UGANDA
IMPROVING THE STATE OF SANITATION

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IMPROVING THE STATE OF SANITATION

Contents

1. Introduction

KEY POINTS

- Uganda needs to think beyond access to any kind of toilets.
- The country failed to attain the Millennium Development Goal in the sanitation sector but it needs to attain the Sustainable Development Goal.
- For this, Uganda needs to promote safe containment structures and manage faecal sludge.
- Uganda is currently planning faecal sludge management in large towns and cities but it should also focus on rural areas, where over 75 per cent of its population live and practise unimproved sanitation.
- Uganda needs a strong regulatory framework for safe management of faecal sludge in rural areas.
- Developing a management information system (MIS) by monitoring the state of sanitation at district and national levels is vital.

Uganda has failed to meet the United Nations Millennium Development Goal (MDG) in sanitation, which aimed to halve the population without sanitation between 1990 and 2015. The Joint Monitoring Programme (JMP) report, published by the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) in 2015, showed that there was no progress in the sanitation sector and hence the country failed to reach the MDG.[1] Things did not improve post MDG—Uganda showed no major progress in the sanitation sector during this time either as can observed from the 2019 JMP report.[2]

Unimproved sanitation is the most prominent sanitation facility in Uganda. Around 58 per cent of sanitation facilities in 2017 were unimproved, although open defecation in the same year was only 6 per cent.[3] This means that the population gave up open defecation for any kind of toilet. According to the 2019 JMP report, 77 per cent of the population live in rural areas as a result of which the national scenario is greatly influenced by the state of sanitation in rural areas.

Uganda, in East Africa, is a landlocked country, with Kenya bordering it in the east, Tanzania in the south, Rwanda in the southwest, the Democratic Republic of Congo in the west, and Sudan in the north (see *Map 1: Districts of Uganda*). It is spread over 240,000 square kilometres and divided into 135 administrative districts. The districts are subdivided into counties (subdistricts), counties are subdivided into sub-counties, sub-counties into parishes and parishes into villages (see *Table 1: Administrative structure of Uganda*).

Table 1: Administrative structure of Uganda

Unit	Administrative unit/governing body
District	Local Council 5
County	Local Council 4
Sub-county	Local Council 3
Parish	Local Council 2
Village	Local Council 1

Source: United States Agency for International Development and Hygiene Improvement Project. 2007. Opportunities for Sanitation Marketing in Uganda.

Map 1: Districts of Uganda

Source: https://www.ezilon.com/maps/africa/uganda-maps.html

Uganda has a decentralized system of governance, and several functions—including setting funding priorities for water supply, sanitation and primary healthcare interventions—have largely been ceded to the local governments, with budget-making and control at the sub-county (Local Council 3) and district (Local Council 5) levels. Hiring technical staff is also in the hands of districts. However, the Central government is in charge of policymaking, setting standards, technical oversight and supervising the overall programme.

All the districts may not adhere to this structure. A district may omit Local Council 4 while having all the other local councils in place. This creates confusion with regard to monitoring and distribution of sanitation-related activities.

The 2019 JMP report makes no mention of safe sanitation in Uganda. However, the national government's own report puts safe sanitation practices in rural areas at about 7 per cent.[4] All the research reports—both government and non-government—agree that unimproved sanitation is most widely practised in Uganda, with rural areas worse than urban.

The most used toilet facility at both the household and institutional levels is the pit toilet—local governments promote pit toilets as the most suitable option in rural areas. But no guidelines for emptying pits or treating sludge are given. As a result, partially treated or untreated sludge is disposed of on open lands or in waterbodies

The consequent contamination of soil and water and high rates of waterborne diseases results in huge health problems and economic losses for Uganda. While building faecal sludge treatment plants for big cities and towns is talked about, the huge amount of faecal sludge—affecting waterbodies and groundwater in most parts of the country—generated in rural areas is not dealt with.

Uganda—like most African countries—needs to meet the Sustainable Development Goals (SDGs) as well as other safe-sanitation commitments. In 2013, African heads of state and government launched the African Union (AU) Agenda 2063 for action to all segments of African society to work together to build a prosperous and united Africa based on shared values and a common destiny, with water and sanitation among top priorities. Uganda was part of the 2015 Ngor Declaration, whose vision is to achieve universal access to adequate and sustainable sanitation and hygiene services and eliminate open defecation by 2030.

In May 2015, African ministers responsible for sanitation and hygiene adopted the Ngor Declaration on Sanitation and Hygiene at the AfricaSan4 Conference in Senegal. The commitments were made in recognition of the fact that the gains made in sanitation access since 1990 had not kept pace with demographic change; an understanding of the centrality of hygiene and sanitation to existing heath, and the economic, social and environmental burden on African countries; and to reaffirm the human right to safe drinking water and sanitation for all. Although made in advance of the Sustainable Development Goals (SDGs)—launched by

the United Nations in 2015, with 2030 as the deadline—the vision of the Ngor Declaration closely aligns with the SDG sanitation and hygiene targets.[5]
Uganda has excellent public health legislation, with scope to achieve good sanitation, but enforcement is lacking due to weak penalties, shortage of health inspectors able to focus on sanitation-related regulations, and lack of political will to deal with this sector.[6] While faecal sludge treatment plants have come up for big cities like Kampala, rural areas—where most of the population lives—needs strong legislation to achieve safe sanitation.

Uganda failed to achieve the Millennium Development Goal (MDG) for sanitation but now aims to achieve the United Nations Sustainable Development Goal (SDG) 6.2. SDG 6.2 aims for access to adequate and equitable sanitation and hygiene for all—and ending open defecation—with special attention to the needs of women, girls and those in vulnerable circumstances. The country is now looking beyond a measurement of how many people have access to adequate toilets (with regard to coverage) and defines outcome in terms of safe management of human waste across the whole service chain, from containment, through emptying and transport to treatment and final disposal or reuse in all settlement contexts along the rural–urban continuum.

But to reach this, it cannot be business as usual. Not only is the development of a policy aligned towards achieving SDG 6—providing clean water and sanitation—required, but the development of a transparent Management Information System (MIS) for data sharing is the need of the hour so that policies at the local and national levels can be easily implemented.

One needs to understand why Uganda has failed to attain safe sanitation. Is it low funding in the water and sanitation sector, poor institutional arrangement, lack of technological know-how or lack of reliable data? It is crucial to find the impediments to Uganda achieving the SDG goal on WASH (Water, Sanitation and Hygiene) so that appropriate steps can be taken to pull the country out of the crisis.

2. Management of excreta and wastewater: Overview

KEY POINTS

- Uganda's progress in the field of sanitation has been fairly slow.
- It has cut down number of open defecators by only 6 per cent in 2000–17.
- The government does not offer to build any kind of toilet. Its role is to build awareness around sanitation. CSOs and NGOs have however invested in building toilets in households and institutions.
- According to various research reports published by the government and non-government organizations, unimproved sanitation is the most predominant facility. Safe handling of excreta is minimal in rural areas (including small towns, which are also classified as rural).
- Rural Uganda prefers traditional pit-toilets, where management of excreta becomes essential.
- Non-availability of collection transport and treatment mechanisms and the absence of any regulations in this regard in small towns and rural areas cause dumping of untreated faecal sludge in waterbodies and open grounds.

Uganda has a population of 428 lakh. According to the 2019 Joint Monitoring Progress report,[7] the country showed a decline of just 6 per cent in the 17 years 2000–17. In 2000, around 15 per cent of the population practised open defecation—this number fell to 9 per cent in 2017.

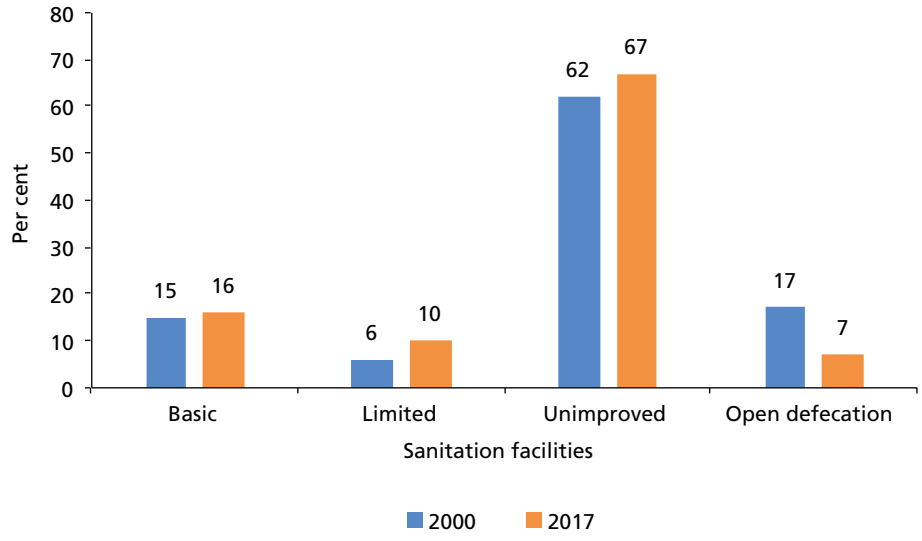
Does this mean that Uganda will achieve Goal 6.2 of the Sustainable Development Goals (SDGs)—ensuring sustainable sanitation by 2030? According to the 2019 JMP report, between 2000 and 2017, basic sanitation (classified by UNICEF as improved sanitation, which separates human excreta from human contact) increased only by 1 per cent while unimproved sanitation increased by 2 per cent, going up to 58 per cent from 56 per cent in 2000. Limited sanitation—i.e. shared improved sanitation facilities but considered lower in rung than basic—also increased by 7 per cent from 11 per cent in 2000 in the 17 years during 2000–17.

This data indicates that Uganda needs to work not only on eradicating open defecation but also on managing excreta safely to attain sustainable sanitation by 2030. Access to any kind of toilet will be inadequate.

The 2019 JMP data shows that around 77 per cent of the population of Uganda lives in rural areas.[8] Hence the state of sanitation in the country is largely influenced by whether the rural population practises safe sanitation. In 2000 around 17 per

cent of the rural population was practising open defecation. This number fell to 7 per cent in 2017, but this was through access to mostly unimproved sanitation facilities. It is observed that unimproved sanitation facility is the most prominent facility practised by the rural population of Uganda (see *Figure 1: Sanitation facilities used by rural population in Uganda*).

Figure 1: Sanitation facilities used by rural population in Uganda



Source: JMP 2019

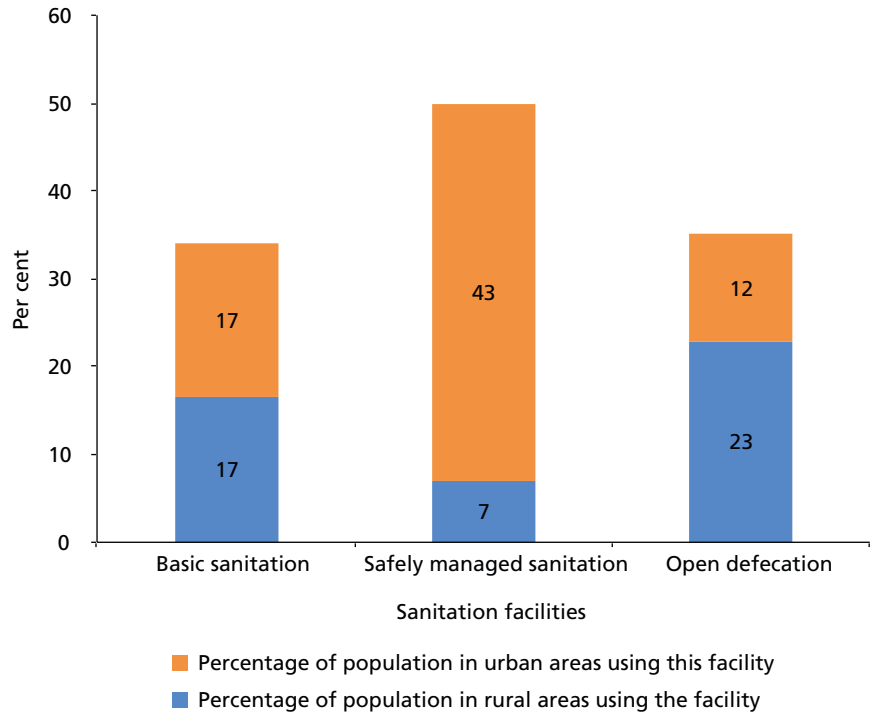
The Uganda Water and Environment's Sector Performance Report (SPR) also assessed sanitation as well as the performance of the water and environment sectors in the country.[9] The SPR is prepared with inputs from the ministries dealing with the sector, NGO networks and civil society organizations (CSOs). The Ministry of Water and Environment, responsible for the implementation of the water and sanitation projects, collates the data. The report appraises the district reports, both urban and rural.

Uganda is subdivided into 134 districts. According to the 2019 SPR, access to any form of sanitation in rural areas fell from 79 per cent in FY 2017–18 to 77 per cent in FY 2018–19. The report says that 93 per cent of the population in rural areas practised basic sanitation, unimproved sanitation or open defecation in FY 2018–19. Basic sanitation includes facilities like the traditional pit-toilet, ventilated improved pit toilet (VIP) toilet and EcoSan toilet.

This indicates that the remaining 7 per cent of the rural population use safely managed sanitation (see *Figure 2: Sanitation facilities practised by urban and rural population of Uganda in FY 2018–19*). Such sanitation facilities safely dispose of excreta in situ or transport faecal sludge to an off-site treatment facility. The SPR includes safely managed sanitation, water-based toilets (flush toilets), drainable ventilated improved pit toilet and pour flush toilets.[10] A few toilets are classified as 'other types', which the report does not explain.

An assessment of ground conditions shows that the safely managed sanitation practised by the rural population has drainable VIP toilets as the most preferred option. SPR 2019 states that around 23 per cent of the population practised open defecation in rural areas in FY 2018–19 (see *Figure 2: Uganda's urban and rural sanitation practices in FY 2018–19*). As per the report, the Government of Uganda recorded almost three times more open defecation in FY 2018–19 than what the JMP reported a year earlier (2017). SPR 2019 however talked about safely managed sanitation practised by the rural population, which was not assessed in the JMP report.

Figure 2: Uganda's urban and rural sanitation practices in FY 2018–19



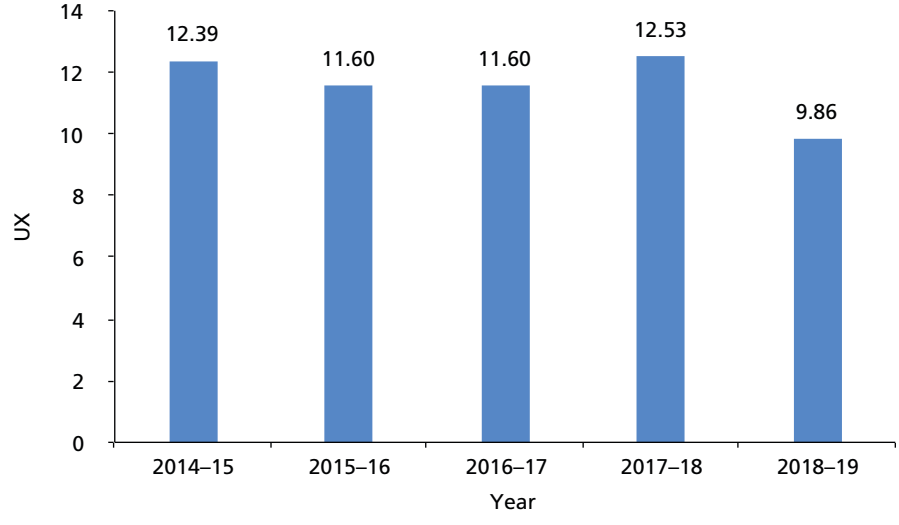
Source: Uganda Water and Environment Sector Performance Report 2019

The government offers no subsidies for rural domestic sanitation in Uganda. The country promotes sanitation coupled with strong enforcement thus relying on a carrot-and-stick approach. The main sanitation initiatives revolve around community and household improvement campaigns under district health and water officials supported by the village health teams. The government invests in these initiatives. Areas that succeed in achieving and sustaining open defecation free (ODF) status are those where household incomes are higher than the national average, where toilet coverage in households before any official intervention was more than 65 per cent, and areas where mobilization and support were provided in a planned manner.[11]

Financial support in building infrastructure in households and institutions in Uganda are supported by civil society organizations. In FY 2018–19, the investment was UGX 9.86 billion (1 USD = UGX 3811), where the investment in basic and safely managed sanitation were 54 per cent and 46 per cent respectively. FY 2018–19 has the lowest investment in the sanitation sector of the last four financial years (see *Figure 3: CSO investment in sanitation sector in Uganda*). According to SPR 2019, this is attributed to the lower number of toilets built in this year.[12,13] CSOs invested maximum on drainable VIP toilets and minimum on pour flush toilets under safely managed facilities, and maximum on VIP toilets and minimum on EcoSan toilets under basic sanitation facilities. A report by a civil society budget advocacy group suggests that total sector spending on sanitation improvement in 2015–16 by government, development partners and CSOs for both hardware and software was well below US $10 million, with sector partners other than government contributing the bulk of those funds.[14] This explains why so few sanitation initiatives have been completed.[15] An analysis of the expenditure in the WASH sector shows that it experienced on average an annual funding deficit of UGX 517.8 billion for 2015–16 to 2018–19 (see *Table 2: Expenditure in WASH sector by government agencies*).

Traditional pit-toilets are the preferred basic toilets. From among safely managed toilets, waterborne toilets are the preference at the household level, and drainable VIP toilets at the institutional level. A total of 62,155 toilets were constructed by CSOs at the household and institutional levels during FY 2018–19 (see *Table 3: Toilets built by CSOs in FY 2018–19*).

