in training.

Public universities offer primarily day classes, because they receive more students. However, in addition to day classes, private institutions organize more evening classes, because they receive more professionals who are only available after work.

## **MAIN INSTITUTIONS FOR TRAINING**

The School of Rural Equipment Engineers (EIER) and the School of Hydraulic and Rural Equipment Technicians (ETSHER) were created by 14 states in West and Central Africa. They were reformed in 2006 to become the International Institute for Water and Environmental Engineering (2iE<sup>16</sup>).

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<sup>14</sup> World Bank Group. (2009). *Accelerating catch-up: Tertiary education for growth in Sub-Saharan Africa*.

<sup>15</sup> Havergal, C. (2015). Africa’s “teaching shops”: The rise of private universities. *Times Higher Education*.

<sup>16</sup> 2iE is an international institute of higher education and research specializing in water and sanitation, energy and electricity, environment and sustainable development, civil engineering and hydraulics, and management and entrepreneurship sectors.

## TRAINING INSTITUTIONS IN SENEGAL

CEMEAU is a department of ONEA that deals with training issues.

UCAD, inaugurated in 1959, was the first public university in Senegal. Several training programs are organized in UCAD through its six faculties (science and technology, legal and political sciences, medicine, pharmacy and dentistry, arts and human sciences, economic and management science, and science and technology of education and training). In addition, there are three institutes (University Institute for Fisheries and Aquaculture [IUPA]; Higher National Institute of Popular Education and Sport [INSEPS]; Institute for Population, Development, and Reproductive Health [IPDRS]); four training schools (Higher Polytechnic School [ESP]; School of Librarians, Archivists, and Documentalists; Higher School of Applied Economics; and Center for Information Science and Technology Studies [(CESTI])).

ESEBAT is a private training institution in civil engineering and construction, electrical engineering, geometry, topography, geotechnics and roads, environment and sustainable development, renewable energies, applied statistics, electromechanics, management, and procurement.

## MINISTRY OF SECONDARY EDUCATION AND RESEARCH IN SENEGAL

### UNIVERSITIES AND INSTITUTES

Senegal has six established universities (UCAD, Université Gaston Berger, University of Thiés, Université Alioune Diop de Bombey, Université Assane SECK de Ziguinchor, Université Virtuelle de Senegal) and one public school (ESP). In addition, two other universities are under construction (Universite Almadoi Mahtar MBOW of Diamniadio and USSEIN of Kaolack).

### ACCREDITATION

Accreditation of diplomas such as licenses, master's degrees, and doctorates is the responsibility of the National Quality Assurance Authority for Higher Education (ANAQSUP). However, accreditation of private high schools is the responsibility of the directorate of the private high school.

## MINISTRY OF SECONDARY AND HIGHER EDUCATION IN BURKINA FASO

### TRAINING INSTITUTIONS IN SANITATION

In the higher education sector in Burkina Faso, there are public and private institutions and academics that carry out training in sanitation:

- 2iE.
- *Centre des Métiers de l'Eau.*
- *Ecole Supérieure Polytechnique de la Jeunesse.*
- *Université Eau Nouvelle.*

## *FINANCING MECHANISMS*

The financial resources for higher education in Burkina Faso come from the state budget, financial partners (World Bank, West African Economic and Monetary Union [UEMOA], Economic Community of West African States [ECOWAS]), and friendly countries (Morocco, Tunisia, Canada, France)

## *ACCREDITATION OF DIPLOMAS*

Accreditation of diplomas will not be effective until 2019. The Directorate of Quality Assurance of Higher Education is currently working on training and awareness raising for quality assurance in order to convince actors in higher education of the concept before opening a national agency that will handle accreditation issues.

## *RECOGNITION OF EQUIVALENCY TITLES AND DIPLOMAS*

Procedures for the recognition of degrees and diplomas in secondary and higher education and their equivalency are available at the Commission for Accreditation, Recognition, and Equivalence (CARETDS).

## *ORGANIZATION OF PRIVATE HIGHER EDUCATION*

In Burkina Faso, higher education is well organized. There are already established procedures for course design and accreditation. There are procedures for enrollment, credits, and transfer between courses. There is a Ministry for Higher Educations that oversees both private and public institutions.

## **DIPLOMAS ISSUED**

Diplomas offered from both public and private institutions/universities are for bachelor's, master's, and doctoral degrees in most West African countries; these diplomas are converted into credits. These credits allow students from all countries and universities to pursue their studies at other European and African universities.

The main diplomas include:

- Bachelor's: *Lycée Technique* (Benin); 2iE (Burkina Faso).
- License: High School of Civil Engineers Verechaguine, ESTBR, and INE (Benin); 2iE (Burkina Faso). UCAD, ESEBAT, and University of Thiés (Senegal).
- Master's: FAST and INE (Benin); UCAD, ESEBAT, and University of Thiés (Senegal).
- Engineer: EPAC (Benin) and 2iE (Burkina Faso).
- Ph.D.: UCAD (Senegal) and 2iE (Burkina Faso).

## **TYPE OF ACCREDITATION**

Most public universities and training institutions have obtained African and Malagasy Council for Higher Education (CAMES) accreditation. CAMES is subscribed to by 19 countries (Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Republic of Congo, Ivory Coast, Gabon, Guinea-Conakry,

Guinea-Bissau, Equatorial Guinea, Madagascar, Mali, Niger, Democratic Republic of the Congo, Rwanda, Chad, Senegal, and Togo).

