



**A CSE POSITION PAPER**

# TANZANIA

## The State of Sanitation



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Swedish International Development Cooperation Agency (SIDA)



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Citation: Sushmita Sengupta, Swati Bhatia and Shivangi Agarwal, 2021, *Tanzania: The State of Sanitation*, Centre for Science and Environment, New Delhi.

Published by

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# TANZANIA

## THE STATE OF SANITATION

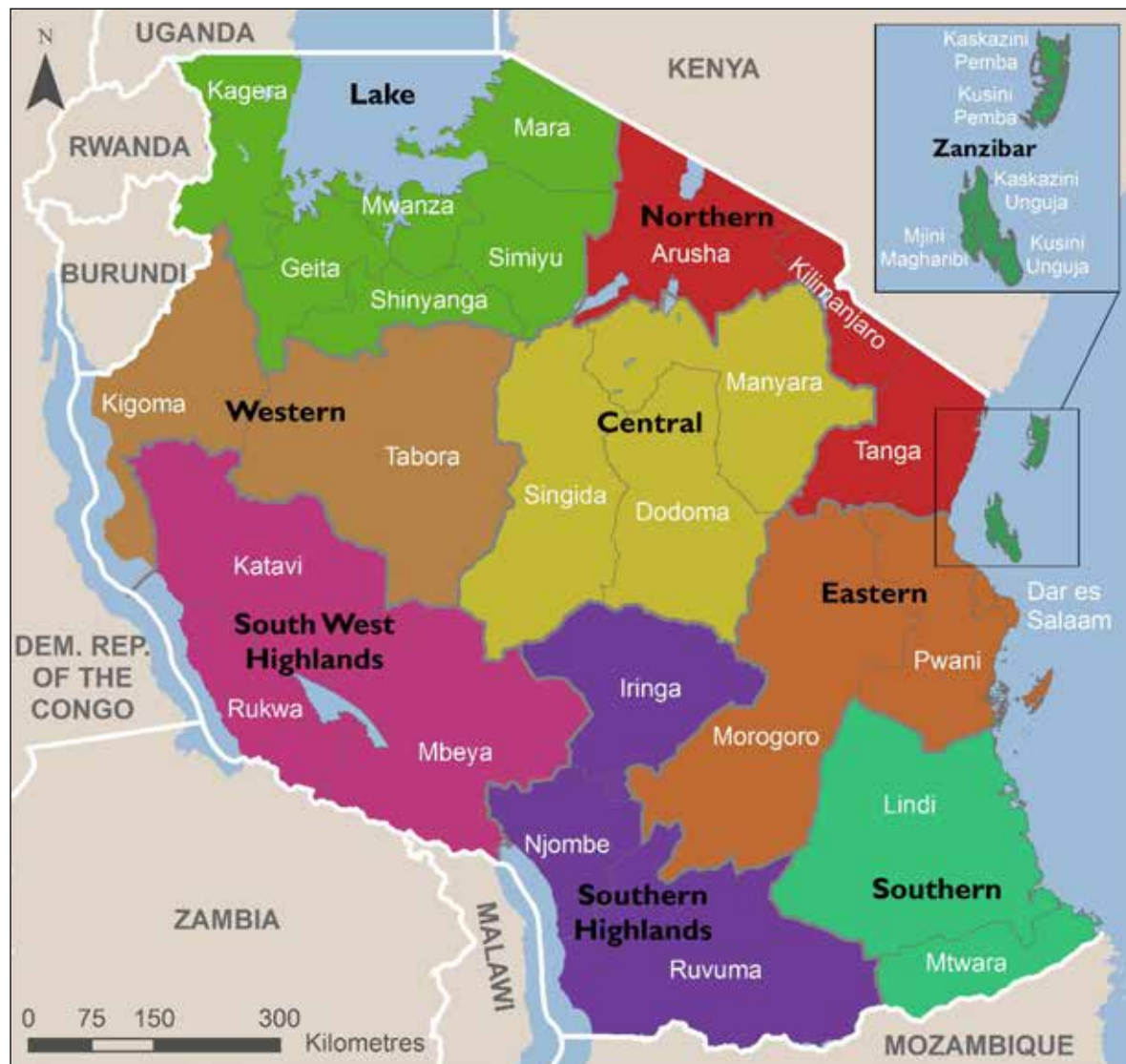
# Contents

<b>Introduction</b>	<b>5</b>
<b>Management of excreta and wastewater in Tanzania</b>	<b>9</b>
<b>Sanitation in schools</b>	<b>17</b>
<b>Impacts of poor sanitation</b>	<b>25</b>
<b>An action plan to achieve the Sustainable Development Goal on sanitation</b>	<b>31</b>
<b>Conclusion and recommendations</b>	<b>57</b>
<b>References</b>	<b>60</b>