Figure 3: CSO investment in sanitation sector in Uganda



Source: Water and Environment Sector Performance Report 2019

Table 2: Expenditure in WASH sector by government agencies

Ministry/government body	2015–16	2016–17	2017–18	2018–19
Ministry of Water and Environment	275.74	275.74	509.49	175.48
Ministry of Education and Sports	0.98	0.41	0.77	0.43
Ministry of Health	3.45	1.2	3.73	1.54
Kampala Capital City Authority	13.59	6.04	12.41	4.69
National Environment Management Authority	0.49	0.04	1.86	1.65
Local government	64.87	13.62	62.88	38.51
Total	510.34	297.05	591.44	222.3
Required	884.3	884.3	884.3	884.3
Funding gap	528.91	587.2	293.16	662

Source: Civil Society Budget Advocacy Group. 2019. Adherence to NDP II Financing and Performance Commitments for Water, Hygiene and Sanitation (WASH) in Uganda. Final report

Table 3: Toilets built by CSOs in FY 2018–19

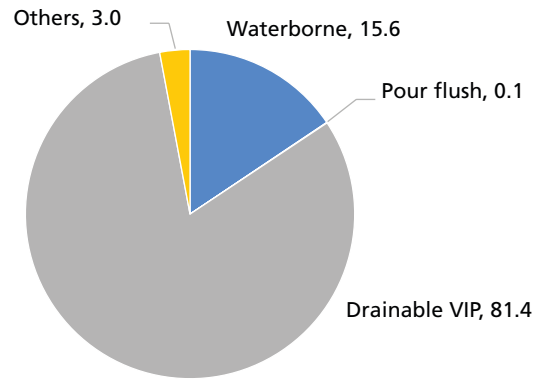
Type of sanitation	Facility	Numbers built at household level	Numbers built at institutional level	Total	Investment (UGX billion)
Basic	Traditional pit toilet	54,820	1,127	55,947	0.96
	VIP toilet	3,146	36	3,182	0.96
	EcoSan	187	25	212	0.39
	Other	2,004	13	2,017	0.63
Safely managed	Waterborne toilet	33	3	36	0.29
	Pour flush toilet	32	36	68	0.09
	Drainable VIP toilet	0	544	544	1.05
	Other	145	4	149	0.28
	Total	60,367	1,788	62,155	4.65

Source: Water and Environment Sector Performance Report 2019

Basic sanitation was the most preferred facility provided by CSOs in 2018–19. Infrastructure for basic sanitation constituted 98.7 per cent of the total number of facilities provided in the year, benefiting a population of 364,938. According to the *Uganda Water and Environment's Sector Performance Report* (SPR), only 797 safely managed facilities for sanitation were provided, benefitting 35,645 people. According to the report, CSOs built almost 10 times more basic sanitation than safely managed facilities for rural beneficiaries.

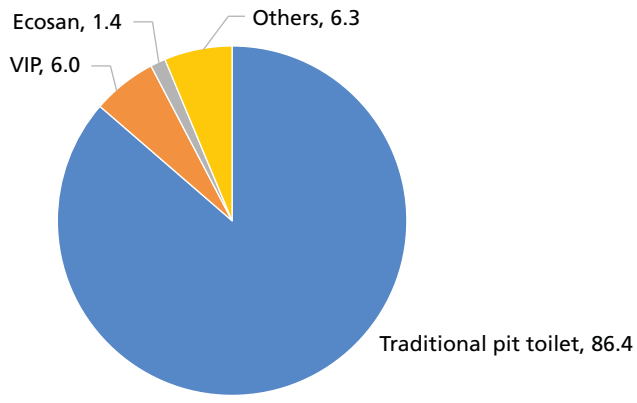
Although a large number of basic sanitation facilities were provided in the previous year—FY 2017–18—the number of safely managed facilities were at least 800 more in FY 2018–19. A strong preference of the beneficiaries towards drainable VIP toilets in safely managed sanitation (see *Figure 4: Percentage of beneficiaries using safely managed facilities in rural Uganda in FY 2018–19*) and traditional pit toilets in basic sanitation facility (see *Figure 5: Percentage of beneficiaries using basic sanitation facilities in rural Uganda in FY 2018–19*).

Figure 4: Percentage of beneficiaries using safely managed facilities in rural Uganda in FY 2018–19



Source: Water and Environment Sector Performance Report 2019

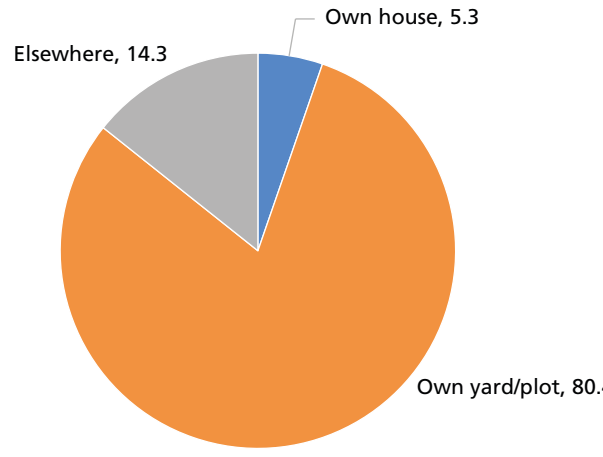
Figure 5: Percentage of beneficiaries using basic sanitation facilities in rural Uganda in FY 2018–19



Source: Water and Environment Sector Performance Report 2019

According to the 2018 Demographic and Health Survey of Uganda, most of the toilet facilities were within the dwelling unit[16] (see *Figure 6: Location of toilet facilities in FY 2018–19*). This is seen in both urban and rural areas, indicating that privacy was given preference.

Figure 6: Location of toilet facilities in FY 2018–19



Source: Uganda Bureau of Statistics (UBOS) and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF.

The data on sanitation in various studies coverage shows that coverage is not uniform across the country. A 2007 study by the United States Agency for International Development and Hygiene Improvement (USAID)[17] showed wide variation in sanitation coverage in the country—districts like Kotido, Kabong and Abim had just 1 per cent coverage, Rukungiri recorded coverage as high as 98 per cent. The study showed that the lowest coverage of sanitation is concentrated in the seven districts in northeast which experienced civil unrest. In 1960, Uganda stood out in sanitation coverage in Africa—almost 90 per cent of the households had their own toilet—but decades of civil unrest and political disturbance affected sanitation in the country.

This study points—probably for the first time—the discrepancy in data provided by different government departments and likely reasons. For example, there are differences in the definitions of safe/improved sanitation between government agencies—i.e. the Environment Health (EH) Division of the Ministry of Health (MoH) and the Uganda Bureau of Statistics (UBOS)—analysing the Demographic Health Survey (DHS) (see *Table 4: Difference in definition of improved sanitation by different departments in Uganda*). As per the study, the EH Division included pit latrines that met performance-based standards within coverage figures. The Uganda Bureau of Statistics (UBOS) on the other hand classified pit latrines as unimproved if they did not have a concrete slab, thereby omitting them from coverage rates. According to DHS, the composting toilets, which includes urine diversion and other ecological sanitation (EcoSan) models, were considered improved. The remaining facilities, considered unimproved by the DHS, used all local materials and designs, and may lack privacy, structural integrity, proper coverage of pits, or be full.

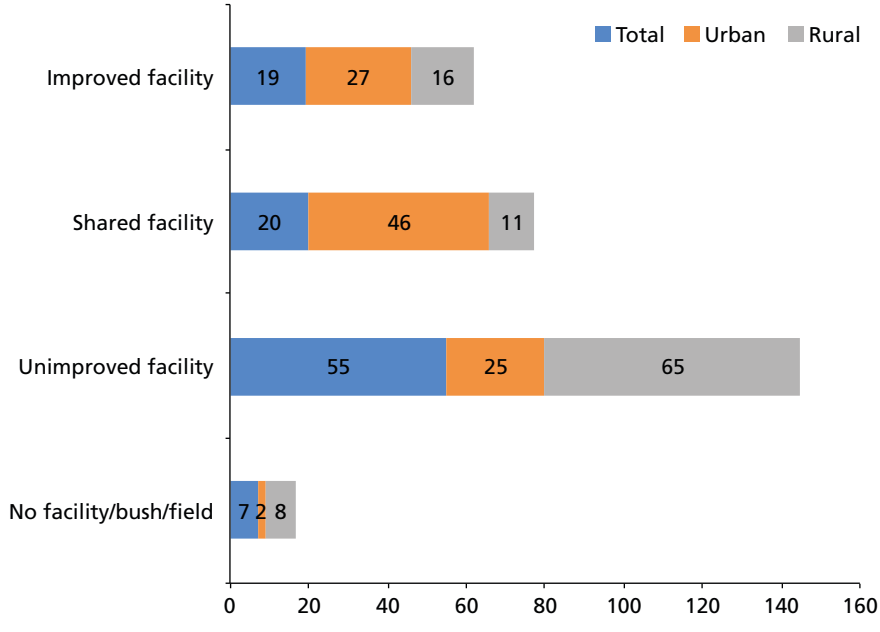
Table 4: Difference in definition of improved sanitation by different departments in Uganda

Uganda Bureau of Statistics (UBOS) analysing Demographic Health Survey (DHS)	Environment Health (EH) Division of the Ministry of Health
Based on technology Technologies included the following: Flush toilet Ventilated improved pit toilet Pit toilet with concrete slab Composting toilet	Based on performance Mandates are: a. Must provide privacy b. Faeces deposited cannot be less than three feet from the top of the pit c. Slab needs to be structurally safe but can be of wood also
Pit toilet without a proper concrete slab not defined as improved sanitation. Other unimproved sanitation facilities are bucket toilet, hanging toilet, flush or pour flush toilet not connected to sewer, septic tank or pit latrine. Shared facilities are also considered unimproved.	Pit toilet without concrete slab defined as improved sanitation

Source: United States Agency for International Development and Hygiene Improvement Project. 2007. Opportunities for Sanitation Marketing In Uganda

According to the Demographic Health Survey (DHS), Uganda has divided sanitation into improved sanitation, shared sanitation, unimproved sanitation and open defecation. A 2016 DHS study published in 2018 showed that the most prominent toilet facility in rural Uganda was unimproved toilets—65 per cent of rural Uganda used these. The urban scenario was better, with only 25 per cent using this facility.[18] The study was carried out in 19,588 households in the country—over 5,027 households were in urban areas and around 14,561 households in rural areas. At the national level only 19 per cent of the households used improved facilities, which is only 4 per cent more than what was practised in 2011. Thus, the increase in improved sanitation was not even 1 per cent between 2011 and 2016 (see *Figure 7: Sanitation facilities in Uganda*).

Figure 7: Sanitation facilities in Uganda



Source: Uganda Bureau of Statistics (UBOS) and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF.

Thus, research studies show that open defecation is not the only problem in Uganda. Mismanagement of faecal matter through unimproved sanitation is a major concern. Faecal sludge treatment facilities in Uganda are restricted to big towns and cities and it is not clear how the sludge from the VIP toilets or pour flush toilets are emptied, treated and disposed of. According to several reports, faecal sludge in conditions of limited sanitation facilities are not taken care of.

A 2004 study in the Kawempe Division, Kampala District, showed that except Kampala city—which used sewerage connection—the rest of the study area used on-site sanitation. The most used on-site sanitation was the traditional pit toilet (over 80 per cent). Since these are open pits, the majority, especially children, did not used them. Faecal matter in plastic bags were disposed of in and around the houses and ultimately found their way to drainage systems and waste heaps. The report says that the inefficient disposal of excreta caused contamination of shallow groundwater in the region.[19]

According to the 2014 baseline survey by SNV Uganda, an international non-profit headquartered in the Netherlands, only 4 per cent of the rural households in 15 targeted districts had improved sanitation facilities that kept away flies. Of these households, 79 per cent used unimproved traditional pit latrines that allowed flies in and out of the latrine, hence propagating the risk of contamination of food and transfer of faecal-related diseases.[20] Sharing of toilets between two to three families was also classified as unimproved sanitation.

According to article published in March 2020 in the *Journal of Water, Sanitation and Hygiene for Development*,[21] the small town of Lukaya in Kalungu district of central Uganda practised mostly on-site sanitation. In Uganda, small towns are also considered as rural areas. Most respondents (85 per cent) to household surveys were women whose level of education was primary school (50 per cent). Around 96 per cent of the households had on-site sanitation facilities and 4 per cent practised open defecation. Most (two-thirds) of households that practised on-site sanitation used traditional latrines without slabs and classified as unimproved according WHO and UNICEF.[22] The remaining one-third of on-site sanitation users used pit latrines with slabs, designated as improved.[23] The 2020 research showed that around 71 per cent of the households in these small towns took the initiative to empty their pits or dug new pits when their pits were full, the common mode being transferring faecal waste into another pit dug near the toilet. Other modes included leaving an outlet on one side of the pit toilet so that when the pit toilets filled during the rainy season, faecal waste was flushed by surface runoff. A negligible number of households (2 per cent) used flush toilets, where black water from toilets entered the septic tanks.

Data related to the mismanagement of wastewater in rural areas is not well documented—data is available for municipal and urban areas. It is evident, however, that construction of faulty toilets in the rural areas generates a huge amount of black water. Grey water is also generated from bathrooms and kitchens.

The key challenges confronting the sanitation in small towns are summarized as:

(a) The majority of households (86 per cent) have access to pit latrines, which are mostly unlined and also used for domestic solid waste disposal affecting

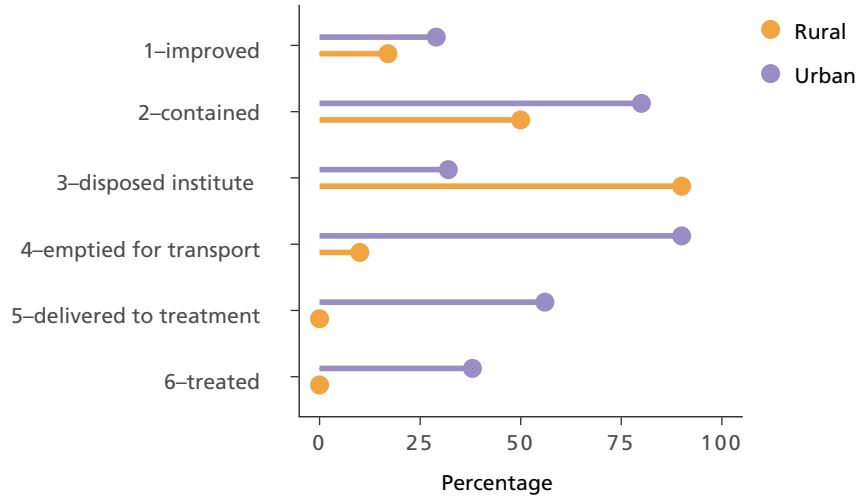
the quality and characteristics of septage from the pits;

(b) Lack of adequate collection and treatment capacity, as over 80 per cent of the fleet of trucks is based and operates in Kampala, and treatment and disposal infrastructure do not exist in most towns;

(c) High service charges as trucks are mobilized from Kampala and nearby larger towns to provide collection and transportation services;

(d) Inadequate regulation and enforcement, leading to indiscriminate disposal in swamps, quarries, gardens and waterbodies with resultant public and environmental health risks.[24]

Figure 8: Sludge management in Uganda

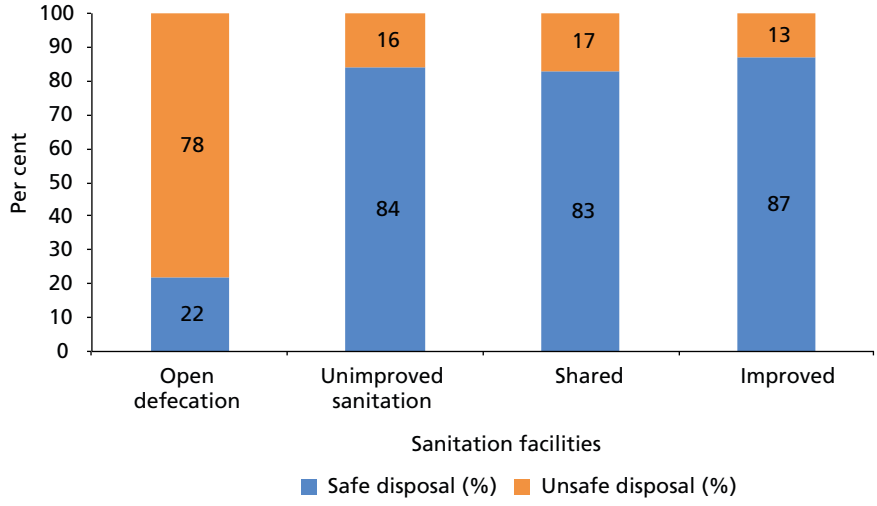


Source: https://www.susana.org/_resources/documents/default/3-2747-7-1488881310.pdf

Not only is managing sludge important. Safe disposal of child excreta is equally important as it effects the health and economy of the country. A 2014 World Bank analysis says that in 2013, 75 per cent of households surveyed in Uganda reported that the faeces of their youngest child under the age of three was safely disposed of.[25] Around 52 per cent of households in Uganda reported that their youngest child's faeces were disposed of in an improved sanitation facility—this figure is much lower than that for safe disposal (see *Table 5: Safe disposal and improved disposal of children's faeces in Uganda*).

The prevalence of risky disposal of children's faeces in Uganda is higher among households without access to sanitation facilities (see *Fig. 9: Relationship between disposal of children's faeces and sanitation facilities in Uganda in 2011*), such as those in rural areas and urban slums, where poorer households and those that practise open defecation predominantly live. Around 13 per cent of households with improved sanitation facilities dispose of child faeces unsafely.[26]

Figure 9: Relationship between disposal of children's* faeces and sanitation facilities in Uganda in 2011



*Children denotes those under the age of three years

Source: Child faeces disposal in Uganda. Report 2014. UNICEF, WSP. World Bank

Table 5: Safe disposal and improved disposal of children's* faeces in Uganda (2011)

Safe disposal	Improved disposal	Percentage
Child used toilet and household used improved sanitation	Yes	5
Child faeces rinsed into toilet and the household used improved sanitation	Yes	47
Child used toilet and household used unimproved sanitation	No	2
Child faeces put/rinsed into toilet and the household used improved sanitation	No	21
Total safe disposal (sum 1 to 4)		75
Total improved disposal (sum 1 to 2)		54

* Children denotes those under the age of three years

Source: Child faeces disposal in Uganda. Report 2014. UNICEF, WSP. World Bank

The Government of Uganda has laid strong emphasis on eradicating open defecation and encouraging people to invest in safe containment systems. Funding to local governments to support community-led total sanitation has increased awareness about sanitation at the community as well as household levels.

But this is not sufficient. The government needs to go beyond toilets and give greater attention to the safe management of excreta. The Sustainable Development Goals (SDGs) have shifted the sanitation sector's goalposts significantly. Sanitation targets go well beyond a measurement of how many people have access to a toilet and measure the outcomes in terms of safe management of human excreta across the whole service chain, from containment, through emptying and transport to treatment and final disposal or reuse—in all settlements, urban or rural.