The objectives of the CAMES agreement include joint efforts for advocacy and capacity building in the quality assurance of higher education, with a focus on developing good practices and collaborating with similar bodies in other regions of Africa and around the world.

ANAQSUP is a state agency in Senegal that serves to ensure and improve the quality of higher education programs and institutions in the country, and allows national recognition of diplomas from public universities and private training institutions. The Engineering Titles Commission (CTI) is an independent body fully involved in the development of the European higher education area. Its mission is the evaluation and accreditation of higher education institutions in the field of engineering in order to authorize French *grandes écoles* to deliver the *Diplôme d'Ingénieur*, the development of quality in engineering education, and the promotion of engineering curricula and careers in France and abroad.

These different types of accreditation include:

- CAMES: EPAC, FAST, INE and *Lycée Technique* (Benin); 2iE (Burkina Faso); *Institut des Hautes Etudes en Management* (Mali); and UCAD (Senegal).
- CTI: 2iE.
- ANAQSUP: ESEBAT and University of Thiés (Senegal).

## FUNDING SOURCES

Institutional funding comes from:

- State budget: EPAC, INE, FAST, *Lycée Technique*, and ESTBR (Benin); 2iE (Burkina Faso); and UCAD (Senegal).
- Payment of tuition fees: 2iE (Burkina Faso) and ESEBAT (Senegal).
- Seminars and capacity building: ESEBAT (Senegal).
- Research projects: 2iE (Burkina Faso).

For private institutions, students are expected to pay their tuition fees. However, at public universities, in addition to the usual curriculum, there are professional training programs. Most of these professional training programs are organized in partnership with local companies and/or international training institutions to meet specific needs. These types of training are private and are open to employees of enterprises and students. Therefore, students who wish to participate must pay school fees. The cost of this training varies between 1.5 to 4 million CFA francs per trainee (US\$2,500–6,500). The data collected for this feasibility study shows that there is a market for private, self-funded students, as well as organizations that are willing to pay for students.

## ESTABLISHED PARTNERSHIPS

Several institutions (2iE, CEMEAU, UCAD, and ESEBAT) have already developed technical and financial partnerships with financial institutions, NGOs, international organizations, and regional and international research institutions. These partnerships are designed to strengthen the quality of the courses that the institutions provide. Moreover, the developed partnerships vary by institution. Examples include:

- **2iE:** World Bank, UEMOA, ECOWAS, and training institutions and research centers in Africa, Europe, America, and Asia.
- **CEMEAU:** WaterAid, Eau Vive, and GIZ.
- **UCAD:** African and Malagasy Council for Higher Education, Association of African Universities, University Agency of the Francophonie, and Network for Excellence in Higher Education in West Africa (REESAO).
- **ESEBAT:** University of Thiés, *Lycée Maurice Delafosse* of Dakar, GI5 of Dakar, ONAS, and local cabinets operating in the construction industry.

## SELECTION OF TRAINING PARTICIPANTS

Although there may be some differences, data gathered for this feasibility study show that the normal process for selection to attend training is as follows.

At the service level, requests for training programs are generally formulated by department heads. A validation committee is set up to study all applications for training. Following the meeting of the validation committee, the most relevant programs are selected and funded. Training is usually organized at the national level within a particular country, occasionally it might be in another African country or outside Africa if the training is not offered by training institutions in the country. The choice of countries depends on the availability of the desired training programs, the available budget, and the relations between the service and those of the countries. Some examples of overseas courses are:

- SONEB staff courses were held in Benin (Millennium Popo Beach Hotel and Ganna Hotel in Cotonou).
- Gambia Department of Water Resources staff attended courses held in Nigeria, Kenya, Senegal (Dakar), and South Korea.
- Mali ANGESEM staff courses were done in day classes in Mali (Water and Sanitation for Africa [EAA] and *Institut des hautes Etudes en Management*); China (*Université de Hebei* and *Centre forestier de Hangzhou*); Belgium (Namur); and Genève, Suisse (UN Institute for Training and Research).
- Burkina Faso sanitation department staff attended courses in Burkina Faso and in Morocco.
- ONEA staff attended courses in Burkina Faso (CEMEAU), Morocco, and other countries in Africa and Europe.
- Municipality of Ouagadougou attended courses in Ivory Coast (Abidjan); Benin (Cotonou); Ghana (Accra); France; and Israel.
- PEPAM staff attended courses in Senegal (EPT and ESP); Burkina Faso (2iE); France (OIEAU, Drinking Water and Sanitation of Strasbourg [ENGESS]); and Canada (SETYM International).

- ONAS staff attended courses in Senegal (ESP, EPT, and African Center for Graduate Studies in Management [CESAG]); Morocco; Tunisia; and France.

## SOURCE OF FUNDING

The funding budget for capacity building comes from:

- Structured budget for training: ANGESEM, DA Burkina Faso, ONEA, and ONAS.
- Technical and financial partners (grant): Gambia Department of Water Resources and ANGESEM, Municipality of Ouagadougou.
- Technical and financial partners (loan): SONEB.

The main technical and financial partners are the World Bank, European Union, African Development Bank, NGOs, UNICEF, Japan International Cooperation Agency, French Development Agency (AFD), Belgian Cooperation, and Luxemburg Cooperation.