# 1. Introduction

- **Seventy per cent of Tanzania's population lives in its rural areas. While the country has made substantial progress in poverty alleviation and economic growth, it still needs to cover a lot of ground in providing basic improved sanitation facilities to its people**
- **Rural areas of the country lag behind their urban counterparts with respect to the state of sanitation. Compared to 43 per cent in cities, only 24 per cent of rural Tanzania has access to basic sanitation facilities. Factors like non-availability of safe toilet technologies and inappropriate terrain are some of the reasons behind this lag**
- **Lack of basic sanitation facilities (as well as construction of faulty facilities) has led to severe contamination of water sources – primarily groundwater, which is the main source in Tanzania. This has led to rising incidence of diseases like cholera and diarrhoea, and stunting among children. The economic cost of this disease burden is huge as well**
- **Since 2002, the country has been working to develop its sanitation strategies and policies. These strategies now focus on improved sanitation. Tanzania's Vision 2025 aims to increase access to improved sanitation to around 95 per cent. The Second Five Year Development Plan 2011/12-2025/26 aims to provide access to improved sanitation to 85 per cent of the population in rural areas**
- **Tanzania needs safe containment systems, a strong regulatory framework for safe management of faecal sludge in rural areas, and a management information system for monitoring the state of sanitation in the country**

**Map 1: Tanzania – a political map**



Source: Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHCDGEC, MoH, NBS, OCGS, and ICF. <https://dhsprogram.com/pubs/pdf/FR321/FR321.pdf>, viewed on 23rd May, 2021

The United Republic of Tanzania, located in the eastern part of Africa, borders Uganda in the north and Kenya in the north-east. The Indian Ocean lies to its east; the countries of Mozambique and Malawi to the south, Zambia to the south-west, and Rwanda, Burundi and the Democratic Republic of the Congo to its west (*see Map 1*). This vast country, the fourth most populous in Sub-Saharan Africa, has a population of 57.3 million people – with over 70 per cent of them living in rural areas.

In recent years, Tanzania has registered significant economic growth and rise in household incomes<sup>1</sup> – however, it has been unable to expand and sustain Water, Sanitation and Hygiene (WASH) coverage. In the last 15 years, the country’s GDP has grown at 6.5 per cent per annum; since 2007, it has witnessed a reduction in poverty.<sup>2</sup> But human development cannot be measured only by household earnings or expenditure; WASH plays an equally critical role in determining it. For instance, an outbreak of cholera and other water-borne diseases caused due to unsafe sanitation may lead to overburdening the health system and can result in premature deaths.

Tanzania has missed its Millennium Development Goal (MDG) target of halving – by 2015 – the 1990 proportion of people lacking access to improved water and sanitation. A Joint Monitoring Programme (JMP) report, published in 2019 by the United Nations Children’s Fund (UNICEF) and the World Health Organization (WHO)<sup>3</sup> shows that the country has reduced the use of unimproved sanitation from 84 per cent to 41 per cent. The same report also says that the country has registered an over 20 per cent improvement in access to basic sanitation. This is no doubt encouraging – but Tanzania still has 23.7 million people who are forced to use unimproved sanitation facilities, and 6.7 million go out to defecate in open.<sup>4</sup>

The country’s urban areas demonstrate a better state of sanitation than their rural counterparts. As per the latest JMP report<sup>5</sup>, only 24 per cent of the population in rural areas has access to basic sanitation facilities; in urban areas, the figure is 43 per cent. Seventeen per cent of the rural population practises open defecation, compared to 2 per cent in urban areas. A 2018 research paper says poor sanitation has been on the rise in rural areas of northern Tanzania, especially among pastoralists and other groups whose main source of livelihood is livestock rearing.<sup>6</sup>

Studies<sup>7</sup> have shown that people’s interest in building toilets varies between different districts. For example, people living in a difficult terrain (rocky, swampy or areas with loose soil) are less inclined to build toilets and need interventions in toilet technologies. The 2019 paper also points out that soil condition directly determines the access to sanitation: the inclination towards building and using improved sanitation facilities is maximum where the soil condition is good and compact (more than 90 per cent of the people use toilets in these regions), while a lower inclination is seen in areas with swampy, collapsing or rocky soil.<sup>8</sup>

Groundwater is the most heavily used source of water in Tanzania. Faulty on-site sanitation technologies have been known to trigger nitrate contamination of groundwater in the country. Wells in peri-urban areas show high levels of faecal coliform due to unsafe sanitation.<sup>9</sup> Studies have called for protection of groundwater recharge basins and improvement of on-site sanitation systems.<sup>10</sup>

Unsafe and inadequate water supply, improper sanitation, and poor hygiene have resulted in high incidence of a number of diseases in the country. Tanzania reports about 5,800 cases of cholera every year; 18,500 children under the age of five die annually from diarrhoea – about 90 per cent of these deaths are attributed to poor water, sanitation, and hygiene conditions.<sup>11</sup>

The lack of adequate sanitation facilities has been shown to contribute to high levels of stunting among children in Tanzania. Evidence collected from multiple regression analysis along with the Demographic and Health Survey (DHS) 2010<sup>12</sup> shows that in rural Tanzania children are shorter (stunted) in communities where human faeces are managed improperly, suggesting a strong link between sanitation and nutrition. This has a significant impact on early child development, as stunting impacts on intellectual and cognitive abilities, and can lead to impaired learning, increased absences from school, and decreased future economic productivity.