What the Millennium Development Goals (MDGs) regarded as *improved* sanitation is now considered *basic* sanitation if there is no proper management of waste beyond the toilet. In Uganda, where over 90 per cent of the population relies on on-site facilities, the supporting services for emptying, transporting and treatment are poorly developed. This results in unplanned disposal of sludge in waterbodies and land, seriously affecting water, soil and public health.

3. School sanitation

KEY POINTS

- The Ministry of Education and Sports is responsible for sanitation in schools. Access to toilet facilities, however, has not been provided by any government body.
- The national standard for toilet to student ratio is 1:40 but according to different government reports only a few reach that ratio.
- CSOs and the NGOs offer financial aid to build toilets in schools. This has in many cases improved the toilet–student ratio as well as in many regions improved gender parity and inclusiveness.
- A major bottleneck in implementing safe sanitation in schools is the absence of a dedicated national fund for school water, sanitation and hygiene services.
- Local governments promote pit toilet as the most favourable toilet facility in schools but there are no guidelines for the collection and management of faecal sludge. As a result, schools have to abandon pit toilets once they fill up.

According to a 2011 joint study,[27] around 70 per cent of primary schools in Uganda are located in rural areas (see *Figure 10: Location of primary schools in Uganda*). Pit latrines, with separate facilities for male and female students, are the sanitation provided. The source of supply to the pit toilets is bore wells, wells or springs. Piped water supply is only for urban areas.

A 2001 agreement between the Ministry of Health, Ministry of Education and Sports, and Ministry of Water and Environment states that sanitation in schools is the responsibility of the Ministry of Education and Sports (MoES). No clear party, however, is assigned with the responsibility of providing water to schools. Although the MoES is mainly responsible, the responsibily of other ministries towards school WASH services cannot be ignored.

As per the 2018 Joint Monitoring Programme (JMP) for Water Supply and Sanitation by WHO and UNICEF,[28] both at the national level and in rural areas, most of the sanitation facilities provided in 2016 was basic sanitation (see *Figure 11: Sanitation facilities in schools of Uganda in 2016*). Since rural areas predominate in the country, the national data is largely influenced by the rural data.

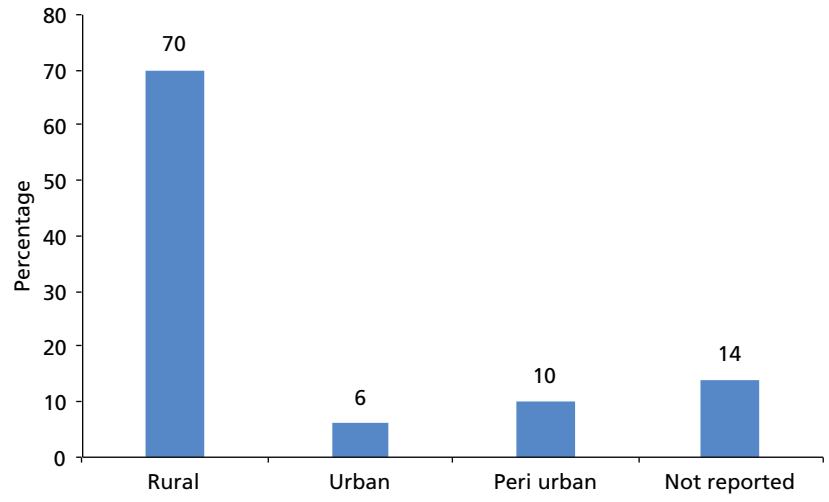
District reports submitted to the Ministry of Water and Environment show that the prominent toilet technology adopted in schools is lined pit-toilets. Central (districts include Nakaseke, Luwer and Nakasongola) and western regions (Kyankwanzi and Buliisa) of Uganda have reported these.[29]

Table 6: Roles and responsibilities of different ministries/bodies for WASH for schools in Uganda

Ministry	Responsibility
Ministry of Education and Sports	Develops national guidelines and standards for school water, sanitation and hygiene Provides school with sanitation and hygiene education
Ministry of Water and Environment	Responsible for supplying water to the school as a part of a community
Ministry of Health	Responsible for enforcing Public Health Act in all buildings (all buildings including institutions should have adequate sanitation facilities) Provides health education to schools
Local government	Apply national standard at local level Help to determine the financial priorities Monitor at local level
Schools	Organize students for hygiene behaviour Ensure access to hygiene materials

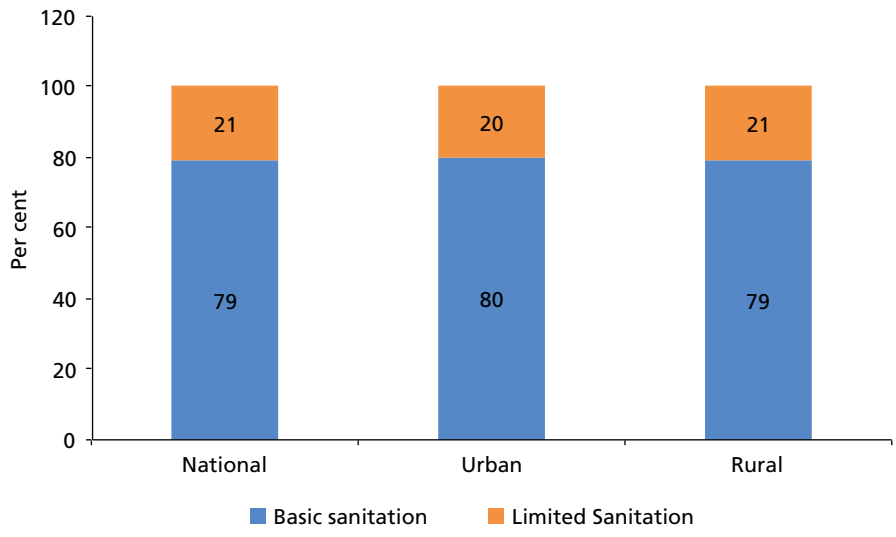
Source: Emory University and UNICEF. 2011. Equity of Access to WASH in Schools. A Comparative Study of Policy and Service Delivery in Kyrgyzstan, Malawi, the Philippines, Timor-Leste, Uganda and Uzbekistan

Figure 10: Location of primary schools in Uganda



Source: Emory University and UNICEF. 2011. Equity of Access to WASH in Schools. A Comparative Study of Policy and Service Delivery in Kyrgyzstan, Malawi, the Philippines, Timor-Leste, Uganda and Uzbekistan

Figure 11: Sanitation facilities in schools of Uganda in 2016



Source: 2018 Annual Report WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene

But the problem with these toilets becomes grave when schools do not know what to do with the faecal sludge accumulated in the pits. Although district officials promote the option of lined pit toilets as the best option for schools, they do not communicate through awareness campaigns the procedure to manage faecal sludge. Plants need to be developed in nearby areas to handle the huge quantities of treated or partially treated faecal sludge emptied from these pits. According to a 2019 report published by the Civil Society Budget Advocacy Group, only 17 per cent of the schools surveyed emptied pits due to lack of safe emptying options or scarcity of funds in school. The report concluded that the existing Universal Primary Education and School Facilities Grants are insufficient to support adequate school sanitation.[30]

As per the 2011 report published jointly by Emory University and UNICEF,[31] the quality of toilets, supply of water to toilets and maintenance of toilets were questioned. The report explained that in 2010, the Ministry of Education and Sports released a monitoring report that evaluated the WASH status of schools in 17 of the country's 117 reorganized districts during that year.

According to the report, coverage rates in schools was high—96 per cent for water and 83 per cent for sanitation. The definition of coverage, however, did not take into consideration safe drinking water, broken facilities or seasonal availability. A 2010 Ministry of Education and Sports report found that only 33 per cent of primary schools provided clean, safe drinking water for their students and 73 per cent of schools did not have access to handwashing facilities or soap. The report explained that in 2006, around 80 per cent of toilets in the northern and eastern regions were found to have wet, dirty floors and faeces smeared on the walls.

Case study visitations to schools in 2011 confirmed that there were wide differences in terms of quality and access. Although the national Basic Required Minimum Standards for schools require water sources to be located within 500 metres of a school, some water sources were found to be one kilometre away from the school property. Inadequate maintenance of WASH infrastructure was also evident.

School visits and interviews with staff threw light on the issue of vandalism of school property. Urban and peri-urban schools faced members of surrounding communities entering school premises and damaging or stealing facilities, or using toilets improperly. Vandalism makes it difficult to maintain hardware and supplies, such as taps or soap. When they are regularly stolen, schools cannot afford to replace them.

The responsibility of cleaning toilets is generally given to students. When cleaning is not completed, other students, particularly girls and students with disabilities, have difficulty in using the latrines. Abandoned filled toilets were common on school property due to the lack of consistent emptying services.

The Construction Management Unit, Ministry of Education and Sports, has set guidelines for sanitation facilities, including their distance from classroom blocks. Toilets are generally placed in optimum spaces on school sites. When emptying services are not available, however, new toilets are built in suboptimal locations further from classrooms and school staff supervision.

These challenges have made it increasingly difficult for schools to maintain their WASH programmes and enable students to practise proper sanitation and hygiene. There is no current funding source that is allocated specifically for WASH in schools, and resources are allotted to schools based upon their most pressing needs.

The national student-to-toilet ratio in 2017 was 71 students per toilet as against the national standard of 40 students per toilet,[32] but this number varies considerably by region. According to the Sector Performance Report (SPR),[33] the student–toilet ratio as per reports submitted by the districts fell from 73:1 in FY 2017–18 to 71:1 in FY 2018–19. The report also says that access to handwashing facilities also rose in FY 2018–19 by 2 per cent from 40 per cent in FY 2017–18. The current WHO–UNICEF Joint Monitoring Programme (JMP) estimate says that five in 10 schools do not have soap and water available for handwashing.[34]

The Ministry of Education and Sports in a 2011 report confirmed that there were variations in the student to toilet ratios in different regions.[35] According to the report, the Karamoja Region, for example, has a student-to-toilet ratio of more than 100 students per toilet. In 2010, the Ministry of Health collected national data on the student-to-toilet ratio and found that only four out of 117 districts reached the national standard of one latrine to 40 students.[36]

The poor access to sanitation facilities is due, in part, to the lack of emptying services for pit latrines. Once latrines have been filled, schools that cannot provide

emptying services have no option but to abandon the structures and invest significantly more resources into building a new pit latrine. As per a 2011 report, approximately 1,500 schools out of 18,000 primary schools surveyed relied solely on rainwater collection tanks throughout the school year.[37] The tanks were easily broken or vandalized, and even when functioning properly, they were only useful during the rainy season. Another common barrier to water access identified by teachers was borehole sharing with neighbouring communities. Conflicts arose between schools and community members when both groups were using the water source concurrently.

Insufficient funds in this sector is one of the main hindrances in implementation of safe sanitation in schools. NGOs and civil society organizations (CSOs), however, are seen to have invested money in this sector. According to the latest Sector Performance Report (SPR), CSOs invested UGX 2.37 billion in school sanitation in FY 2018–19, which is almost 24 per cent of the total investment in the sanitation sector.[38] As per the report, this investment improved the *toilet–student* ratio (see *Table 7: Improvement in toilet–student ratio due to investment of CSOs in school sanitation*), and moved towards the national standard of 1:40 in many cases. The investment also focussed on gender parity and inclusiveness (see *Table 8: Sanitation facilities developed by CSOs in schools in FY 2018–19*).

International NGO UNICEF has also invested in the school sanitation sector.[39] Around UGX 476,000,000 UGX were spent in FY 2018–19 in the eastern (Kamuli, Iganga) and northern (Adjumani) regions. The facilities developed served around 2,500 people.

Apart from the paucity of funds (as no budget is allocated at the national level for school WASH), other roadblocks in implementation of safe and sustainable sanitation facility in schools in Uganda include the following:[40]

1. Since schools have pit toilets, emptying faecal sludge from toilets and treating it before disposal remains a challenge.
2. Soap and water for handwashing is available in 50 per cent of the schools.
3. Few toilets in rural schools are connected to water.
4. Facilities to maintain menstrual hygiene in toilets for girls are few.
5. Focus on toilets for students with special needs is needed.
6. Maintenance of sanitation facilities is poor.
7. No monitoring system is in place at the national level to crosscheck district reports.

Table 7: Improvement in toilet–student ratio due to investment of CSOs in school sanitation

	GIRLS		BOYS	
	Before investment	After investment	Before investment	After investment
Average	1:70	1:42	1:72	1:40
Maximum	1:125	1:80	1:140	1:80
Minimum	1:28	1:10	1:39	1:8

Source: Uganda Bureau of Statistics (UBOS) and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF.

Table 8: Sanitation facilities developed by CSOs in schools in FY 2018–19

User category	Basic sanitation	Safely managed sanitation
	Toilet (no.)	Toilet (no.)
Student—male	419	246
Student—female	767	344
Teacher—male	58	13
Teacher—female	46	13
Persons with disabilities—male	74	5
Persons with disabilities—female	125	8
Changing rooms—female	224	24
Other	57	–

Source: Uganda Bureau of Statistics (UBOS) and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF.

4. Impacts of poor sanitation

KEY POINTS

1. Poor sanitation conditions adversely impact economic growth and human development in Uganda.
2. Economic loss due to disease load is huge for Uganda. Around US $147 million is lost each year because of premature deaths due to diarrhoea.
3. Women and girls in Uganda are severely impacted because of inadequate, deficient or inappropriate water and sanitation services.
4. Uganda has excellent policy and legislation but their enforcement is weak.
5. Regulatory framework and capacity of the stakeholders are weak in rural areas.

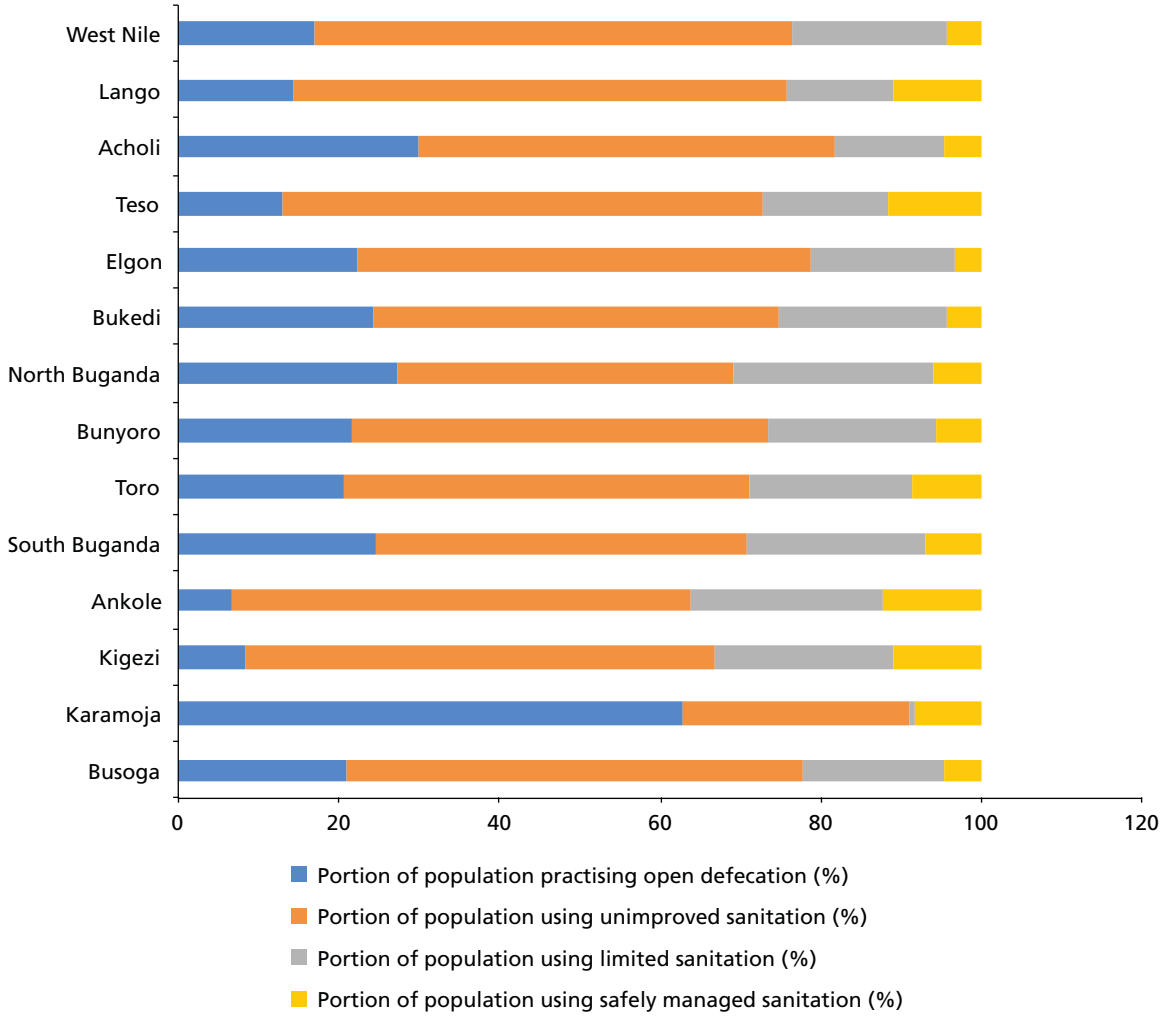
According to the Government of Uganda's 2019 Sector Performance Report (SPR), only 7 per cent of rural population practices safe sanitation.[41] This is mainly because of lack of awareness, traditional beliefs, poor soil conditions for construction of latrines, and poor operation and maintenance of sanitation facilities, especially in public places and schools. Other impediments to the implementation of safe sanitation are inadequate allocation of funds, political instability in neighbouring countries (resulting in unplanned sanitation of the migrants), and weak institutional framework for enforcement of existing laws and regulations.

Rapid population growth is another challenge that delimits access to safe sanitation facilities. The Uganda Bureau of Statistics (UBOS) projected an average growth rate of 3 per cent for the country. Increasing population will increase the number of people living in rural areas, which is over 75 per cent of the total population. Additionally, natural calamities such as heavy rains, cyclones and landslides destroy sanitation facilities—this is the reason for the decline in the state of sanitation in rural areas in FY 2018–19 as compared to FY 2017–18 (as mentioned in Chapter 2).

Uganda is divided into 14 sub-regions with regard to monitoring health services. Sanitation-service level is a category in all 14 sub-regions (see *Figure 12: Population sanitation-service level in different sub-regions in Uganda*).