Courses that have been provided to leaders and managers of sanitation institutions or departments in Burkina Faso, Gambia, Mali, and Senegal are presented in Table 5.

TABLE 5: TRAINING ALREADY CARRIED OUT FOR LEADERS AND MANAGERS

COUNTRY	ORGANIZATION	CAPACITY BUILDING NEEDS
Benin	SONEB	<ul style="list-style-type: none"> <li>• Sanitation project management and M&amp;E.</li> <li>• Planning and regulation.</li> <li>• Procurement procedures.</li> <li>• Financial model, funding requests, and tariff studies.</li> <li>• Designing and dimensioning of hydraulic works related to sanitation.</li> <li>• Environmental impact assessments and environmental and social management plans.</li> </ul>
Burkina Faso	DA	<ul style="list-style-type: none"> <li>• Communication of conflicts.</li> <li>• Performance indicators.</li> </ul>
Burkina Faso	ONEA	<ul style="list-style-type: none"> <li>• Mechanisms for recovery of by-products of sanitation.</li> <li>• Assistance to the local authority.</li> <li>• Autocad I, II, and III.</li> </ul>
Burkina Faso	Municipality of Ouagadougou	<ul style="list-style-type: none"> <li>• Sharing experiences with the town halls of Ivory Coast (Abidjan), Benin (Cotonou), and Ghana (Accra).</li> <li>• Specific training was held in France (through cooperation between Ouagadougou and Lyon) and Israel (renewable energy training).</li> </ul>
Gambia	Department of Water Resources	<ul style="list-style-type: none"> <li>• Sanitation project management.</li> <li>• Planning and regulation.</li> <li>• Waste water treatment.</li> </ul>

COUNTRY	ORGANIZATION	CAPACITY BUILDING NEEDS
Mali	ANGESEM	<ul style="list-style-type: none"> <li>Sanitation project management and M&amp;E.</li> <li>Management of sanitation technologies.</li> </ul>
Senegal	Ministry of Water and Sanitation	<ul style="list-style-type: none"> <li>Management of technology and sanitation works.</li> <li>Community-led total sanitation (CLTS)/<i>Assainissement Total Piloté par la Communauté</i> (ATPC).</li> <li>Hygiene.</li> </ul>
Senegal	DA	<ul style="list-style-type: none"> <li>Principles of administration.</li> <li>Basic Excel and advanced Excel.</li> <li>Delegations of public services.</li> <li>Contract management.</li> </ul>
Senegal	PEPAM	<ul style="list-style-type: none"> <li>Project management.</li> <li>Planning.</li> <li>Management of heritage.</li> <li>Design and operating systems for WWTPs.</li> </ul>

## CAPACITY BUILDING FOR EMPLOYEES OF NGOS

Table 6 presents the capacity building carried out by NGOs (EAA, USAID WASH, and WaterAid) in Burkina Faso and Senegal. USAID WASH has already carried out capacity building programs for public institutions, municipalities, ministries of water, sanitation and hygiene, and parliaments in Ghana and Burkina Faso. Consulting firms are usually recruited to conduct capacity building for organizations.

WaterAid organizes capacity building programs for its staff in the WASH sector. These training sessions are conducted by WaterAid agents in collaboration with consultants.

Training programs are held for EAA staff so that they can perform their jobs. Training themes are built on the results of research and of innovative approaches related to specific needs of the country. Training programs are conducted by EAA staff and consultants (if the necessary skills do not exist).

TABLE 6: CAPACITY BUILDING FOR EMPLOYEES OF NGOS

COUNTRY	ORGANIZATION	CAPACITY BUILDING CARRIED OUT
Burkina Faso	EAA	<ul style="list-style-type: none"> <li>Ecological sanitation and ATPC/CLTS.</li> <li>Sustainability of sewerage networks.</li> <li>Micro credit.</li> </ul>
Burkina Faso	USAID WASH	<ul style="list-style-type: none"> <li>Governance.</li> <li>Planning in the WASH sector.</li> <li>Infrastructure development.</li> <li>Project management and M&amp;E.</li> <li>Specific WASH policies by country.</li> <li>HRM.</li> </ul>

COUNTRY	ORGANIZATION	CAPACITY BUILDING CARRIED OUT
		<ul style="list-style-type: none"> <li>• Management of financing.</li> <li>• Production or acquisition of high-quality data.</li> <li>• Research manual development.</li> </ul>
Burkina Faso	WaterAid	<ul style="list-style-type: none"> <li>• Leadership and HRM.</li> <li>• Marketing.</li> <li>• Communication.</li> <li>• Sociology.</li> </ul>
Senegal	WaterAid	<ul style="list-style-type: none"> <li>• Facilitation.</li> <li>• Behavior change.</li> <li>• Leadership.</li> <li>• Strengthening of the sector.</li> <li>• Climate change.</li> </ul>

## MODEL/APPROACH FOR THE ASA IN WEST AFRICA

A model for the ASA in West Africa has been developed using the information garnered from the interviews, field visits, and desk review. This feasibility study presents an understanding of the current demand for leadership, management, and technical sanitation training, as well as an analysis of current and potential providers.