According to a 2012 study by Water and Sanitation Programme,<sup>13</sup> poor sanitation costs Tanzania TSh 301 billion (Tanzanian shillings) or to US \$206 million each year. This sum is the equivalent of US \$5 per person per year in Tanzania, or 1 per cent of the national GDP.

One needs to understand how Tanzania can attain safe sanitation. Is it through adequate funding in the water and sanitation sector, strong institutional arrangement, technological know-how or the availability of reliable data?

Prioritisation of water and sanitation, therefore, has become the need of the hour. The unfinished agenda of MDG has been carried forward in the Sustainable Development Goals (SDGs), the sixth of which aims to ensure the availability and sustainable management of water resources and sanitation for all. Research shows the benefits of water and sanitation projects are manifested in reduced medical costs of treating water-borne diseases, time saved in collecting water (which could otherwise be used in economic production), and deaths avoided from waterborne infections, as exemplified by statistics related to access to improved water and sanitation services.<sup>14</sup>

To meet the SDG 6 target, 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 sharing data is also the need of the hour, so that policies at the local and national levels can be easily implemented.

The present paper focusses primarily on analysing the situation in and finding the solutions for sanitation in Tanzania's rural areas, as most of the people in the country live in these areas. Nudging the rural regions towards safe sanitation will help the entire country achieve the SDG on sanitation.



## **2. Management of excreta and wastewater in Tanzania**

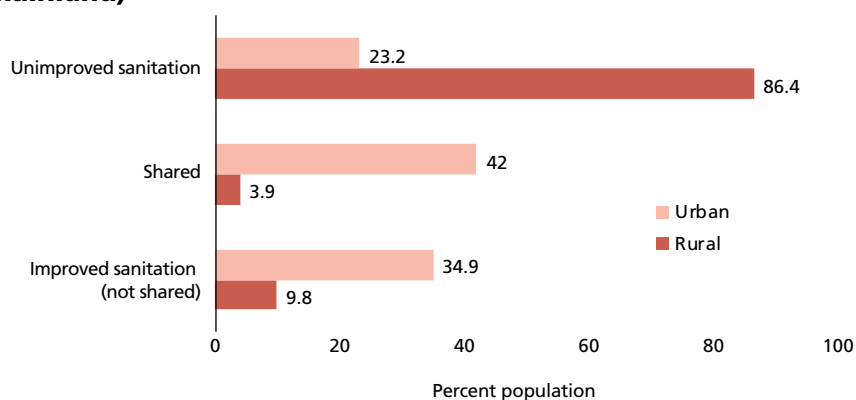
- **Sanitation in Tanzania is categorised into improved, shared and unimproved facilities. Around 70 per cent of Tanzania's population practices unimproved sanitation, mainly in the rural areas.**
- **The pit toilet with non-washable slab is the most common type of household toilet in the rural areas, making management of faecal sludge very difficult. Not only this – Tanzania can safely manage only 38 per cent of child faeces; the unmanaged faeces has the potential to impact environment in a manner similar to open defecation.**
- **Outbreaks of cholera and other diseases are quite common. They occur in areas where groundwater is contaminated due to poorly built toilets. Treatment and safe disposal of faecal sludge is the most important step to move towards safe sanitation.**
- **Allocation of budget for water and sanitation has been low in the last few financial years. Expenditure in the WASH sector is one of the lowest among African countries.**
- **Since 1990, Tanzania's law and regulations on water and sanitation have started focusing on decentralisation of power, along with more community participation and private sector involvement.**

## The existing state of sanitation in Tanzania

The overall slow progress in the WASH sector has hindered human development and poverty reduction strategies in Tanzania. In 1998, the country initiated its National Strategy for Growth and Reduction of Poverty (NSGRP also known as MKUKUTA<sup>15</sup> in Kiswahili), which aimed to eradicate poverty and promote broad-based growth by addressing challenges, scale up and sustain achievements through policy and guidelines. The strategy has borne some fruit: the proportion of people living below the national poverty line declined from 34 per cent in 2007 to 28 per cent in 2012. But on the scale of human development, the country is placed at a lowly 151 among 181 nations surveyed in the world.<sup>16</sup>

According to the JMP report of 2019<sup>17</sup>, around 70 per cent of the country's total population practices unimproved sanitation; out of this, 12 per cent practices open defecation. Tanzania has been listed among the 39 countries which have recorded an increase in open defecation owing to population growth. Data from rural areas indicates that 72 per cent of the population in them uses unimproved sanitation compared to 57 per cent in urban areas. Seventeen per cent of the rural population defecates in open; the rate in urban areas is 2 per cent. As per the Demographic Health Survey of 2016<sup>18</sup> rural Tanzania had approximately 86.4 per cent of its households with unimproved sanitation, and only 9.8 per cent of households had improved non-shared sanitation facilities. While the country has made considerable progress, but these statistics indicate that it still has a long way to go (see Graph 1).