Poor sanitation conditions in Uganda adversely impact the economic growth and human development. As per Water and Sanitation Program (2012) estimates, Uganda loses UGX 389 billion annually (equivalent to US $177 million) due to poor sanitation.[42] This is the equivalent of US $5.5 per person in Uganda per year, or 1.1 per cent of the national GDP of Uganda.[43]

Figure 12: Population sanitation-service level in different sub-regions in Uganda



Source: Ministry of Water and Environment. Uganda Water and Environment Sector Performance Report 2019.

Factors such as low prioritization by stakeholders, inadequate funding, implementation of inappropriate (unsustainable) technologies, and difficulties of shared responsibilities contribute to poor sanitation progress in the country. Several studies validate that absence or inadequate access to sanitation compel slum residents to use unhygienic pit latrines or polythene bags, or discharge into nearby open storm drains, creating significant disease-related hazards and environmental pollution.[44]

4.1 Health and environmental impacts

Nearly 10 per cent of the global burden of disease is estimated to be associated with lack of access to adequate sanitation, safe drinking water, proper hygiene and effective water management.[45] Development economist Guy Hutton estimated that households receiving improved water supply have 0.37 fewer cases of diarrhoea, and those with improved sanitation see 0.28 fewer cases per year.[46] A 2006 World Bank study on Global Burden of Disease (2006) indicates that 15 per cent of all deaths in children under the age of five in low- and middle-income countries was directly attributable to diarrhoeal disease.[47]

In Uganda, the high burden of sanitation-related diseases is especially common as most of the population has limited access to protected water sources and adequate sanitation facilities. The government estimated that around 64 per cent of the rural population has access to safe water. Despite this, many rural areas rely on contaminated water sources and acquire water supplies from contaminated groundwater, streams, spring wells, ponds and lakes.

The deterioration in the quality of both surface and underground water is to a large extent because of inadequate sanitation facilities.[48] A publication by Ecological Christian Organization in Bugiri Town Council showed that faulty pit toilets can contaminate groundwater and spring water. High level of faecal streptococcus— up to 2,200 cfu/100 ml in bore well water and 1,350 cfu/100 ml in spring water—was observed as against a permissible limit of 0 cfu/100 ml as per World Health Organization.[49] Another study carried out in small town Lukaya in Central Uganda[50] showed high concentration (much above the permissible limit of the country) of Escherichia coli—up to 10^4 cfu/100 ml—and nitrate concentration more than 250 mg/litre in water sources from shallow dug wells. The authors directly linked this with the poor sanitation facilities observed in Lukaya—pit toilet without slab, which has been considered unimproved by the Ministry of Health (see *Table 4: Difference in definition of improved sanitation by different departments in Uganda*).

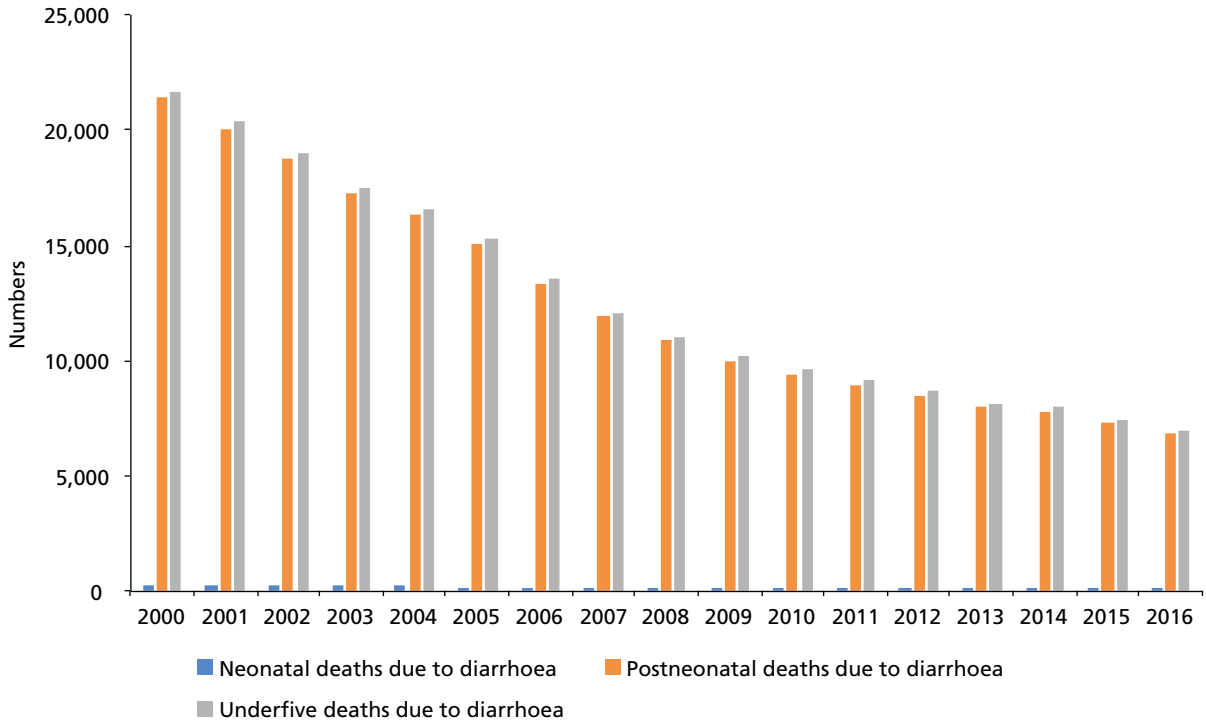
Contaminated water consumption has compromised human health, especially of women and children. Of the three East African countries, Uganda has the worst mortality rate in children under the age of five, with 22 per cent of these deaths attributed to diarrhoea. Diarrhoea is among the top four causes of morbidity in infants and young children. The 2016 Uganda Demographic and Health Survey reported that the prevalence of diarrhoea among children under five in Uganda was 20 per cent. In 2017, diarrhoeal disease deaths reached 6.4 per cent of total deaths, ranking Uganda 27th worldwide.[51,52] Cases of waterborne diseases in 2018–19 showed that malaria was the leading cause of illness for all ages, accounting for 12.5 per cent and diarrhoea and contributing to 1.6 per cent of all OPD attendances. It is noteworthy that around 0.8 million children under the age of five were reported for diarrhoea in 2018–19 (see *Table 9: Cases of diarrhoea and malaria in OPD attendance in 2018–19*). Analysis of cases of diarrhoea in the country for 2000–16 shows, however, that the number of cases declined over sixteen years (see *Figure 13: Cases of diarrhoea reported in Uganda in 2000–16*) although the number of cases remained quite high during this period. The mortality in children under five for 2000–16 also fell (see *Figure 14: Percentage of deaths due to diarrhoea reported for children under five in Uganda in 2000–16*). But this by no means indicates that the country has moved towards safe sanitation.

Table 9: Cases of diarrhoea and malaria in OPD attendance in 2018–19

	Cases under five years of age	Cases of five years of age and above	Percentage contribution to total
Diarrhoea	796,752	560,670	1.6
Malaria	2,647,223	7,836,189	12.5
Others (including diarrhoea and malaria)	9,501,554	74,653,778	100

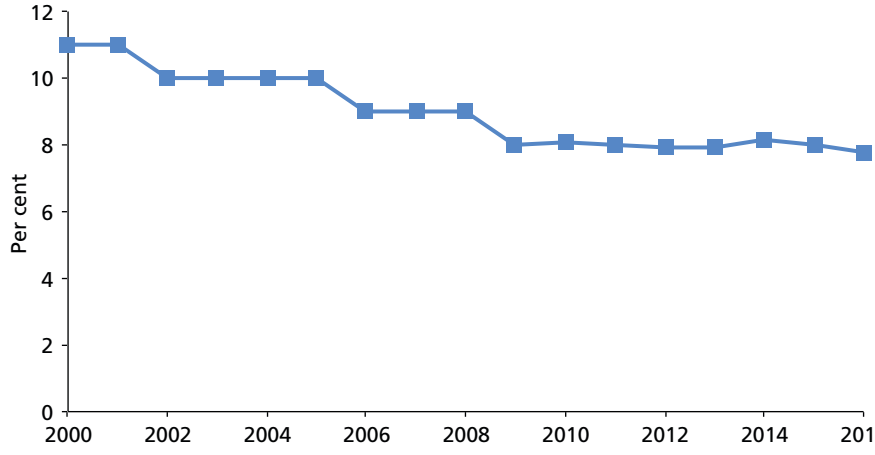
Source: Annual Health Sector Performance Report for Financial Year 2018-19. (2019). Ministry of Health. The Republic of Uganda

Figure 13: Cases of diarrhoea reported in Uganda in 2000–16



Source: https://data.unicef.org/topic/child-health/diarrhoeal-disease/

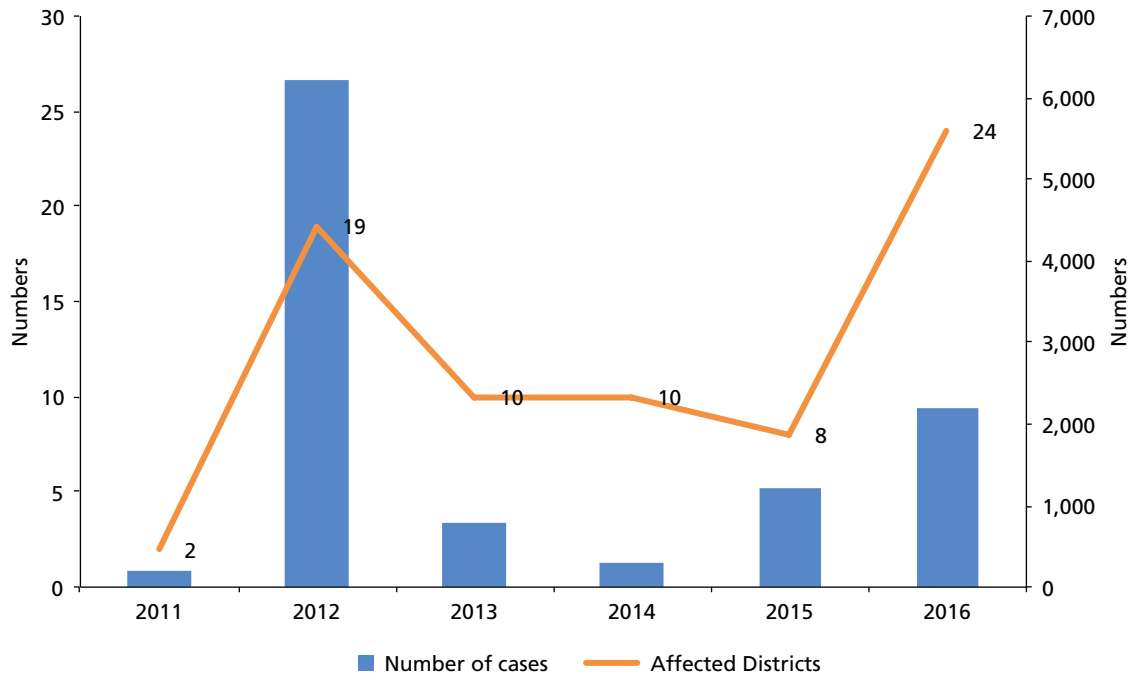
Figure 14: Percentage of deaths due to diarrhoea reported for children under five in Uganda in 2000–16



Source: https://data.unicef.org/topic/child-health/diarrhoeal-disease/

Although cases of diarrhoea in children seemingly fell, outbreaks of cholera in areas around lakes is quite prominent (see *Box 1: Cholera outbreaks and socio-economic characteristics of the communities in the fishing villages of Uganda*). An assessment of cholera cases in 2011–16 gives a shocking figure of 11,030 cases. The highest number of cases were 6,226 in 2012 and the lowest were 229 in 2011 (see *Figure 15: Distribution of cholera cases in Uganda by year [2011–16]*). Around 33 per cent of the districts, which accounted for 40 per cent of the population of the country, were affected in every study year at least once.[53]

Figure 15: Distribution of cholera cases in Uganda by year (2011–16)



Source: Bwire G., Ali M., Sack D.A., Nakinsige A., Naigaga M., Debes A.K., et al. 2017. Identifying cholera 'hotspots' in Uganda: An analysis of cholera surveillance data from 2011 to 2016. PLoS Negl Trop Dis 11(12): e0006118. https://doi.org/ 10.1371/journal.pntd.0006118)

Box 1: Cholera outbreaks and socio-economic characteristics of the communities in fishing villages of Uganda

Cholera remains a major cause of morbidity and mortality in the Great Lakes Region of Africa, including Uganda. The communities in the fishing villages account for 5–10 per cent of the Ugandan population. Most of the fishing villages are located along Lakes Victoria, Albert and Edward and the river Nile.

During the study period of 2011–15, these villages were responsible for over 50 per cent of the reported annual cholera cases and deaths in Uganda. Overall, cholera outbreaks lasted an average of 35 days (five weeks), with a range of eight to 90 days. The majority of the outbreaks occurred during the rainy season, peaking in April–June.

The study reported low toilet coverage (less than 50 per cent), open defecation and bathing in lake waters by the communities in the fishing villages. The data for the study period showed that outbreaks in fishing villages were responsible for an average of 58 per cent of the cholera cases and 55 per cent of deaths in Uganda. The study concluded that the fishing villages were at increased risk of cholera outbreaks due to poor sanitation and hygiene and lack of access to safe water. Further, the villages had similar population characteristics, such as low rate of literacy, ignorance regarding cholera transmission, poverty and constant population migration.

In addition to improvements in water, sanitation and hygiene, complementary use of oral cholera vaccines could play an important role, particularly when targeted at high-risk areas and populations. As a long-term strategy, improvements in education and reduction in poverty should contribute to preventing, controlling or eliminating cholera in the fishing villages as well as in Uganda as whole.

Source: Bwire G., Munier A., Ouedraogo I., Heyerdahl L., Komakech H., Kagirita A., et al. (2017) Epidemiology of cholera outbreaks and socio-economic characteristics of the communities in the fishing villages of Uganda: 2011–15. PLoS Negl Trop Dis 11(3): e0005407. https://doi.org/10.1371/ journal.pntd.0005407

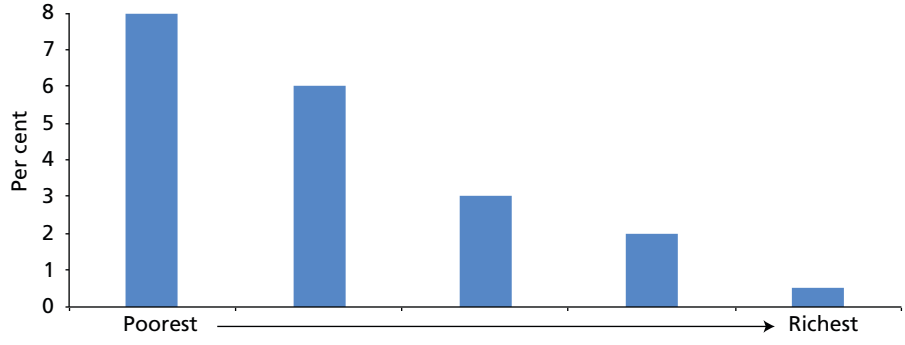
4.2 Socio-economic impacts

Uganda experiences huge economic losses—around US $147 million is lost annually due to premature deaths because of diarrhoea—due to disease load. Also, US $1.1 million is lost each year because of productivity losses due to sickness or limitation in accessing healthcare—this includes time absent from work or school due to diarrhoeal disease, seeking treatment from a health clinic or hospital, and time spent caring for children under five suffering from diarrhoea or other diseases attributable to sanitation.[54]

These economic losses can be tackled if cases of waterborne disease and associated mortality are reduced. The cost burden of unimproved sanitation is most on the poor (see *Figure 16: Cost per person of unimproved sanitation expressed as percentage of income by different wealth categories*). World Bank analysis of the economic loss due to unimproved sanitation showed that premature death contributed to maximum loss (see *Figure 17: Factors contributing to economic loss due to unimproved sanitation*).

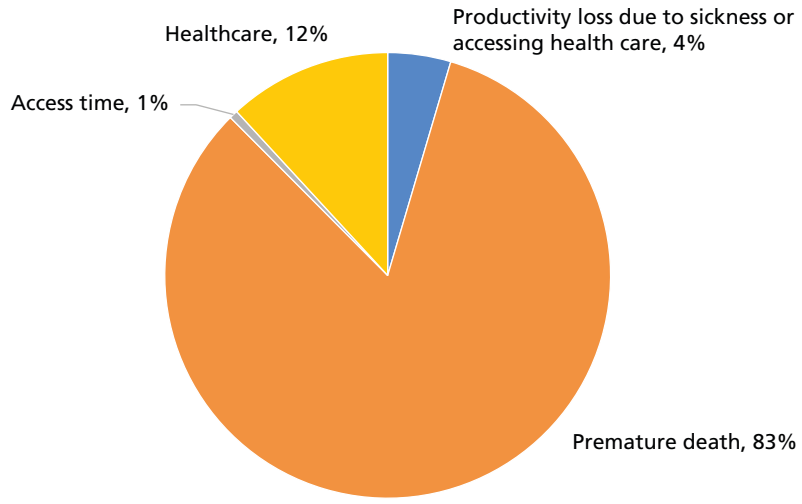
Uganda has over 1.4 million people displaced as a result of insecurity due to poverty as well as water and sanitary problems.[55] The non-health impacts of poor sanitation include lack of cleanliness, privacy, safety for women and children (especially at night), dignity and social status; inconvenience and discomfort; associated decreased property value and rental income; presence of odour and flies; and environmental pollution.

Figure 16: Cost per person of unimproved sanitation expressed as percentage of income by different wealth categories



Source: Economic Impacts of Poor Sanitation in Africa. 2012. The Water and Sanitation Program. World Bank.

Figure 17: Factors contributing to economic loss due to unimproved sanitation (in US $ million)



Source: Economic Impacts of Poor Sanitation in Africa. 2012. The Water and Sanitation Program. World Bank.

Poor sanitation has gender, education and economic implications. The social impacts of sanitation on women, adolescent girls, children and the disabled is especially marked in any country. Existing social, cultural, legal and traditional frameworks in the Global South affect mostly women and other vulnerable groups in the sanitation sector. Women and girls in Uganda are the major water collectors, users and managers in homes. They are also the major promoters of household and community sanitation activities. They therefore bear the impact of inadequate, deficient or inappropriate water and sanitation services.