### INSTITUTION TYPE

The recommendation is to designate a single continental headquarters in one country that will host the ASA. The choice of this country will depend on the synthesis of the results of the three regional studies. In addition, four other regional directorates could be established, one in West Africa, one in East Africa, one in Central Africa, and one in Southern Africa. In the case of West Africa (area of this study), Senegal presents the ideal conditions for the West African ASA hub. The reasons for selection of Senegal are based on efforts made by government to promote sanitation, the political stability of the country, the fact that Senegal is a regional hub for almost all the NGOs that work in the sanitation sector in West Africa, and because of the quality of its higher education, which occupies a privileged position in Africa, as well as the West Africa region.

The recommendation is for the ASA to be its own institution and not subsumed within another institution of higher education. This option would allow the ASA to be autonomous in the management and operations of its training programs. Indeed, if ASA relies on existing training institutions, it may see its objective diverted and risks losing control and efficient management of its training programs. However, having a separate institution for the ASA raises the question of the availability of a dynamic team capable of developing and promoting training that is relevant.

### TARGET AUDIENCE

The target audience of the ASA must be:



- Leaders and managers in services in charge of sanitation within ministries, municipalities, and services.
- Leaders and managers in private sanitation services.
- Rural leaders, including traditional leaders and religious leaders.

The ASA must consider relevant profiles in sanitation. It is important to define missions and attributes of students to be admitted to the ASA. To do this, it is necessary to propose types of training that fit with the profile of the trainees. Short training courses should be offered to potential trainees, because of issues raised previously with preferences for short, tailored training courses. Leaders who are the main targets of the ASA do not have enough time to be absent from their positions due to their responsibilities; it is important to develop targeted short courses to provide an opportunity for them to participate. Furthermore, online training programs can reach a greater number of people. On the other hand, face-to-face programs offer the opportunity to have much more in-depth exchanges.

## **PRODUCTS TO DELIVER**

Due to high demand, technical and leadership/management training would be a good basis for training programs. Indeed, the following training is necessary for better management of the sanitation:

### **Technical Training**

- Waste water treatment.
- FSM.
- Preservation of the environment.

### **Leadership/Management Training**

- Leadership.
- Sanitation project management and M&E.
- HRM.
- Planning and regulation.
- Finance mobilization.
- Procurement procedures.
- Administration/finance/accounting.
- Computer skills.
- Communication, business, and marketing.
- Software applied to the sanitation sector.

## **ACCREDITATION**

The regional and national accreditation systems that currently exist are for degree courses only: bachelor's, master's, and doctoral. However, there is no accreditation for short courses. Therefore, training courses of short duration can only give certificates of participation, which can then be validated by the human resources department of the attendee's employer. These certificates only confirm participation and not competency or ability in a particular area, and there is some discussion as to whether they contribute to career progression.

## **TRAINING LENGTH**

Most of the training requested by current managers and leaders of sanitation are for short courses. They feel strongly that they cannot afford to miss long periods from their work place and want in-service training to complement the skills and competencies they are learning on the job. In contrast, long-term training opportunities are needed more often by young people, most of whom do not occupy a high level of responsibility in their current place of employment.

## **POTENTIAL PARTNERS**

Different types of partnerships could be established with national, regional, and international institutions. For example, a financial partnership could be established with African and international financial institutions to finance training programs for leaders who have difficulty mobilizing. Currently, the following institutions are already supporting capacity building efforts and programs for sanitation: World Bank, UEMOA (ECOWAS), Bank of Africa, GIZ, and AFD.

A technical partnership can be established with African and international training institutions, research centers, and public and private universities to leverage their experience and human resources to pilot the ASA project. For example, the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) and *École Polytechnique Fédérale de Lausanne* (EPFL) Switzerland have set up a Massive Open Online Course (MOOC) training program covering many disciplines, including sanitation. This program is open to the public and has attendees from several different countries across Africa. In addition, online training is also organized at 2iE Burkina Faso for professionals and students. In addition, *Office International de l'Eau France* is organizing training sessions in the form of seminars in Africa. UCAD Senegal has significant experience conducting training in the sanitation sector. It should be possible to further explore partnerships with these existing sanitation training organizations in terms of technical partnerships to deliver content and/or financial partnerships, given their existing budgets for training.

NGOs often use experts to carry out their training programs. For example, WaterAid, EAA, UNICEF, and Plan International often organize regional training in West Africa for their employees. This provides an opportunity for potential collaboration, which would enable the ASA to benefit from the allocated training budgets of NGOs.

Finally, the ASA needs to consider establishing a strategic partnership with regional organizations, such as AMCOW and the African Water Association (AfWA), which have a direct mandate for sanitation. Given its rich web of connections and oversight in the sector, AMCOW could play an advocacy role with the authorities of the member countries. In addition, AfWA would make it possible to reach the sanitation companies of the member countries.

## TEACHING AND LECTURING

Teachers for the ASA should be:

- Professionals with extensive field experience in the private and public sectors will be able to inculcate young leaders and managers with the entrepreneurial spirit, and train them to carry out high-quality work under pressure.
- Academics with up-to-date experience in the sector. Their participation will enable the ASA to produce higher education diplomas that could be validated by ministries in charge of education.
- Experts (African and international) with extensive practical experience in sanitation issues.

## FUNDING MODEL

For sustainability of the ASA, access to the courses provided by the academy should be based on fees. African governments and municipalities could mobilize funds for training from their financial partners. Interviewees for this study reported that governments, utilities, and NGOs all currently pay for staff to attend training that they do not think is of sufficient quality, but which is “better than nothing.” This led to the conclusion that tailored training for the sanitation sector should be in high demand.

Funding for the operations of the ASA should not be based on African public funds (national budgets), because they are not sustainable. However, the investment needed to set up the ASA could benefit from public funds, especially through donors.

## CONCLUSIONS AND RECOMMENDATIONS

The sanitation situation in West Africa is in crisis. Almost one-quarter of the population defecates in the open and three-quarters do not have access to improved sanitation, missing the resulting health benefits. The region still suffers from regular outbreaks of disease related to poor sanitation and hygiene, such as cholera; and it was in West Africa where a deadly outbreak of Ebola in 2014 claimed thousands of lives. Sanitation needs to be given stronger priority by governments, utilities, municipalities, NGOs, and the private sector. High-caliber staff are needed to mobilize the necessary financial and human resources to take sanitation forward. Managers and leaders need the requisite skills in planning, resource mobilization, advocacy, vision, M&E, and HRM, as well as innovations in sanitation technical areas. Traditionally, the sanitation sector has not had the up-to-date training needed to respond to sector needs and to meet the requirements people have in their jobs. Strengthening the capacity to plan, deliver, and monitor services is crucial if there are to be gains in access to improved sanitation.

This feasibility study showed that there is a clear need and desire for better, more tailored training in both technical and leadership/management skills for sanitation. Organizations are prepared to pay for staff to attend short courses. Currently, the courses offered are not of sufficient quality or do not adequately meet the needs of potential participants. Therefore, there is a potential for the ASA to meet the needs of several cadres of staff in the sanitation sector.

Public and private institutions currently offer training in sanitation, leadership, and management. These courses need to be aligned more closely with the needs of the sector or new courses must be

developed. Most existing professionals do not have the luxury of spending a long time away from the office, and would thus prefer shorter courses that are more targeted for practical experience.

The recommendations address three main issues as next steps for development of the ASA:

- Promote the networking and integration of local and international training institutions and experts to provide a range of practical training offerings across the region and continent, which are more directly linked to the expressed needs of those working in the sector.
- Develop partnerships with African public and private services in charge of sanitation to facilitate the practical training components of courses, moving away from a purely academic focus, which most existing courses have.
- Develop an effective strategy to promote the ASA to African governments, services in charge of sanitation, municipalities, and NGOs. AMCOW and AfWA could contribute to this role. Both organizations have strong relationships/connections with government and private sector actors in the African sanitation sector. They could serve as a transmission belt for promotion of the ASA with these actors.

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## ANNEX A: LIST OF PEOPLE INTERVIEWED

COUNTRY	PERSON	POSITION/INSTITUTION	CONTACT INFORMATION
Benin	Guedou Michaëlle	Pumping Assistant/SONEB	mguedou@yahoo.fr
Burkina Faso	Djénéba Drabo	Director of Human Resources/Ministry of Water and Sanitation	djeneba2@gmail.com
Burkina Faso	Nougouierma André Patindé	Director General/Directorate of Sanitation	andrepnougouierma@yahoo.fr
Burkina Faso	Adama Tonde	Administration Advisor/Ministry of Higher and Secondary Education, School and University	tonde.adama@yahoo.fr
Burkina Faso	Salifou Kounka Ouiminga	General Manager of Quality Assurance of Higher Education/Ministry of Higher and Secondary Education	salif0477@yahoo.com
Burkina Faso	Missa Marius Barro	Director General of the Accreditation of the Recognition of Equivalences Titles and Diplomas of Higher Education/Ministry of Higher and Secondary Education	barromissa@gmail.com
Burkina Faso	Urbain Sanon	Director of Human Resources/ONEA	urbain.sanon@oneabf.com
Burkina Faso	Tontama Sanon	Director of Sanitation/ONEA	tontama.sanon@oneabf.com
Burkina Faso	G. Frédéric François Kaboré	Director of Planning and Investments/ONEA	gfrederic.kabore@oneabf.com
Burkina Faso	Souleymane Sabo	Head of Waste Management, Sustainable Development/Mayor of Ouagadougou	sabosouley2000@gmail.com
Burkina Faso	Nikiema Gambila	Head of Training/CEMEAU	nikiemamth@yahoo.fr
Burkina Faso	Djim Doumbe Damba	Director of Training and Pedagogical Innovation/2iE	djim.damba@2ie-edu.org
Burkina Faso	Dissa Ali	Director Partnership and Mobilization of Financial Resources/EAA	dissali@gmail.com
Burkina Faso	Halidou Koanda	Resident Representative/WaterAid	halidoukoanda@wateraid.org
Burkina Faso	Oumar Ndiaye	Senior Technical Advisor/ United Nations Development Programme	oumar.p.ndiaye@uudp.org
Burkina Faso	Abdoul Karim Guiro	Food Security Program Officer/USAID	akguiro@usaid.gov
Burkina Faso	Bijou, Muhura	Health Office Director/USAID	bmuhura@usaid.gov
Burkina Faso	Shawn J. Wozniak	Agricultural Officer/USAID	swazniak@usaid.gov
Burkina Faso	Lakhdar Boukerrou	Regional Director/USAID WASH	iboukerr@fiu.edu