Studies confirm that women are the worst affected by compromising with their privacy because of poor sanitation facilities. They experience humiliation, stress and fear of gender-based violence when defecating outside and therefore seek in-home solutions such as defecating into plastic bags inside their homes.[56] A report on the impact of poor sanitation on women in Kampala found a firm link between lack of access to adequate sanitation and women's experiences of humiliation. High cost, lack of cleanliness and scarcity of facilities available in the communities that were studied for this survey were key reasons why women considered the sanitation facilities to be inadequate.[57] Women in these communities felt powerless to improve sanitation in their communities or to reduce its negative impact on their lives. They also felt that the toilets in their communities threatened their safety by exposing them to risk of harassment while travelling to communal toilets after sunset.

Another study done by Makerere University, Kampala, detailed the challenges associated with the use of shared toilets, their cleaning and maintenance. It validates that after a point, shared sanitation facilities were abandoned if not used and cleaned properly.[58] Constrained access and security concerns, obscure

paths that were filthy—especially at night—insufficient light in the toilet cubicle, and raised latrines—sometimes up to two metres above the ground—coupled with infrequent cleaning and emptying made the shared facilities for toilets completely unusable. Thus, people using shared facilities reverted to open defecation. In this way, open defecation gradually substituted use of the available sanitation facilities. It is opined that filthy latrines have the same net effect as crude open defection.[59]

In recent years, national governments have been pushing boundaries and adopting gender-sensitive policies aimed at improving sanitation outcomes for women and girls. Uganda has enacted gender policies and designed national menstrual hygiene management (MHM) guidelines, which have helped elevate the importance of gender differences in sanitation, education, and sexual and reproductive rights in policy discussions. Implementation of the policies at the state and local levels, however, has been slow. Additionally, women are still underrepresented in leadership roles and lack adequate decision-making power, even when placed in roles of authority.

In order to address these issues, the water and sanitation sector in Uganda developed its first Water Sector Gender Strategy (WSGS, 2003–08) (WSG I) in line with the National Gender Policy, followed by second Water and Sanitation Sub-Sector Gender Strategy (2010–15) (WSSGS II). The Water Gender Strategy is aimed at empowering women and vulnerable groups and reducing poverty by ensuring equitable access to and control of water and sanitation resources. In 2018, the revised Water and Sanitation Gender Strategy (2018–22), re-echoed the water and environment sector's commitment towards the promotion of Gender Equality and Women Empowerment (GEWE) in the country. It demonstrated the actions taken to eliminate gender inequalities among men, women, boys, girls, and other vulnerable groups.[60] Despite these advancements, many sanitation policies have yet to integrate a gender lens and do not intentionally consider gender differences in the design of public sanitation systems and solutions.

4.3 Existing policies, strategies and actions to improve the state of sanitation: Role of government, non-profits and donors

Uganda's national policies and laws make reference to the criteria and procedures of the human right to water and sanitation, but there are gaps and challenges in their ability to implement and enforce these standards. The existing regulatory frameworks talks about the availability and quality of water and sanitation, but compliance to the standards in most cases is awaited.

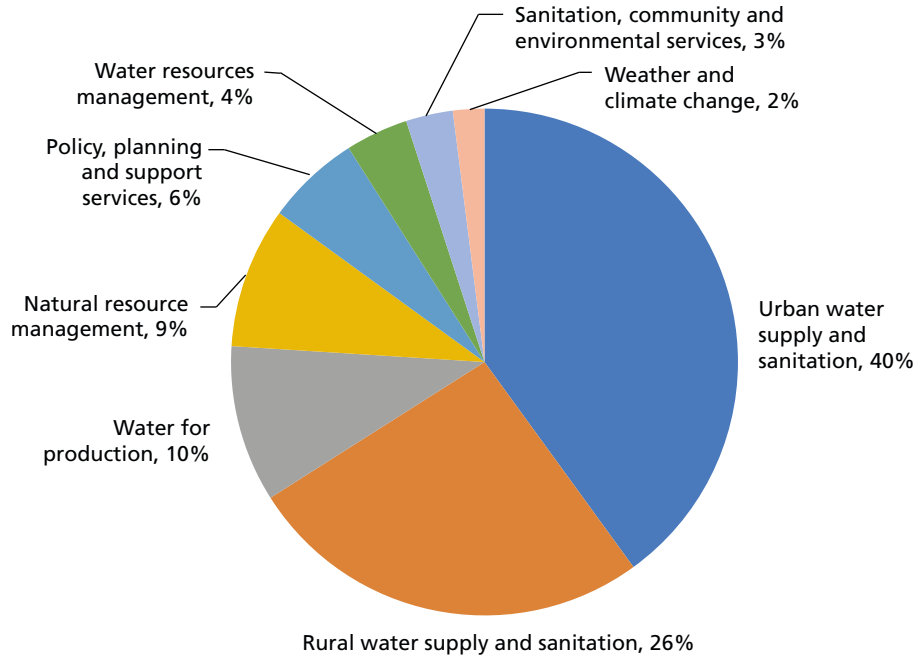
The current development agenda in Uganda is guided by Uganda Vision 2040 and the National Development Plan (NDP) (now in its second edition in a series of six). Uganda Vision 2040 promises universal access to water and sanitation to all Ugandans with access to safe piped-water and modern toilet facilities. Some of

the steps to achieve this vision involve government partnerships with the private sector to promote planned movement of people from scattered rural to planned settlements to ease delivery of utilities and services. During NDP II (FY 2015–16 to 2019–20), the WASH sub-sector focused on the following priority areas:

(i) Increasing access to safe water in rural and urban areas;
(ii) Increasing sanitation and hygiene levels in rural and urban areas;
(iii) Increasing functionality of water supply systems;
(iv) Incorporating gender concerns; and
(v) Implementing water resources management reforms and promoting catchment based integrated water resources management.

While the sector requires approximately UGX 6 trillion to achieve NDP II and Vision 2040 targets, there has been limited funding to achieve this target, a factor which erodes the minimal sector achievements in the face of the high population growth and urbanization rate.[61] NDP II contributes maximum in the water and sanitation sector[62] (see *Figure 18: Funding of NDP II for different sectors*).

Figure 18: Funding of NDP II for different sectors



Source: Civil Society Budget Advocacy Group. 2019. Adherence to NDP II Financing and Performance Commitments for Water, Hygiene and Sanitation (WASH) in Uganda. Final Report.

Since the 1990s, Uganda has developed policies and strategies for safe and sustainable sanitation. But strong implementation on the ground is the need of the hour (see *Table 10: Existing policies, strategies and regulations in Uganda*).[63]

Table 10: Existing policies, strategies and regulations in Uganda

Year	Policy, strategy or regulation
End 1990	The role of the government changed from service provision to overall sector planning, resource mobilization, policymaking, regulation and facilitation
1997	The Government of Uganda instituted the Poverty Eradication Action Plan (PEAP) as its overarching national framework for poverty eradication. PEAP promotes a multi-sectoral approach to development using the concepts of pillars to group its sectoral interventions and strategies.
1997	Uganda's Local Government (LG) Act (1997) mandates local governments at district and sub-county levels to provide services including sanitation to the community and the institutions. The Local Government Act also provides adequate support for operation and maintenance of water systems by users in liaison with the Ministry of Water and Environment.
1998	The National Sanitation Improvement Programme was introduced by the Ministry of Health. The overall objective of the National Sanitation Improvement Programme was to reduce disease through strategic interventions that would ensure a conducive legal framework, behavioural change, research, appropriate technology, capacity building and adequate resource mobilization.
2000	The National Sanitation Guidelines is one of the support manuals (developed by Ministry of Health) for district and urban councils to use in planning and promoting community-managed sanitation and hygiene in Uganda. The guidelines were prepared by implementers, promoters and supporters of programmes on sanitation and hygiene in the country. The objective of the guidelines were to provide recommendations for local authorities and promote a standardized approach for the development of sanitation and hygiene by the institutions and projects involved in the sector.
2000	The first Government and Development Partners' Annual Joint Sector Review on Rural Water and Sanitation Reform study was completed.
2001	A memorandum of understanding (MOU) was signed by the three ministries to achieve the objective of improved sanitation facilities in the country. The Ministry of Education and Sports (MoES), in line with the education sector investment plan (1998–2003), developed the 'Strategy Paper for the Promotion of Sanitation and Hygiene in Primary Education Sub-sector in Uganda', spelling out problem areas, strategies, structures systems, personnel and a work plan with costed activities. The objective was to address sanitation and hygiene in the primary education subsector while mainstreaming the roles and responsibilities of the MoES in water, sanitation and hygiene in primary schools in relation to that of other stakeholders such as government ministries, the private sector, NGOs and the community.
2001	The Ministry of Health introduced a strategy paper titled Sanitation and Hygiene Promotion Programming Guidance. One of the main goals of the Government of Uganda is to eradicate poverty. Sanitation promotion is a key element in the poverty eradication programme but has been nationally marginalized at the district and lower levels. Sanitation activities have not received adequate investments necessary for addressing the problems. There are inadequacies in the areas of political support, financial and human resources, collaboration and co-ordination. The paper provided an overview of the sanitation situation and the related constraints. It presented a strategy for sanitation and hygiene promotion.
2002	The five-year operational plan for rural water and sanitation was presented by the Directorate of Water Development as an investment plan to increase sustainable and equitable coverage from 54 per cent (in 2002) towards the targets set by the Poverty Eradication Action Plan and the Sanitation Sector Investment Plan. It presented the national programme of support that aims to build capacity of the sector and consolidate institutional reforms so that water and sanitation services can be implemented at an increasing pace. The plan also provided the basis for monitoring sector performance.
2006	The Improved Sanitation and Hygiene Promotion Financing Strategy (referred to as ISH) was developed by the National Sanitation Working Group (NSWG). Three ministries—the Ministry of Health, Ministry of Water and Environment, and Ministry of Education and Sports—were signatories of the MOU and are jointly responsible for improving sanitation conditions in Uganda. The ISH is a 10-year national strategy for financing improved sanitation and hygiene aimed at achieving national targets and the MDG.
2010	The first National Development Plan of Uganda was introduced. It aimed to address structural bottlenecks in the economy to accelerate socio-economic transformation and bring a portion of the third of the population out of poverty. The plan outlined the development priorities and implementation strategies to help achieve this.

Year	Policy, strategy or regulation
2015	The Water and Environmental Sector Development Plan was launched with special focus on key players in the sanitation sector. The sector strategic direction was put forward to achieve the objective of increase in access to improved sanitation in rural area, by paying special attention to the need of women and girls and other vulnerable groups. To achieve this objective, the following priority interventions have been kept in place: Strengthen collaboration, communication and cooperation among the institutions responsible for sanitation activities (MoH, MoES and MWE) and intensify collaboration with the local governments. Revitalize and strengthen the health inspection function across districts and sub-counties, especially by improving transport and establishing a sustainable mode for capacity building for the district and lower level staff. Enhance enforcement of the Public Health Act, sanitation ordinances and by-laws through lower level political structures. Promote elimination of open defecation to improve public health. Create demand for improved sanitation and hygiene using different methodologies, including home and school improvement campaigns and competitions, community-led total sanitation and behaviour change communication, including promotion of handwashing with soap and proper management of child faeces. Facilitate the development of the sanitation supply market, including promoting involvement of the private sector Promote ecological sanitation through waste reuse to increase agricultural production and prevent pollution of water sources and the environment.

Source: Compiled by CSE

Currently, various players are involved in institutional roles and responsibilities. The Ministry of Water and Environment is responsible for overall coordination, policy formulation, setting standards, inspection, monitoring, technical backup support and initiating legislation. The Ministry is comprised of three directorates, including the Directorate of Water Resources Management (DWRM), Directorate of Water Development (DWD) and Directorate of Environmental Affairs (DEA). In addition, the Ministry is supported by stand-alone departments such as the Finance and Administration Department, Water and Environment Sector Liaison Department, Policy and Planning Department responsible for the strategic planning, budgeting and monitoring, and Climate Change Department. Other institutions in the sector include the National Water and Sewerage Corporation, which is a public and state-owned utility currently providing (as in June 2015) water supply and sewerage services in 110 urban areas, including Kampala Capital City and its surroundings. Other key stakeholders include local government (LGs), development partners, civil society organizations (CSOs) and the private sector.

Local governments as well as private sector firms are the key implementers in the delivery of services in the sector. Likewise, development partners and civil society organizations offer much-desired support of government actions for service delivery. The major source of donor support to the sector originates from bilateral and multilateral financing windows such as the World Bank, the African Development Bank (AfDB), Food and Agricultural Organization (FAO), European Investment Bank, European Union, Germany (KfW/GIZ), Austria, France, Japan and Belgium.

The sector is guided by the Top Policy Management (TPM) headed by the senior minister and assisted by two ministers of state—for Water and for Environment respectively. The Water and Environment Sector Working Group (WESWG) is chaired by the Permanent Secretary and assisted by two co-chairpersons representing the Water and Sanitation donor group and the Environment and Natural Resources donor group. WESWG is responsible for overall sector coordination, resource mobilization and allocation as well as review of progress. The Water and Sanitation Sub-Sector Working Group (WSSWG) and the Environment and Natural Resources Subsector Working Group (ENR-SWG) are responsible for sector planning and priority setting, implementation, monitoring, supervision and management of their respective subsectors in support of WESWG. However, challenges in terms of inter-departmental coordination and cooperation exist because of which the pace of achieving sanitation goals suffer.

While the urban sanitation sector is better organized, rural sanitation needs attention. The challenges are as follows:[64]

1. Absence of adequate regulation in rural areas: While an urban regulation unit has been established, there is no separate regulation unit in the rural area. The Ministry of Water and Environment (MoWE) looks after the budgets and work plans, and provides technical support to district local governments, with the regulatory role of the ministry missing. The regulatory framework thus remains very weak.
2. Coordination among ministries: A memorandum of understanding to clarify roles and responsibilities for sanitation and hygiene between the MoWE, the MoH, and the Ministry of Education and Sports (MoES) was signed in 2001 but this does not mean that coordination among the ministries is adequately strong. The District Health Departments and Public Health Departments are responsible for the enforcement of public health legislation as well as sanitation and hygiene promotion. Despite the sizable healthcare network, which extends down to the village level, performance with respect to sanitation promotion is weak due to inadequate human and financial resources and poor incentives.
3. Lack of capacity at the local level: In addition to the limited support for local-level sanitation and hygiene promotion, there are local-level capacity constraints for the functioning of the rural water-supply systems. Communities are responsible for operating and maintaining communal rural water-supply and household sanitation facilities. Lack of continual motivation and training post construction of sanitation facilities make many toilets dysfunctional.

5. Suggested action plans to achieve the Sustainable Development Goal for sanitation

KEY POINTS

1. Most of Uganda—which is rural—uses unimproved sanitation, causing contamination of water sources.
2. The main causes of such unsafe sanitation practices are lack of investment in the sector, proper regulation, monitoring and evaluation, and availability of efficient technologies.
3. There is a need to develop a strong institutional framework for sustainable management of faecal sludge and wastewater management.
4. The country needs to rethink on technologies to treat black and grey water safely— there is also a need for major capacity building programmes.
5. The connection between water and toilets needs to be understood. To make toilets functional, one needs to a constant supply of water in toilets. Since the country depends mostly on underground water, Uganda needs to develop a strong policy for decentralized systems for harvesting rain.

Various reports show that most of the country uses unimproved sanitation. The number of people practising open defecation declined from 15 to 6 per cent between 2000 and 2017[65] but this does not confirm safe sanitation practices. Reports suggest faulty toilets contaminate the groundwater and springs in the surrounding areas resulting in diarrhoeal and other waterborne diseases.

This section suggests ways for Uganda to achieve the United Nation's Sustainable Development Goal (SDG) for sanitation in 2030. It discusses steps to improve existing policies and technologies to manage and treat or safely dispose of excreta and the wastewater.

To meet the sanitation goal of the SDG by 2030, Uganda is trying to learn from success stories from around the world with regard to behavioural change in the construction and usage of toilets. The country has been working with local and private organizations, non-profits and CSOs to motivate people to build toilets. According to a 2018 World Bank report,[66] the funding required to make the country open defecation free is daunting. The report explains that in one northern district, Agago, the planning approach suggests that an investment of UGX 25.5 billion (US $7.60 million) will be required by 2030, accounting for population growth. Using currently available annual funding allocations, it would take 68 years to achieve universal coverage.

India has worked hard in its latest sanitation programme, Swachh Bharat Mission (Clean India Mission), launched in 2014, to change the behaviour of the communities in adopting sanitation facilities at the household level.[67] The main impediments to adopting sanitation facilities were non-availability of land, water connections to toilets and safe technologies for management of excreta[68] (as per the Government of India, the cost of the toilets was covered to a great extent under government incentives). In many instances, communities also opted for open defecation due to non-availability of safe containment, options for treatment of sludge and water connections to toilets. It is seen that in many cases communities revert to open defecation for these reasons.

Moving towards an open-defecation-free state does not mean building any kind of toilet. The whole process of the sanitation chain—from safe containment to reuse options for decomposed excreta—should be considered. Availability of safe low-cost on-site sanitation technologies for different ecoregions of the country should be emphasized on.

Pits—mostly the traditional type—seems to be the most favoured option for managing excreta in Uganda. The exercise of management of excreta cannot stop at building pits or septic tanks. Options for emptying sludge from pits and septic tanks in accordance with WHO standards, transporting undigested sludge to treatment plants, and reusing or safely disposing of sludge should also be available. This huge gap in accessibility to a sanitation facility represents a major opportunity for policymakers, implementers and suppliers of sanitation products and services to assist households in adopting or improving their existing sanitation facilities.

We have seen in Chapter 2 that households do not receive any subsidy from the government for building toilets—they either use their own money or civil society organizations help them build toilets (see *Figure 4: Percentage of beneficiaries using safely managed facilities in rural Uganda in FY 2018–19* and *Figure 5: Percentage of beneficiaries using basic sanitation facilities in rural Uganda in FY 2018–19*). It is seen that from both the basic sanitation and safe sanitation categories, pit toilets are the most preferred type of toilet. Government agencies whose role is to make people aware about the use of toilets promote the pit toilets in different districts but seldom give guidelines about the emptying and treatment of the sludge. Most of the country is rural and uses traditional pit toilets—the pits are abandoned once it is filled up. The common practise is to transfer undigested or partially digested sludge to an adjacent pit or dig a new pit near the toilet. According to 2018 World Bank report,[69] many pit toilets are located in areas that vacuum tankers cannot reach since they are far from easy road access. Further, pumped systems can only work in sludge that is fairly liquid and contains little by way of solid matter, such as trash or garbage.

There is, however, significant demand for affordable manual emptying services. With very few exceptions, this tends to mean that informal manual pit-emptiers (also called midnight emptiers)—who use jerrycans, buckets, spades and barrels—are employed to remove some, and sometimes all, of a pit's contents.