COUNTRY	PERSON	POSITION/INSTITUTION	CONTACT INFORMATION
Burkina Faso	Cheik Assane Moctar Gansore	Officer of Infrastructure, Regional Integration, Water and Sanitation Program/Japan International Cooperation Agency	gansorecheik.bf@jica.go.jp
Burkina Faso	Denis Zoungrana	Senior Consultant, Specialist Water, Environment and Health	dezoungr@yahoo.fr
Gambia	Lamin C. Saidyleigh	Senior Program Manager/Department of Water Resources	chabasaidy@yahoo.com
Mali	Mamadou Doumbia	Head of Department for Studies and Planning/ANGESEM	bhasylla2003@yahoo.fr
Senegal	Ababacar Mbaye	Technical Advisor in Sanitation/Ministry of Water and Sanitation	ababacar.mbaye@gmail.com
Senegal	Alioune Badara Niane	Direction of Studies and Cooperation/ Ministry of Higher Education and Research	alban2607@gmail.com
Senegal	Babacar Ndiaye	Operations Officer/PEPAM	b.ndiaye@pepam.sn
Senegal	Momadou Bâ	Director of Human Resources/ONAS	momadou.ba@onas.sn
Senegal	Ousmane Camara	General Secretary/ONAS	ousmane.camara@onas.sn
Senegal	Seydou Niang	Research Teacher/UCAD	seydou.niang@ucad.edu.sn
Senegal	El Hadj Momadou Sonko	Research Teacher/UCAD	elmsnko@gmail.com
Senegal	Saliou Kamara	Partnership Manager/ESEBAT	skamara@esebat.sn
Senegal	Saidou Ndao	Coordinator of License in Water Sciences and Environment/Univesity of Thiés	saidou.ndao@univ-thies.sn
Senegal	Oumar Ndiaye	Regional Funding Manager/WaterAid,	oumarndiaye@wateraid.org

## ANNEX B: LIST OF INSTITUTIONS IN THE REGION

NAME	LEVEL	DISCIPLINE(S)	INSTITUTION	COUNTRY
Environment Science and Sustainable Development	Master's	Education	<i>Université d'Abomey Calavi</i>	Benin
Civil Engineering	Master's	Environmental sciences, ecology	<i>Université d'Abomey Calavi</i>	Benin
Civil Engineering	Engineer	Environmental science	<i>Université d'Abomey Calavi</i>	Benin
Environment	Diploma, Specialized Graduate	Natural environments, fauna, and flora	<i>Université d'Abomey Calavi</i>	Benin
Environmental Management	Master's	Environmental sciences, ecology	<i>Université d'Abomey Calavi</i>	Benin
HRM	Master's	Protection of persons and property	<i>Université d'Abomey Calavi</i>	Benin
HRM	Bachelor's Master's	Management and applied economics	<i>Université Catholique de l'Afrique de l'Ouest</i> <i>Unité Universitaire à Cotonou</i>	Benin
Master of Engineering, Option Water and Sanitation	Master's	Engineering, manufacturing, and construction	2iE	Burkina Faso
Master of Engineering, Option Infrastructure and Hydraulic Networks	Master's	Engineering, manufacturing, and construction	2iE	Burkina Faso
Master Specialized WASH Humanitarian	Master's	Engineering, manufacturing, and construction	2iE	Burkina Faso
Master Infrastructure and Services Management, Option Water and Sanitation	Master's	Urban planning, construction, and civil engineering	2iE	Burkina Faso
Ph.D. in Water Sciences, Energy, and Environment	Ph.D.	Science, mathematics, and computer science	2iE	Burkina Faso
Master of Engineering, Civil Engineering, and Mines	Master's	Engineering, manufacturing and construction; Engineering and engineering trades; Studies of transport and traffic	2iE	Burkina Faso
Marketing and Management	License	Marketing and sales management	<i>Université de Ouagadougou</i>	Burkina Faso
Civil Engineering	License Master's	Building and public works	<i>Université Catholique de l'Afrique de l'Ouest</i>	Burkina Faso
Water and Sanitation Technologies	License	Environmental engineering	<i>l'Institut de Génie de l'Environnement et du Développement Durable (IGEDD)</i>	Burkina Faso



NAME	LEVEL	DISCIPLINE(S)	INSTITUTION	COUNTRY
Water and Sanitation Technologies	Master's	Water, energy, environment	IGEDD	Burkina Faso
-Civil and Environmental Engineering -General Engineering	Bachelor's Master's Ph.D.	Engineering	<i>Universidade de Cabo Verde</i>	Cape Verde
Operations and Water Treatment Engineer	Engineer	Environmental sciences, ecology, earth and water sciences, geodesy, cartography, remote sensing	<i>Institut national polytechnique Félix Houphouët-Boigny</i>	Ivory Coast
Civil Engineering	Engineer	Architecture and urban planning, construction and civil engineering, architecture and building (others)	<i>Institut national polytechnique Félix Houphouët-Boigny</i>	Ivory Coast
Climate, Environment, and Sustainable Development	Master's	Geodesy, cartography, remote sensing	<i>Université Félix Houphouët-Boigny</i>	Ivory Coast
Human Resources and Labor Management	Bachelor's	College of management and information technology	American International University West Africa, Banjul	Gambia
Civil Engineering	Bachelor's	Faculty of civil and geo engineering	Kwame Nkrumah University of science and technology	Ghana
Civil and Environmental Engineering	Bachelor's	Engineering	Ashesi University College	Ghana
Civil and Environmental Engineering	Bachelor's	Engineering	Central University	Ghana
Civil and Environmental Engineering	Bachelor's	Engineering	Accra Polytechnic	Ghana
Civil and Environmental Engineering	Bachelor's Master's Ph.D.	Engineering	University of Mines and Technology	Ghana
Civil and Environmental Engineering	Bachelor's	Engineering	All Nations University College	Ghana
Civil and Environmental Engineering	Bachelor's Master's Ph.D.	Engineering	Accra Institute of Technology	Ghana
Civil and Environmental Engineering/General Engineering	Master's	Engineering	Ho Polytechnic	Ghana
Civil and Environmental Engineering/General Engineering	Bachelor's Master's Ph.D.	Engineering	University of Energy and Natural Resources	Ghana

NAME	LEVEL	DISCIPLINE(S)	INSTITUTION	COUNTRY
Civil and Environmental Engineering/General Engineering	Bachelor's Master's	Engineering	<i>Université Kofi Annan</i>	Guinea
<i>Master Gestion des Ressources Humaines et Organization (GRHO)</i>	Master's	Economics	<i>Université Général Lansana Conté de Sonfonia</i>	Guinea
Engineering	Bachelor's	Engineering	Amilcar Cabral University	Guinea Bissau
Civil and Environmental Engineering	Master's	Engineering	University of Liberia	Liberia
Civil Engineering: Buildings and Public Works	Master's	Engineering and engineering professions (broad programs); Architecture and building; Architecture and town planning	<i>Ecole nationale d'ingénieurs Abderhamane Baba Touré</i>	Mali
Civil Engineering: Hydraulics	Master's	Earth and water sciences	<i>Ecole nationale d'ingénieurs Abderhamane Baba Touré</i>	Mali
Master's of Applied Chemistry (Water Chemistry and Environment)	Master's	Chemistry	<i>Université des sciences, des techniques et des technologies de Bamako</i>	Mali
Ph.D. in Applied Chemistry (Water Chemistry and Environment)	Ph.D.	Chemistry	<i>Université des sciences, des techniques et des technologies de Bamako</i>	Mali
Master's in HRM	Master's	Humanities and arts; Management and administration; Social sciences; Business and law	<i>Université Mande Bukari</i>	Mali
Topography	Master's	Geodesy, cartography, remote sensing, geography	<i>Ecole nationale d'ingénieurs Abderhamane Baba Touré</i>	Mali
Civil Engineering	Engineer	Construction and civil engineering, materials science, architecture and building	<i>Ecole des Mines, de l'Industrie et de la Géologie</i>	Niger
Civil and Environmental Engineering General Engineering	Bachelor's Master's Ph.D.	Engineering	University of Ilorin	Nigeria
Civil and Environmental Engineering General Engineering Chemical Engineering	Bachelor's Master's Ph.D.	Engineering	University of Lagos	Nigeria
Civil and Environmental Engineering General Engineering Chemical Engineering	Bachelor's Master's Ph.D.	Engineering	University of Ibadan	Nigeria

NAME	LEVEL	DISCIPLINE(S)	INSTITUTION	COUNTRY
Civil and Environmental Engineering General Engineering	Bachelor's	Engineering	Landmark University	Nigeria
Civil and Environmental Engineering General Engineering Chemical Engineering	Bachelor's Master's Ph.D.	Engineering	University of Nigeria	Nigeria
Design Engineering in Electromechanical Engineering	Engineer	Mechanical and metalworking; Electricity and energy; Electrical and automation	<i>Ecole Polytechnique de Thiès</i>	Senegal
Design Engineering in Civil Engineering	Engineer	Civil engineering	<i>Ecole supérieure polytechnique de Dakar</i>	Senegal
Master's in Resources, Environment, and Development	Master's	Natural environments, fauna, and flora; Geography	<i>Université Cheikh Anta Diop de Dakar</i>	Senegal
Master's in Environment	Master's	Environmental science	Institute of Environmental Science	Senegal
Environment	Ph.D.	Environmental science	<i>Université Cheikh Anta Diop de Dakar</i>	Senegal
Hydraulics and Fluid Mechanics	Ph.D.		<i>Université Cheikh Anta Diop de Dakar</i>	Senegal
Water, Environment, and Health Waste Water Treatment Urban Hydrology and Sanitation	Ph.D.	Study of water, quality, and uses of water	<i>Université Cheikh Anta Diop de Dakar</i>	Senegal
Master's in HRM	Master's	Social and behavioral science (broad programs); Management and Administration	<i>Institut Africain de Management</i>	Senegal
HRM	Master's	Management and administration; Other; Law; Social and behavioral sciences	<i>Groupe ISM</i>	Senegal
HRM	Master's	Management and administration	<i>Centre africain d'études supérieures en gestion</i>	Senegal
Marketing and Customer Relationship Management	Master's	Management and administration; Other; Law; Social and behavioral sciences	<i>Groupe ISM</i>	Senegal
Hydraulics and Sanitation	Bachelor's Master's	Hydraulics and sanitation	ESEBAT	Senegal
Civil Engineering and Construction	Bachelor's Master's	Hydraulics and sanitation	ESEBAT	Senegal