The sludge removed by manual emptiers is most often buried nearby in a shallow pit or discharged to a road drain or onto a nearby open ground.[70] There have also been reports of faecal sludge emptied from big urban centres—faecal sludge treatment plants are only planned for such centres. How sludge is emptied from the pits in rural areas is not documented.

This clearly indicates the following challenges in the wastewater (grey and black) sector and in faecal sludge management (with a focus of rural areas, where most of the population dwells):
(i) Lack of proper regulation;
(ii) Lack of investment in infrastructure;
(iii) Use of efficient technologies; and
(iv) Lack of monitoring and awareness.

5.1 Setting up institutional framework for management of faecal sludge and wastewater in rural areas

This section suggests definite roles and responsibilities of the stakeholders.

Table 11: Proposed institutional roles for sustainable management of wastewater and faecal sludge in Uganda

Stakeholder	Asset ownership or expertise for improvement in state of sanitation	Sanitation facilities	Supporting capability	Functions	
				Step 1: Planning	Step 2: Operation and maintenance (policy and regulatory if any)
Individual household owners	Technologically safe toilets like pour-flush twin-pit toilets, VIP toilets, septic tanks and other on-site sanitation facilities according to different ecoregions in the country Toilets will have water supply for handwashing (and self-cleaning if not dry toilet)	Adequate number of toilets, no contamination of water and soil No fresh handling of sewage		Showing interest in construction of toilets Expressing the need for water supply to the toilets (for self-cleaning and/ or handwashing) Building water and sanitation committees for management of water and sanitation	Building and using toilets regularly Paying tariff for sanitation services and water supply to the committees Putting up issues regarding toilet construction and usage in committee meetings Reporting issues on emptying, collection and transport of sludge to the committee

Stakeholder	Asset ownership or expertise for improvement in state of sanitation	Sanitation facilities	Supporting capability	Functions	
				Step 1: Planning	Step 2: Operation and maintenance (policy and regulatory if any)
Toilet owner association/ water sanitation committees	Technologically safe community toilets (where more than one toilet unit occurs) like pour-flush twin-pit toilets, VIP toilets, septic tanks and other on-site sanitation facilities according to different ecoregions in the country Toilets will have water supply for hand washing (and self-cleaning if not dry toilet)	Adequate number of toilets, no contamination of water and soil No fresh handling of sewage		Showing interest in construction of toilets Arranging or planning for resources/ materials for toilet construction Arranging for water supply to toilets (for self-cleaning and/or handwashing)	Handling the funds and resources/materials Monitoring the quality of toilets and their use and maintaining a steady source of water supply to these toilets Reporting issues on emptying, collection and transport of sludge to the water and environmental sanitation department
Sub-county (Local Council 3)	Collection and transportation equipment for faecal sludge Open drains for carrying grey water out of single and cluster households In charge of treatment systems for grey water (decentralized) In charge of faecal sludge treatment system In charge of water supply to the toilets		Having a menu of safe technologies available for management of faecal sludge and grey and black water	Making the community aware of safe technologies Deciding the type of safe technology suitable for a particular ecoregion Coordinating with the toilet owner association/water sanitation committees Taking part in, allocating contract and commissioning projects to private parties Involving itself in supervision of the implementation of the decentralized systems (for faecal sludge and wastewater) Involving itself in the sustainability of water sources (through different rainwater harvesting techniques)	Making the community aware of safe technologies Deciding the type of safe technology suitable for a particular ecoregion Coordinating with the toilet owner association/ water sanitation committees Taking part in, allocating contract and commissioning projects to private parties Involving itself in supervision of the implementation of the decentralized systems (for faecal sludge and wastewater) Involving itself in the sustainability of water sources (through different rainwater harvesting techniques)

Stakeholder	Asset ownership or expertise for improvement in state of sanitation	Sanitation facilities	Supporting capability	Functions	
				Step 1: Planning	Step 2: Operation and maintenance (policy and regulatory if any)
District (Local Council 5)	Collection and transportation equipment for faecal sludge In charge of decentralized wastewater systems and faecal sludge treatment systems		Politically can promote the provision of excreta and wastewater management	Defining appropriate standards for treated wastewater and faecal sludge Spreading awareness on faecal sludge and wastewater and sensitizing the community for effective treatment and reuse Monitoring infrastructures Coordinating with stakeholders Building capacity of the artisans in the construction of decentralized systems of culturally acceptable and affordable treatment of excreta, wastewater and water management systems	Enacting by-laws of excreta and wastewater management Mandating provisions of such sanitary conveniences in large public gatherings. Makes provisions for approvals before such gathering Setting out the structure of tariff Monitoring contractors Monitoring the work schedule of the water and environmental sanitation department Monitoring performance of the decentralized systems Developing health and safety guidelines for users, workers, farmers and communities at different stages of the sanitation value chain from user interface to reuse applications (based on guidelines from WHO publications on safe use of excreta and sanitation safety planning) Enacting reuse regulations based on market demand, application guidelines based on agronomic trials, etc.

Stakeholder	Asset ownership or expertise for improvement in state of sanitation	Sanitation facilities	Supporting capability	Functions	
				Step 1: Planning	Step 2: Operation and maintenance (policy and regulatory if any)
Ministry of Water and Environment			Can promote politically provision of excreta and wastewater management	Sourcing funds Commissioning research studies and capacity-building programmes on culturally acceptable and economic management of faecal sludge and wastewater Building awareness on faecal sludge (and wastewater) management of the local government authorities and state representatives and providing technical support for pilot projects, if requested Approving major decisions in the local government areas and the states Supporting public awareness on wastewater and faecal sludge management Getting involved in overall supervision	Developing, reviewing and updating periodically policy guidelines for wastewater and faecal sludge management Recommending inputs for the local government authorities' faecal sludge management by-laws. This can be done in coordination with the Ministry of Health and Ministry of Education. Working with the Ministry of Agriculture, Animal Industry and Fisheries and Ministry of Lands, Housing and Urban Development to simplify the process for securing license for using and marketing of compost or organic fertilizer produced (if any) at faecal sludge treatment facilities

Stakeholder	Asset ownership or expertise for improvement in state of sanitation	Sanitation facilities	Supporting capability	Functions	
				Step 1: Planning	Step 2: Operation and maintenance (policy and regulatory if any)
Private sector (including end-use industries)	Collection and transportation equipment for faecal sludge Laboratories to test the quality of the treated faecal sludge and wastewater		Have a menu of safe technologies available for management of faecal sludge and grey and black water Research capabilities	Developing partnership with local government authorities in projects Supporting Local Council 5 to design appropriate cost-effective technologies for the communities Helping Local Council 5 with research projects for the management of faecal sludge and wastewater Supporting public awareness on wastewater and faecal sludge management Supporting Local Council 5 on cost recovery of the infrastructure implemented Buying end products of faecal sludge and treated wastewater (e.g. in agricultural industry)	Following the mandate of the faecal sludge management by-law

Stakeholder	Asset ownership or expertise for improvement in state of sanitation	Sanitation facilities	Supporting capability	Functions	
				Step 1: Planning	Step 2: Operation and maintenance (policy and regulatory if any)
Civil society organizations and NGOs	Awareness tools		Research capabilities	Supporting public awareness on appropriate toilet technologies Motivating the community to build systems to treat the faecal sludge and wastewater Promoting strategies of the water and environmental sanitation department in selecting service providers for collecting, transporting, treating and safely disposing of faecal sludge	

Compiled by CSE

Capacity-building and awareness activities should be undertaken for users, government bodies and private players with regard not only to available technologies for treatment of excreta but also emptying pits and septic tanks, collecting sludge, transporting, treating and disposing of both faecal sludge and wastewater (grey and black water). Designs for septic tanks and dual pits/ ventilated improved pits should be part of capacity-building programmes for both government representatives and private players. It is also important to make civil society organizations (CSOs), non-profits, communities, self-help groups and artisans aware about the safety standards under information education and communication (IEC) activities.

Regulations for faecal sludge management

This section details the proper guideline framework for the by-law. The following points are defined clearly for this purpose:

i. Each step of sanitation value chain—the design, operation and maintenance of the system—should be well defined;
ii. Insanitary toilets should be retrofitted or converted to sanitary ones;
iii. Incentives should be given to communities interested in retrofitting;
iv. Licence should be issued private service-providers; and
v. Incentives should be given for sanitation services, and penalties to service providers for violation of rules.

A. Who will be responsible? The district authority (local council) shall be in charge of defining the roles and responsibilities of the stakeholders,

developing the institutional framework and enforcing the bylaw of the faecal sludge (and wastewater) management systems.

B. Applicability of the regulation: The regulation has been designed for rural areas, small towns with focus on on-site sanitation.

C. Activities proposed under this regulation:
The following activities have been proposed:

Retrofitting or conversion of insanitary toilets to sanitary toilets: A database of improperly built toilets (i.e. those that did not follow safe norms or failed to take into consideration soil strength, type and hydro-geological condition) should be developed. Geo-tagging of all existing toilets will be beneficial. Households should be informed about insanitary conditions. Incentive in form of discounts on tariffs on water or any other services provided to the community (or households) should be provided for such retrofitting. Communities, households and neighbourhoods should be made aware about the regular schedule for removing sludge from pits and septic tanks. As toilets will be linked to GIS, de-sludging as per schedule can be regularly monitored.

Emptying and collection of faecal sludge: Pit toilets (drop holes) with slabs and septic tanks need to be de-sludged by private de-sludgers. (Although drop holes with slabs have not been considered sanitary as per this document, in view of the fact that many in rural areas have opted for them, this document also suggests options for de-sludging these toilets). Twin-pit toilets or ventilated improved pit toilets should have honeycomb brick walls for degradation of the sludge and absorption of the liquid in the twin leach pit below the ground. As one pit is filled, the other pit gets ample time to decompose the faecal sludge, and the decomposed sludge can be emptied by household owners or toilet-owners association. All the existing septic tanks should have access covers for each chamber so that they can be easily opened during the emptying process. Where covers are not available, it should be made compulsory for all property owners to provide proper covers. New septic tanks need to be designed and constructed.

When private de-sludgers are engaged, they should apply for a licence from the local government authority. The term of the license should be for a maximum of five years. The database of licensed de-sludgers should be made available to the communities through ministry portals, newspaper and even local advertisements. After de-sludging, the operator must ensure cleanliness of the area. Any leaks must be disinfected with bleach solution or by spreading lime over the spillage. It is the collection operator's responsibility to verify that sufficient disinfectant (bleach or lime) is on the truck prior to dispatching it for service. Desludging workers must wear appropriate personal protective equipment, including rubber gloves, rubber boots, a face mask and eye protection.

After the pumping activities, operators should wash their hands with soap. Collection should preferably be done when traffic in the area is light. All collection vehicles should have early warning devices and traffic cones should be placed at the back and front of the vehicle during operation. It is the responsibility of the

collection operator to check the truck's safety equipment daily prior to dispatching the unit for service. Any safety equipment deficiencies should be reported to the supervisor and repaired before dispatch. The community should directly upload the feedback of the private operator on the web portal of the local government authority. The service provider must maintain a record-keeping system about households served and land application as per the local ordinance. Based on the feedback of the community, the service provider will be allotted future contracts; in case of malfunction, the local government authority shall cancel the licence.

Transportation of faecal sludge: The traffic police should keep a track of whether the de-sludgers are plying with a valid license. The operators identified by the government agency must have vehicles for transportation that meet the standards of the local ordinance. The workers shall be trained enough to handle the waste. To avoid any leak or spill from the vehicles during transport, all the inlets and outlets should be constructed with leak-proof materials and maintained regularly; to avoid flooding or spraying at the receiving area, the discharge outlets should be designed accordingly. The vehicle shall be painted to mark very clearly to the public that it is carrying untreated sewage. The trucks shall be tracked through GPS tracking system for monitoring purpose. In the event of accidental spillage of the sludge, the operator should immediately take action to contain the sludge, minimize the environmental impact, and begin clean-up procedures. The operator shall notify the concerned officials about the spillage and the nature of remedial action within 24 hours. Penalties may be imposed on the operators who do not comply with the guidelines.

Issuing a licence for collection and transportation of faecal sludge: Every service vehicle applying for a licence needs to comply with the following:

a. The applicant shall display the company name, company logo, contact number and business registration number of the transporting vehicle on both sides;
b. The applicant shall display the service area and final point where the sludge will be transported;
c. The applicant shall have vehicles that have leak-proof bodies and a strong locking mechanism to withstand collision with heavy and strong vehicles and structures; and
d. The workers should be well trained and must wear appropriate personal protective equipment (PPE).

Once the licence is received, the copy of the license should be displayed on the transport vehicle.

Investment options

The sanitation projects for the management of sludge may be are implemented through government, funding from CSPs, donors or international NGOs, or through user fees. Government and international NGOs generally have programmes or schemes for construction of toilets, faecal sludge treatment plants, vacuum tankers etc. There are also funds available for the local government authorities to prepare feasibility reports and detailed project reports (DPRs) as well as for awareness and communication strategies.

Box 2: PPP model for faecal sludge treatment plant at Leh

Situated in the Himalayas at an altitude of over 3,500 metres above sea level, with a harsh climate (the temperature ranges from –40°C to 35°C, with seven months of severe winter), Leh is a popular tourist destination, with 250,000 annual visitors. Inadequate sanitation infrastructure and services has led to groundwater contamination.

The local government indentified an urgent need for improved faecal sludge management, but lacked the funds and technical expertise to operate the faecal sludge management services in the town. Bremen Overseas Research and Development Association (BORDA), an international non-profit facilitated a partnered with Blue Water Company (BWC), a private provider of turnkey wastewater management solutions, to implement and manage every aspect of faecal sludge managementin Leh, India. BWC financed, build and profitably operates the faecal sludge treatment plant on town-owned land. The town collects fees from customers, which are in turn paid to BWC for complete service of faecal sludge management provision.

From signing the contract to operational faecal sludge management for all residents and hotels took less than four months. This is a performance-linked payment and the investment is 100 per cent private. The treatment plant was commissioned in 2017.

Source: Sunita Narain, Sushmita Sengupta, Rashmi Verma and Heli Shah, 2019, Nigeria: Improving the State of Sanitation, Centre for Science and Environment, New Delhi

Apart from this, public–private partnerships may be an option for funding through which the state can bridge the gap due to lack of technical knowledge and financial deficit (see Box 2: *PPP model for faecal sludge treatment plant at Leh.*

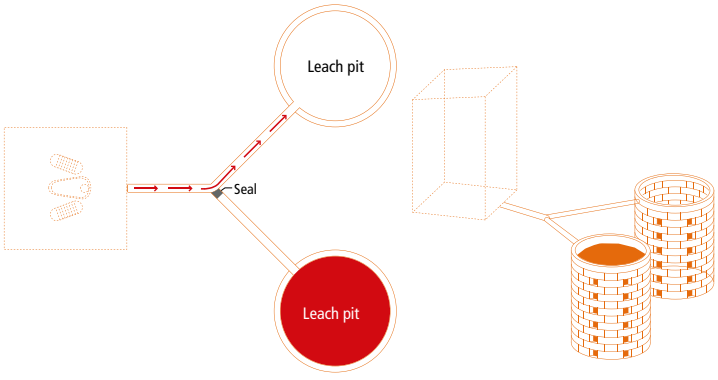
5.2 Improving the toilet designs, FSM and making water available to toilets

There are critical issues with toilet design and faecal sludge management in Uganda. Several technological options can be used to tackle the issues of sanitation in the country. However, lack of knowledge of what households might desire for their sanitation solutions is the biggest issue.

On-site toilet technologies

The following are on-site toilet technologies:

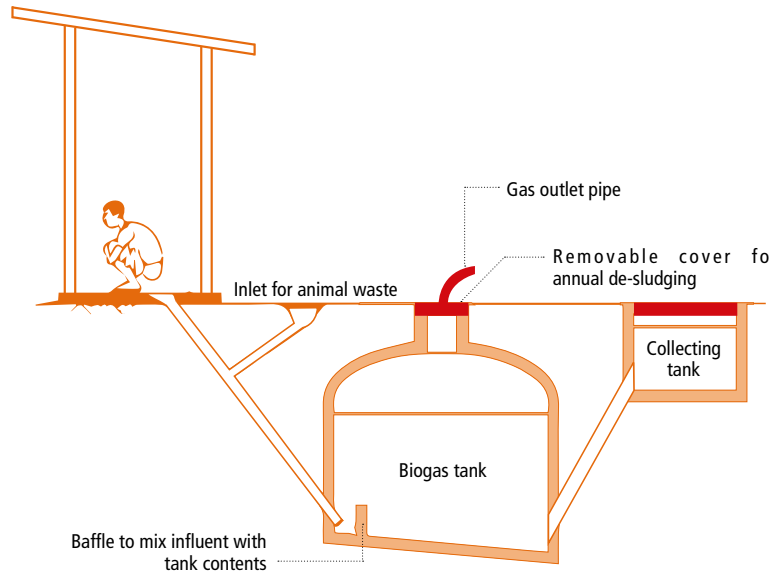
1. Dual pit toilet system



- Dual pits can are used alternately.
- Both pits are connected with a junction chamber.
- Pit walls have a honeycomb structure.
- The bottom of the pit is not plastered and is earthen.
- Capacity of each pit is normally kept for three years.
- After filling up of first pit, it is blocked at the junction chamber and second pit is put in operation.
- Dug out by beneficiaries and digested sludge is used for agriculture and horticulture purposes.