NAME	LEVEL	DISCIPLINE(S)	INSTITUTION	COUNTRY
Geometry and Topography	Bachelor's Master's	Hydraulics and sanitation	ESEBAT	Senegal
Management and Procurement	Master's	Management and administration	ESEBAT	Senegal
Environmental Management and Strategies Sustainable Development	Master's	Management and administration	ESEBAT	Senegal
Integrated Water and Environmental Management	Bachelor's	Science and technology	University of Thiès	Senegal
Design Engineering in Civil and Urban Engineering	Engineering	Engineering sciences	University of Thiès	Senegal
Design Engineering Geometer – Topographer	Engineering	Engineering sciences	University of Thiès	Senegal
Civil Engineering	DUT	Science and technology	University Institute of Technology in Thiès (IUT)	Senegal
Geometer – Topographer	Bachelor's	Science and technology	IUT	Senegal
Master's in Forestry and Environment for Sustainable Management of Natural Resources	Master's		<i>Ecole Nationale Supérieure d'Agriculture (ENSA)</i>	Senegal
HRM	Bachelor's	Department of human resource management	University of Makeni	Sierra Leone
Civil Engineering	Master's	Construction and civil engineering	<i>Université de Lomé</i>	Togo
Electrical Engineering	Master's	Electricity and energy	<i>Université de Lomé</i>	Togo
Mechanical Engineering	Master's	Mechanics and metal work	<i>Université de Lomé</i>	Togo
Natural Resources Management and Environment	Master's	Agricultural economics	<i>Université de Lomé</i>	Togo
Environment	Ph.D.	Natural environments, fauna, and flora	<i>Université de Lomé</i>	Togo
Natural Resources Management and Environment	Ph.D.	Environmental science	<i>Université de Lomé</i>	Togo
HRM	Master's	Education and training	<i>Université de Kara</i>	Togo
HRM	Master's	General and practical pedagogical courses	<i>Institut Africain d'administration et d'études commerciales</i>	Togo
Marketing and Management of Organizations	Master's	Education and training	<i>Université de Kara</i>	Togo

<b>NAME</b>	<b>LEVEL</b>	<b>DISCIPLINE(S)</b>	<b>INSTITUTION</b>	<b>COUNTRY</b>
Business Management	Master's	General and practical pedagogical courses	<i>Institut Africain d'administration et d'études commerciales</i>	Togo
Project Management	Master's	General and practical pedagogical courses	<i>Institut Africain d'administration et d'études commerciales</i>	Togo

## ANNEX C: QUESTIONNAIRE

Country: \_\_\_\_\_  
 Structure: \_\_\_\_\_  
 Respondent: \_\_\_\_\_  
 Position: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Email: \_\_\_\_\_

**Is there a need for leaders training (decision maker and manager)?**

Yes       No

**1.1. If yes, indicate the need using below table. Add rows if necessary**

TRAINING NEEDS	PRIORITY*
Civil engineer	
Electromechanical engineer	
Human resources management	
Administration/finance/accounting	
Management of sanitation projects	
Computer skills	
Communication, business, and marketing	
M&E of sanitation projects	
Planning and regulation	
Software applied to the sanitation sector	
Waste water treatment	
Fecal sludge management	
Procurement procedures	
Finance mobilization	
Preservation of the environment	

\* Note from 1, with 1 representing the first priority, 2 the second priority, 3 the third priority, etc.

**2. Are there sanitation training institutions in the country?**

Yes  No

2.1. If yes, cite them and indicate the types of training and diplomas awarded.

TRAINING INSTITUTION	STATUS (PRIVATE OR PUBLIC)	TYPE OF TRAINING (COURSE OF THE DAY, EVENING, ONLINE, SEMINAR, ETC.)	TYPE OF ACCREDITATION (LOCAL OR REGIONAL)	DIPLOMA/ATTESTATION ISSUED (EX : DES IN ELECTROMECHANIC, DES IN PROJECT MANAGER, ETC.)

Add rows if necessary

**3. Did the framework staff (decision makers and managers) have already attended training (s) related to sanitation (technical, IEC, ...)?**

Yes  No

3.1. If yes, in which country the leaders (decision makers and managers) have been trained? Add rows if necessary

IN YOUR COUNTRY*	AFRICA OUT OF YOUR COUNTRY*	OUT OF AFRICA*

\* Indicate the city, country, and, if possible, the name of the training institution.

**3.2. If yes, cite the types of training received by leaders (decision makers and managers) of the structure. Add rows if necessary**

SPECIALTY	TYPE OF TRAINING (COURSE OF THE DAY, EVENING, ONLINE, SEMINAR, ETC.)	DIPLOMA/ ATTESTATION ISSUED
Civil engineer		
Electromechanical engineer		
Human resources management		
Administration/finance/accounting		
Management of sanitation projects		
Computer skills		
Communication, business and marketing		
M&E of sanitation projects		
Planning and regulation		
Software applied to the sanitation sector		
Waste water treatment		
Fecal sludge management		
Procurement procedures		
Finance mobilization		
Preservation of the environment		

**3.3. If yes, what are the sources of funding for these training courses? Add rows if necessary**

SOURCES OF FUNDING	CHECK IF YES
Structure budget for training	
Technical and financial partners (loan)	
Technical and financial partners (grant)	
Other(s), specify	

**3.4. If so, what is your assessment of the impact of the training received by the management staff of the structure? Add rows if necessary**



## APPRECIATION

In terms of knowledge and/or skills acquired	
Types of training received (day classes, online courses, seminars, etc.)	
Place of training received (in your country, in Africa outside of your country, outside of Africa)	
Cost of training received	



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