Source: Tilley, E. et al. 2014. Compendium of Sanitation Systems and Technologies. 2nd Revised Edition. Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland

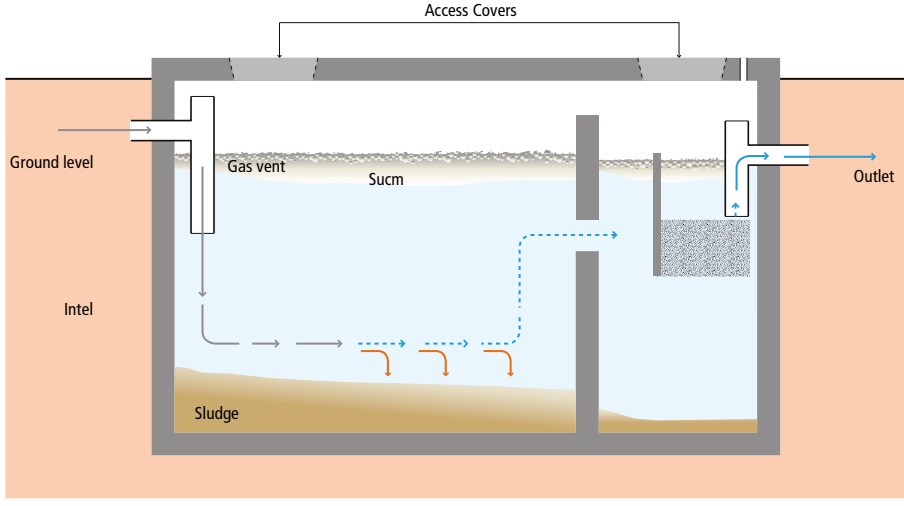
2. Toilet-linked biogas plant



- Human waste along with animal waste is dumped into the biogas tank.
- Biogas is produced through anaerobic digestion.
- Design of biogas tank depends on quality and quantity of such wastes.
- Total amount of biogas of one cubic metre can be produced per day from a family of five with two cattle heads

Source: Franceys, R., Pickford, J. and Reed, R., A. 1992. Guide to the Development of On-site Sanitation, WHO, Geneva

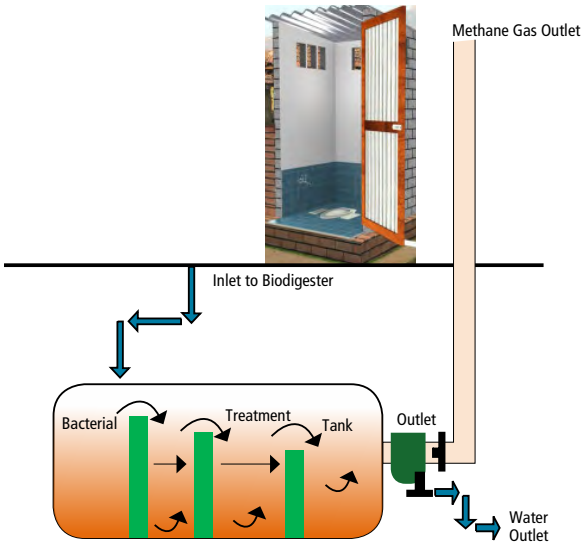
3. Septic tank (two-chambered with filter)



- Septic tank is a watertight chamber made of concrete, fibre glass, PVC or plastic.
- Settling and anaerobic processes reduce solids and organics. Include two chambers with a single filtration chamber resulting in improved treatment.
- As wastewater flows through the filter, particles are trapped and organic matter is degraded by the active biomass that is attached to the surface of the filter material

Source: Rohilla, S. et al. 2019, Integrated Wastewater and Faecal Sludge Management for Ghana: Draft Guidelines, Centre for Science and Environment, New Delhi.

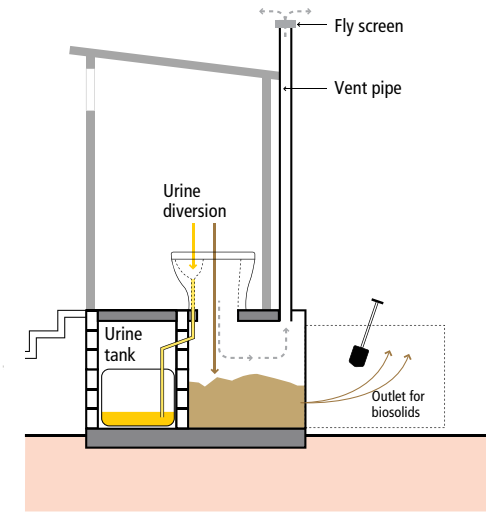
4. DRDO—Biodigester toilet



- Biodigester toilet (bio toilet) is developed by Defence Research and Development Organization (DRDO), a premier Research and Development Organization of India, for the treatment of toilet wastewater.
- Normally for a household, these bio toilets are filled up to 1/3rd of its volume by inoculums to activate digestion process.
- Usually, the effluent is connected to a soakage pit

Source: Banka bioloo

5. EcoSan toilets



- EcoSan is a dry toilet, with limited or no use of water.
- Excreta and urine are collected in two different structures.
- Excreta are biologically decomposed by microorganisms (mainly bacteria and fungi).
- The ready compost is a stable, inoffensive product that can be safely handled and used as a soil conditioner

Source: Tilley, E. et al. 2014. Compendium of Sanitation Systems and Technologies. Second revised edition. Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland.

Table 12: Capital cost for different containment technologies

Toilet model	Capital cost (in US$)	Number of pits	Type of toilet
Dual pit pour flush toilet with cemented superstructure (for household of five)	170	Honeycomb brickwork twin leach-pit	Pour flush
Biogas-linked toilet (household of five)	300	No pit	Pour flush
Dual-pit pour-flush toilet with superstructure from locally available material (household of five)	160	Perforated cement ringed twin leach-pit toilet	Pour flush
EcoSan (household of five)	160	No pit	Not applicable (very low water required)
Septic tank/advanced septic tank	320–340	Soakaway pit at the end of the advanced septic tank	Flush toilet

Note: Cost is indicative only. It will vary with the type of soil, availability and cost of materials and labour

Source: Compiled by CSE

If on-site treatment technologies work effectively, further treatment of black water or faecal sludge is not required or is very minimal. But this is seldom found to happen. This part of the section deals with the treatment options for black and grey water along with faecal sludge for rural Uganda. It explains treatment at the household and neighbourhood levels (see *Table 13: Proposed treatment options for wastewater at the household and neighbourhood levels in Uganda*) as well as at a larger level—at faecal sludge treatment plants (see *Table 14: Steps at faecal sludge treatment plants suggested for Uganda*). Faecal sludge from different rural areas or small towns may be brought and treated together at these plants.

Table 13: Proposed treatment options for wastewater at the household and neighbourhood levels in Uganda

Type of treatment	Scale	Description	Advantages	Suitability
Leach pits	Individual household	Planned only for wastewater from kitchen and bathroom Brick-lined single circular pit using honeycomb masonry Diameter of pit approximately 1 metre Wastewater percolates into the ground Pit to have insect-proof cover with inlet pipe using a water-seal trap to avoid mosquito breeding	Can handle larger volumes of water than a traditional soak pit Prevents water stagnation Prevents vector breeding Can be managed easily by household owner	Suitable in areas where groundwater is deep
Kitchen garden	Individual household	Planned only for wastewater from kitchen and bathroom Wastewater is passed through a silt and grease trap to remove debris and into a simple surface irrigation system or into a piped root zone water system The root system has the added feature of a filter bed around the PVC pipes which further filters the water before it reaches the plants.	Simple and cost-effective technology Prevents water stagnation Prevents vector breeding Supports growth of plants Can be managed easily by the household owner	Suitable in any type of soil
Anaerobic baffle reactor	Community	Wastewater passed through series of reinforced cement concrete (RCC), stone-masonry tanks (three or more) brought through locally laid drainage lines Drainage system may carry both black and grey water or either of them to the system Treatment takes place by microbial activity	Treated water can be stored and used when needed	Suitable in small towns, where cost is not a constraint
Waste stabilization ponds (WSP)	Community	Wastewater from local laid out drainage system passed through large shallow basins or ponds placed in a series Drainage system may carry both black and grey water or either of them to the system	Capital cost is very low Natural process operation and maintenance cost is low Can be managed by the community	Suitable in areas where groundwater is deep

Type of treatment	Scale	Description	Advantages	Suitability
Constructed wetland	Community	Wastewater from local laid out drainage system passed into the wetlands Drainage system may carry both black and grey water or either of them to the system The wastewater into the wetland has to be channelized within the wetland and water may be sprayed vertically or horizontally (see Fig. 25: Horizontal subsurface flow constructed wetland and Fig. 26: Vertical flow constructed wetland) Masonry or natural structures planted with wetland plants and supported by gravel and boulders at the bottom The process uses natural biological process of plants and soil to clean water	Is technically simple Is ecologically sustainable Can handle large variety of pollutants	Suitable in rural areas
Soil biotech-nology	Community	Wastewater from local laid out drainage system passed into the system Drainage system may carry both black and grey water or either one of them to the system RCC, stone-masonry or soil bunds and consists of an impervious containment An under-drain layer lies at the bottom above which lies a layer of media housing microbial culture and plants Physical (like sedimentation, infiltration) and biochemical processes are carried out to treat wastewater	No sludge production No odour Duration of treatment is small Treated water can be stored and used when needed Considered as one of the most efficient treatment technologies	Suitable in small towns, where cost is not a constraint

Source: Compiled by CSE

Table 14: Steps at faecal sludge treatment plants proposed for Uganda

Primary treatment of faecal sludge		
Types	**Features**	**Advantages**
Sedimentation tanks	One or more series of ponds The first pond is anaerobic pond and the second is a facultative pond, followed by maturation ponds Residential time is more	Cost effective with low energy needs Simple to operate Reuse of effluent in agriculture Can handle shock load
Reed bed filters/ constructed wetland	De-watering technique Planted sealed shallow concrete structure filled with filter materials Provides solid liquid separation Sludge dried naturally by percolation and evaporation	Low capital and energy cost Low odour High quality of treated liquid O&M cost low
Post treatment of faecal sludge		
Types	Features	Advantages
Co-composting	Stabilization of organic material through aerobic decomposition process Solid is mixed with bulking agent (solid waste) and aerated mechanically High temperature kills pathogens Results in humus-like material	End product is safe and marketable Supports nutrient cycle for agriculture Low cost and simple technology
Stabilization ponds	One or more series of ponds Function same as sedimentation pond Residential time is less Optimum pathogen reduction	Simple and reliable process to achieve desired water quality

Source: Compiled by CSE

Undigested sludge can be co-treated with sewage. For this, existing sewage treatment plants or effluent treatment plants can be used or new facilities can be created. Wherever a sewage treatment plant is located near a settlement, provisions should be made to carry undigested sludge to the treatment facility so that it can be co-treated with sewage.

5.3 Water availability for toilets

The Rural Water Supply and Sanitation Department (RWSSD) under the Directorate of Water Development in the Ministry of Water and Environment is responsible for the provision of safe water and sanitation services in rural areas across the country. The department coordinates the utilization of the District Water and Sanitation Conditional Grant (DWSCG) to district local governments (DLGs), providing support to the planning and development of water supply and sanitation projects (large gravity flow schemes, large motorized piped water schemes and solar powered mini-piped water systems) and the promotion of appropriate technologies and sanitation practices in rural areas. The provision of rural water supply and sanitation covers communities or villages with scattered population in settlements up to 1,500 people, and Rural Growth Centres (RGCs) with populations between 1,500 and 5,000. As of June 2018, the national safe water coverage in rural areas was estimated at 70 per cent. Out of the 57,974 rural villages in Uganda, 38,183 (66 per cent) of the villages had some source of water supply and the functionality for rural water supplies is at 85 per cent in FY 2017–18.[71] The households use the available water for cooking, drinking

and washing and using it for sanitation is the last priority. For sustaining the long-term maintenance of toilets, the water availability is much needed. There is a gap in understanding that water and toilets are correlated. Unless there is equal expenditure on resources for development of both sanitation as well as water availability, people will abstain from using toilets on a regular basis. Hence initiatives should be taken to construct toilets which are less water-intensive, especially for the population in the rural areas. Since a large percentage of the population depends on borewells or tube wells,[72] a scheme for harvesting rainwater should be prioritized in the country. The potential of rainwater as a sustainable water source is less explored. There is great potential to use rainwater to meet water needs (see *Box 3: Potential for water harvesting to meet Uganda's household water needs*).

BOX 3: Potential for water harvesting to meet Uganda's household water needs

Population* = 42.8 million
Land area** = 24.1 million hectares

Average household requirement in rural households = 55 litres/day/person (based on India's rural household requirement, which is much higher than what is currently supplied to Ugandan rural households)
Average annual rainfall at national level = 1,000 mm

Annual water requirement in a year for a population of 42.8 million at the rate of 55 litres per capita per day (as per India's rural water supply) = 859 billion litres

Land requirement = 0.18 million hectares = 0.71 per cent of the land availability (assuming that the collection efficiency is just 50 per cent)

** United Nations Children's Fund (UNICEF) and World Health Organization (WHO), 2019. Progress on household drinking water, sanitation and hygiene 2000-2017. Special focus on inequalities*

*** https://worldpopulationreview.com/countries/uganda-population/*

Source: Agarwal, A., Narain, S. 1997. Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting Systems (State of India's Environment, Volume 4). Centre for Science and Environment, p. 29.

There is a gap in understanding that water and toilets are correlated. Unless there is equal expenditure on resources for development of both sanitation as well as water availability, people will abstain from using toilets on a regular basis. Hence initiatives should be taken to construct toilets which are less water-intensive, especially for the population in the poorest quintile. Since a large percentage of the population depends on borewells or tube wells, a scheme for harvesting rainwater should be prioritized in the country.

Proposed steps for the country:

1. Introduce a policy of small-scale water-harvesting systems: National policies should be worked out to encourage the growth of small water-harvesting systems. The systems should be planned and managed by the community.
2. Revive the traditional water-harvesting systems: Uganda has a system of collecting rainfall in tanks on roofs and other catchments and reusing it.

These systems should be revived. A healthy mix of traditional and modern systems should be used but priorities should be given to traditional systems as they conserve rainwater.

3. Focus on sponges: Waterbodies should be protected and created, and communities should revive degraded waterbodies, with minimal involvement of the states. The emphasis should be not on community participation but on community governance. This implies not merely the social management of a water-harvesting structure handed over by the state but the involvement of the community in both its planning and implementation.
4. Involve women and girls in all the stages of the project: Women should also be equally included in the planning, design and implementation of such projects as women and adolescent girls are worst affected by water scarcity and play an important role in carrying water from far-flung places.
5. Capacity building of the communities: Major investments have to be made to increase the capacity of communities so that they efficiently operate and maintain the rainwater harvesting structures (including lakes and waterbodies) in different ecological regions.
6. Communities to be motivated for ownership: Finances for the initial construction and rehabilitation of the water-harvesting structure should come from the community as much as possible. At least 25–30 per cent can be obtained from the community, provided the investment planning for rehabilitation is undertaken by the community itself, with state agencies and other external agencies playing only a supportive role. The exact modalities of financing and cost recovery should be best left to the community.
7. The community must contribute effectively at all stages of the project. While state subsidies may be necessary, their level should be decided according to the community needs and regional specificities. Further, greater emphasis has to be on subsidies to the community rather than on private subsidies to individuals.
8. Incentivize the communities for decentralized water supply projects: The state rural water supply and sanitation agencies should incentivize the communities going for source sustainability projects for water supply through harvesting rain in the form of awards and discounts in water tariffs.
9. Sustainable water supply to functional toilets: Once rural areas are declared open defecation free, they should have a steady source of water to their toilets for regular use (if flush or pour flush toilets) as well as for self and hand-washing purposes. Water and environmental sanitation departments should help communities plan and implement decentralized water-supply projects for this purpose.

5.4 Fixing gaps in existing policies and regulations

Uganda probably offers a good example of well-written national policies, but the task is with implementation in a decentralized environment. In general, the major difficulty is in creating an environment in which national policy is implemented at the lowest level of government. It is quite common to find local governments lacking the technical, managerial, and financial capacity to address sanitation needs. Programmes also tend to focus on facilities and give less attention to health and hygiene promotion. In sanitation sector key gaps are been identified related to leadership, institutional arrangements, by-laws, capacity development and

policy frameworks (see *Table 15: Gap identification in key functional domains in sanitation sector in Uganda focussing on rural areas*).

Table 15: Gap identification in key functional domains in sanitation sector in Uganda focussing on rural areas

Functional domain	Identified gaps
Political leadership	Sanitation in development agenda but discrepancy exists between commitment and resource allocation
Policy/institutional arrangement	Only restricted to policy formulation and planning
Decentralization	Complex organization; shift is predominantly towards markets; citizens viewed as customers
Norms/community by-laws	Addressed predominantly through CLTS (rural tool) and sanitation marketing (rural and urban tool) under Ministry of Water and Environment and Ministry of Health
Policy, planning or strategy	Lacks resources for implementation
Budgeting and financing	0.5 per cent GDP allocation not yet implemented, funding still not sufficient to drive change at scale; Investment priority is on urban sanitation and sewerage arrangements; Sector is donor-dependent
Monitoring and evaluation	Accountability gaps
Capacity development	Large capacity gap especially at the district level
Laws and regulations	Ample laws and regulations but enforcement is challenging partly due to context-specific compliance barriers

Source: Nelson Ekane et al. 2020. Linking sanitation policy to service delivery in Rwanda and Uganda: From words to action. Dev Policy Rev.38:344–65.

Over the last two decades there has been a strong political momentum for strengthening sanitation promotion. This has led to significant developments in the sector regarding policy on the promotion of sanitation in Uganda. This political goodwill still exists right from the highest political office of the President to the lower levels of leadership. Furthermore, the decentralization policy on governance allows for district local governments to take a lead in policy and regulation formulation through the relevant sector. There are several committees at district level that are multipurpose bodies responsible for planning and implementing a range of development activities, for example, the local councils, Parish Development Committees (PDCs) and the Sectoral Committees at the various levels of political organization. There is no need to create new structures in Uganda but it is necessary to work with the existing structures to advocate and promote the sustainable sanitation. Therefore, the existence of national sanitation policies and guidelines can serve as a key stimulus to local action by working through the existing structures mentioned to translate national policy into local action and for local initiatives that should fit in the overall sanitation strategy. The district mechanisms, projects, programmes, local CSOs and NGOs can be used to turn the good national policies into actions that will promote ecosan.

Action plan for fixing gaps

1. Development of policy as a social mobilization process. The supportive policies should be framed to provide the better planning and implementation sanitation programmes in the rural areas
2. The decentralization of responsibilities is critical to loosen the highly complex system of planning, enforcing regulations and allocating resources at the rural areas.
3. The skill development and capacity building of local government is very much essential to strengthen the sanitation sector. For this, conditional grants should be provided by the central government to districts for rural areas and small towns.
4. There is a need to strengthen the implementation mechanisms of the Environmental Health Division at national, district and lower levels. An opportunity exists for the review and development of relevant policy and guidelines.
5. Although the Ministry of Agriculture, Animal Industry and Fisheries has a policy regarding the use of compost as a fertilizer and soil improver, it does not yet have a concrete policy on the re-use of nutrients in sanitized human excreta as a valuable resource for agricultural purposes. If this were to be developed recirculating systems would benefit.
6. There is also need of a development of policy for the reuse of wastewater for the rural areas

5.5 Learnings from best practices on behaviour changes

This section details best case practices on behaviour changes from South Asia and Africa, whereby communities not only built toilets but also started using them. It clearly identifies the ways in which such changes can be brought about at the country, state and local levels.[73]

(a) COUNTRY LEVEL

Case study: Bangladesh

Bangladesh's drive to improve sanitation started in 2003, after its first nationwide baseline survey. According to the Department of Public Health and Engineering (DPHE), the survey during this time revealed that only 33 per cent of Bangladesh's population had improved (pit latrines with slab) sanitation while 42 per cent had no toilets. Shortly thereafter, political commitment and a multi-stakeholder approach helped improve sanitation coverage in the country. According to a 2019 JMP Report, the country has become open-defecation free, with 48.2 per cent of the population using basic latrines. Around 29.1 per cent of the population uses unimproved latrines and 22.7 per cent share latrines. The report states that open defecation reduced from 32 per cent in 1990 to 1.3 per cent in 2015 and to nil in 2017.

What worked in Bangladesh?

I. The strategy of containment of faeces helped people understand how to use toilets and improved environmental sanitation, paving the way for moving up the sanitation ladder: The movement to get people to defecate at one location, using any sort of toilet, started in the 1970s. The Department of Public Health and Engineering, with the help of UNICEF and WHO, initiated the introduction of sanitary latrines on a limited scale in the 1970s. DPHE engineers designed high-quality, high-cost toilets and promoted several technologies, worked with NGOs and the private sector, and coordinated and monitored activities at the field level. Toilets were installed free of charge as demonstration models. The premise was that this would attract people's attention and they would install more on their own. The idea was to get people used to the idea of toilets and then, as resources permitted, move them up the sanitation ladder.

II. NGOs, entrepreneurs and microfinance institutions helped supplement and accelerate government programmes along with the development agencies: In 1991, the government formulated a ten-year sanitation strategy. In 1993, it launched a social mobilization (SOC-MOB) approach jointly with UNICEF with the objective of improving safe disposal of excreta, promoting personal hygiene and increasing the use of safe water for domestic purposes. The strategies of SOC-MOB included increased involvement of the community in planning and implementation, strengthening programme communication and training, forging alliances with partners and achieving political and social commitment. In 2003, the government declared a time-bound target to achieve sanitation for all. It started the national sanitation campaign with

Community-led Total Sanitation (CLTS). CLTS motivates and empowers rural communities to stop open defecation and build and use latrines without subsidies. Local people analyse their sanitation profile, including open defecation, and assess the faecal–oral contamination routes that affect everybody. This inspires them to stop open defecation and improve sanitation. The role of NGOs is to facilitate and improve the capacity of the stakeholders. With the support of development agencies, such as the Bill and Melinda Gates Foundation, DPHE and NGOs provide finance and technology and supply hardware to the community and local government institutions. Entrepreneurs train in business development and toilet technologies, microfinance institutions provide soft loans, implementing NGOs help create linkages with local government institutions, which in turn direct financial support towards the poor.

III. Political commitment at all levels, from the federal government to the ward level, ensured sanitation gets priority and resources: At the national level, the local government department (LGD) and National Sanitation Task Force Committee developed the National Action Programme monitoring was an important part of the programme. The programme included a baseline survey, community mobilization and preparation of action plans that include implementation and monitoring. The action plans enhanced awareness, changed attitudes towards sanitation and promoted hygienic practices and were followed by a construction phase. The last part was monitoring of installations and behaviour change. The main drivers were elected representatives of LGDs. Political commitment to improving sanitation is also high and has been an important factor for success. Elected representatives on sanitation task forces are very proactive and observe October as a sanitation month every year. The government focused strongly on advocacy in all policies to create an enabling environment. Local government departments approved a programme framework where sanitation promotion at the grass roots was given top priority through peer learning.

IV. Strong monitoring and supervision: Coordination among line departments ensured strong monitoring of sanitation. Monitoring was followed by reporting and verification from the field. Union parishads and paurashavas (municipalities), as the lowest tier of the local government, collect information from ward water and sanitation (WatSan) committees. Community-based organizations help WatSan committees and parishads in this. These reports federate upwards to the DPHE office at the upazila (district sub-unit) level. At the upazila and district levels, the staff compiles monthly data on sanitation coverage and reports to the DPHE sanitation secretariat. In Dhaka, the LGD and DPHE have introduced standard monitoring formats for different government organizations into the National Management Information System (NAMIS). The system is managed by the Local Government Division (Policy Support Unit/Department). The system is managed by the Local Government Division (Policy Support Unit/Department of Public Health and Engineering) (LGD [PSU]/DPHE) and reports to the National Forum for WSS, which coordinates with ministries and NGOs. V. Focus shifted from subsidy-driven toilet construction to bringing about behavioural change in

people: Bangladesh has made significant changes in its strategy, shifting the focus from subsidy-driven toilet construction to triggering collective behavioural changes. A participatory approach enabled distinct behavioural changes and thus the focus. Respondents associated with behavioural changes realized the consequences, such as improvement in health and protection of women's dignity.

(b) COUNTRY LEVEL

Case study: Ethiopia

What worked in Ethiopia?

I. Strong political will: Ethiopia is a country with strong development priorities and political stability which has made the country work extensively in removing open defecation

II. Connecting sanitation and health: The secret of Ethiopia's success lies in the fact that it recognizes sanitation as a health problem. Sanitation and drinking water are under a single ministry, Ethiopia has put sanitation under the health ministry. In fact, the Ethiopian government's Health Extension Programme, started in 2003, is responsible for rolling out key sanitation interventions in rural areas, where 85 per cent of the country resides. Its Trachoma Prevention Programme is another example of how integrating sanitation with the health programme helps. Rolled out in 2002, the scheme promoted construction of toilets, because poor sanitation and lack of personal hygiene are important triggers for the spread of infectious disease that can leave people blind.

III. Strong community participation: Ethiopia has ensured that sanitation programmes do not focus merely on the construction of toilets but they also promote the idea of using them. Local communities and political leaders together discuss the types of sanitation services required, reflect on the tariff and monitor performance. This principle of participation is visible in all sanitation programmes. In the Health Extension Programme, for example, the services provided at the kebele level—the smallest administrative unit of Ethiopia—are customized to meet the needs, demands and expectations of the people. The Community-led Total Sanitation and Hygiene Programme (CLTSH), another important sanitation scheme that was started in 2009, is implemented by school health clubs and water committees at the kebele level. Community participation has not only given a boost to the construction of toilets, but also ensured the long-term sustainability of the practice.

IV. Well-planned verification and certification guidelines: The country also has open defecation-free verification and certification guidelines and set up committees at every administrative level, from the kebele to the national level, to verify that the guidelines are being followed. After a kebele is declared open defecation-free, monitoring is done by trained leaders from the community. We also have a system where kebeles are coded according to their open defecation-free status.

(c) STATE LEVEL

Case study: Sikkim, India

Sikkim was the first state in the country to achieve 100 per cent sanitation in rural and urban households, schools, sanitary complexes and anganwadi centres. As per the data on Swachh Bharat Mission, the state had constructed 57,525 household toilets and have attained 100 per cent open-defecation-free state. Apart from this, the state also worked on solid and waste management through awareness campaigns.

What worked in Sikkim?

The initiative to achieve full sanitation was launched in 1999 in 7,096 sq. km of both rural and urban areas in all four districts of the state. The government fixed the target year of 2009 to achieve total sanitation. To increase the rate of implementation of the project, the Total Sanitation Campaign (sanitation campaign launched by India in 1999) was taken up in mission mode in 2008.

Key to the success of Sikkim's sanitation programme were the following:

I. Strong political and administrative will: It became mandatory for all gram sabhas to have sanitation as the top priority in their agenda.

II. Stringent law and enforcement: The state government also made amendments in the Panchayati Raj Act so that members of panchayati raj institutions construct toilets in their households. If they failed to, their nominations were cancelled in the panchayat elections.

III. Availability of resources: Every family possessed enough land for the construction of toilets and used the land accordingly. Water scarcity was addressed through increased access to tap water.

IV. Sanitation officials understood the issue and worked on awareness campaigns: Information, Education and Communication (IEC) activities were carried out through booklets, pamphlets, documentaries, multimedia presentations, banners, posters and billboards in English as well as the regional languages of Sikkim.

V. Strong advocacy: People began to value toilets as a mark of dignity.

(d) BLOCK LEVEL

Case study: Taranagar block, Churu district, Rajasthan, India

What worked in Taranagar?

I. Strong political and administrative will: The programme was rolled out in campaign mode under the strong leadership of the district collector.

II. Intelligent communication strategy: The campaign's communication

strategy to bring about behaviour change was based on engendering dignity and pride in the community. The district helped spread awareness by creating disgust among villagers about open defecation. The campaign focused on malnutrition and health, which served as a trigger for the campaign.

III. Local choice of toilets: People in Churu constructed toilets according to their own preferences, mostly of a higher value than those covered by the government incentive. Since people are allowed to do this, even poor households started investing additional resources, taking into consideration long-term use. No contractor or NGO was hired to construct the toilets. The district administration ensured that appropriate technologies were used for toilets by showcasing toilet designs and training masons. Water was made available to toilets throughout the year from the shallow groundwater (saline) and rainwater stored in sumps in almost every household.

IV. Easy availability of loans and incentives: The wealthy in the villages offered loans to construct low-cost toilets. The incentives under Nirmal Bharat Abhiyan (the sanitation programme launched in India in 2012) were transferred directly to beneficiaries' bank accounts. Available funds for solid and liquid waste management under Nirmal Bharat Abhiyan were used as an effective community reward for achieving open defecationfree status.

V. Well-planned design of the campaign: The campaign was designed so that the community took the initiative rather than wait for government support. The government's financial support was delivered effectively as incentives and rewards for community-level outcomes.

VI. Effective institutional arrangement: Systems were instituted to facilitate the campaign at the district, block, gram panchayat and village or habitation levels.

VII. Capacity development with respect to technology options for Community-led Total Sanitation: Capacity development programmes targeting stakeholders were conducted, supported by the World Bank's Water and Sanitation Program (WSP) that engaged expert agencies and resource personnel to facilitate the training.

VIII. Effective monitoring: Traditionally, government sanitation programmes monitor the number of toilets. But a campaign that aims to make more and more villages open-defecation free (ODF) has to monitor nothing but the number of ODF villages. This shift in monitoring outcomes rather than outputs was evident in routine review meetings at the district and block levels.

(e) VILLAGE LEVEL

Case study: Tamana village, Ganjam district, Odisha, India

What worked in Tamana?

I. Strong wills of the village committee to bring a change: Due to the water crises, the villagers abandoned agriculture in the early 1980s. Unavailability of water also made the villagers defecate in open, near the village pond, and contaminate the only source of water. Waterborne diseases were a regular feature in the village when the village committee wanted an improvement in water and sanitation.

II. Involvement of the community: With help of a local NGO, the village formed a village executive community with representation from all households and with 50 per cent participation of women to facilitate the construction and maintenance work. The communities were motivated to use local materials and to bear any additional cost.

III. Easy fund availability: A local NGO helped the villagers mobilize funds from government resources.

IV. Water in toilets ensured: The village pond was revived and water diverted to a centrally placed 80,000-litre overhead tank. Water was supplied to all the households through piped-water schemes.

V. Water supply made sustainable: Although the piped-water supply was laid with the help of government funding, the village executive council (VEC) also created a corpus to be used for operation and maintenance of the piped-water supply. The corpus was created from contributions by the villagers. To make the source of water sustainable, the villagers were motivated to protect the catchment through plantation drives and started harvesting rain through traditional ponds and connecting them to the main pond.

VI. Effective monitoring: The VEC is involved in regular monitoring of the toilets and water supply in the village. For maintenance of the systems, the corpus is used.

The common points between all the success stories are as follows:

A. Political and administrative will: Strong, credible leadership;
B. Awareness and education programmes through a decentralized community-centric approach;
C. Strong implementation plan; and
D. Outcome-based monitoring

In all the success stories, health was brought to forefront of the campaigns and people were made aware that safe sanitation was necessary to remove disease. Ethiopia emerged as a champion by integrating both sanitation and health under the same ministry.

6. Conclusion and recommendations

Uganda—which has 77 per cent of its population dwelling in rural areas—has almost 58 per cent of the population practising unimproved sanitation.

The country failed to meet the Millennium Development Goal for sanitation. While, according to the 2019 Joint Monitoring report, only 6 per cent of the population goes out to defecate, this does not ensure safe sanitation.

Research reports only indicate that Uganda has only given up open defecation and moved towards any kind of toilet—of which the traditional pit toilet is the most preferred. The unimproved mode of sanitation adds to the health burden of the country as it contaminates groundwater, the most used source of water for the country. Government reports published in 2019 showed that around 8 lakh children died due to diarrhoea caused by consumption of contaminated water sources.

Success stories from around the world show that strong political will, awareness and well-planned strategies can bring changes in behaviour with regard to toilet use. In these cases, governments invested money to make communities aware about building and using toilets. But real success occurred after correct toilet technologies were implemented and toilets had regular supply of water.

Uganda relies on on-site sanitation facilities, with pit toilets the most preferred option. The most common mode of managing faecal sludge is to transfer it into another pit (dug near the toilet) when the first pit is full. Transfer to the second pit cannot be done mechanically as the vacuum trucks for emptying the pits cannot enter narrow lanes in rural areas and small towns. Also, most of the trucks are from Kampala or big urban centres from where getting the trucks is expensive.

It is also observed that in households and schools, toilets are often abandoned when the pits are full. Another means seen of managing the sludge is leaving an outlet on one side of the pit toilet so that when the pit toilets fill during the rainy season, faecal waste is flushed by surface run-off. Inadequate regulation and enforcement in rural areas and small towns lead to indiscriminate disposal in swamps, quarries, gardens and waterbodies, resulting in public and environmental health risks.

The challenges of accessible and safe sanitation require introduction of strong institutional structures and related by-laws and using safe technological options to handle faecal sludge and wastewater. Big urban areas to some extent have sorted the emptying and treating of faecal sludge through enforcement of

sanitation laws and building of faecal sludge treatment plants. But the major problem is in villages and small towns that constitute the rural areas—the major portion of the country—which affect the overall state of sanitation of the country.

Task 1: Strengthening legal and institutional structures for effective implementation

Although the country has promoted safe sanitation through its policies, they are mainly aimed at big urban centres.

Uganda needs to focus on wastewater and faecal sludge management in villages and small towns. Our recommendations are:

1. The roles and responsibilities of the different stakeholders, from household owners to government authorities and private agencies, should be well defined.
2. Capacity-building and awareness programmes should be planned for users, artisans, NGOs, CSOs and government authorities involved in the sanitation sector.
3. The local government authorities should develop and implement faecal sludge by-laws, comprising conversion of insanitary toilets to sanitary toilets and implementing best practices of emptying and collecting faecal sludge and transporting it to treatment facilities. Conditions for issuing licenses to private de-sludgers should be well defined to safeguard the health of the people who empty the pits/tanks as well as the community.

Task 2: Create a manual/menu of toilet technologies linked to treatment systems

Uganda has diverse hydrological conditions, varying from shallow groundwater (0–12 metres below the ground) to deep groundwater (30–66 metres below the ground) levels. Toilet technologies are accordingly proposed as follows:

1. Biogas-plant-linked toilets are the best option for every part of the country.
2. Dual-pit toilets are suitable for areas that have limited water supply and the groundwater level is not less than 8 metres below the ground.
3. Ecological sanitation toilet is suitable for areas where water is scarce as well as those that easily get waterlogged.
4. Septic tanks are suitable in small towns (classified as rural) without a centralized sewer system, where cost is not a constraint.

Task 3: Work on ensuring safe treatment or reuse of household excreta

The following options are suggested:

1. Constructed wetlands at the community level are the best option for rural areas. In areas that are prone to severe waterlogging, the base of the wetlands should be structurally modified as per soil conditions.
2. Soil biotechnology is the best option to treat wastewater at the community level in small towns, where cost is not a constraint.

To treat faecal sludge in rural areas, the following steps are suggested:

1. A combination of sedimentation tanks and reed bed filter to effectively separate solid and liquid parts of the sludge.

2. This should be followed by treating the liquid in stabilization tanks and the solid by co-composting it with organic waste. The end-product can be reused. The treated liquid can be used for irrigation and the solid as manure in fields.

In cases where existing sewage treatment plants are nearby, sludge from the settlements can be brought to these plants and co-treated with sewage. This is a more cost-effective option than building new faecal sludge treatment plants.

Task 4: Link water availability with sanitation and reuse

The link between toilet sustainability and water supply in toilets must be understood.

Over 90 per cent of water supplies in the country depend on groundwater. Uganda has adequate rainwater-harvesting potential to cater to its household needs.

The country should implement the following:

1. Introduce small-scale water-harvesting systems;
2. Revive traditional water-harvesting systems;
3. Focus on groundwater-recharge structures;
4. Involve communities (especially women) in small-scale projects. Make them aware and motivate them through incentivized schemes; and
5. Water should be mandated for functional toilets. Government should provide support to the communities.

The Centre for Science and Environment (CSE), New Delhi, India, will work closely with the Ministry of Water and Environment, Uganda. CSE will help the Ministry of Water and Environment plan and design safe technologies and develop policy regulations to manage faecal sludge and wastewater in different hydrogeological regions in Uganda and enable the Ministry to choose the most effective projects that adhere to site specification and local rules and regulations.

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Over 75 per cent of Uganda's population lives in rural areas and has access to unimproved sanitation. While the number of people practising open defecation reportedly fell in 2000–17, studies show that this only means that people have transitioned to using any kind of toilet—even if it is not safe—resulting in contamination of water and soil.

Only 40 per cent of Uganda's population has access to safe water. According to the latest government report, 8 lakh children under the age of five died in 2018–19 because of diarrhoea. Uganda loses UGX 389 billion annually (equivalent to US $177 million) due to poor sanitation. Since pit toilets—mostly of the traditional type—are the preferred sanitation option in many parts of the country, emptying and safe disposal of faecal sludge is a major concern. According to several reports, faulty toilets contaminate groundwater and springs in nearby areas.

Uganda needs to focus on safe containment, emptying, transporting, treating and disposing of or reuing faecal sludge and wastewater. Several policies and strategies promote safe sanitation in the country but implementation on the ground is the need of the hour. The country needs to focus on sanitation in rural areas—where most of the population resides—and put out strong guidelines and by-laws aligned to safe management of faecal sludge. This document addresses these aspects in the Ugandan context.

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