**Graph 1: Sanitation facilities at the household level in Tanzania (mainland)**



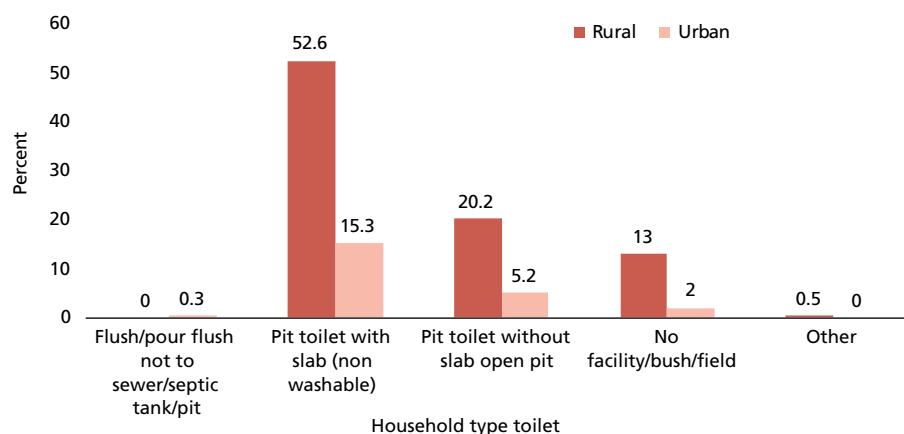
Source: Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHCDGEC, MoH, NBS, OCGS, and ICF. <https://dhsprogram.com/pubs/pdf/FR321/FR321.pdf>, viewed on May 23, 2021

Disposal of child faeces is a serious concern in the country – it has the potential to impact environment in a manner similar to open defecation. As per 2015 estimates, Tanzania ranked number 28 (out of 38 African nations) for the percentage of children whose faeces are safely disposed of. Only 8 per cent of households in Tanzania reported that their youngest child's faeces were disposed of into an improved sanitation facility – this indicates that children under three encounter worse sanitation compared to the overall Tanzanian population.<sup>19</sup>

The Demographic and Health Survey<sup>20</sup> of FY 2015-16 has categorised sanitation in Tanzania into improved, shared and unimproved facilities. The survey shows that unimproved sanitation facilities prevail more in rural areas. The pit toilet with slab (non-washable type) is the most favoured toilet type in rural areas (over 50 per cent of the facilities are of this type). The second-most popular system is the pit toilet without slab (20 per cent) (*see Graph 2*).

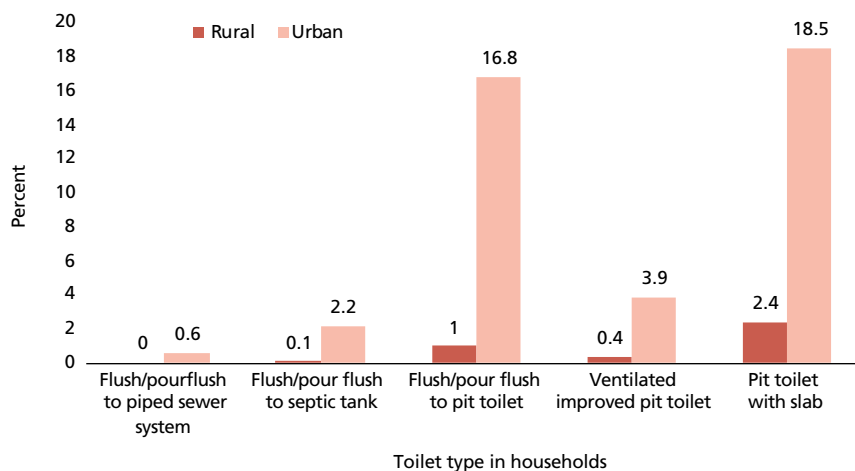
In urban areas, the shared category prevails (*see Graph 3*). Under it, the pit toilet with slab (*see Graph 2*) is the most favoured toilet type (19 per cent).<sup>21</sup>

**Graph 2: Categorisation of preferred sanitation facilities in rural and urban Tanzania (mainland)**



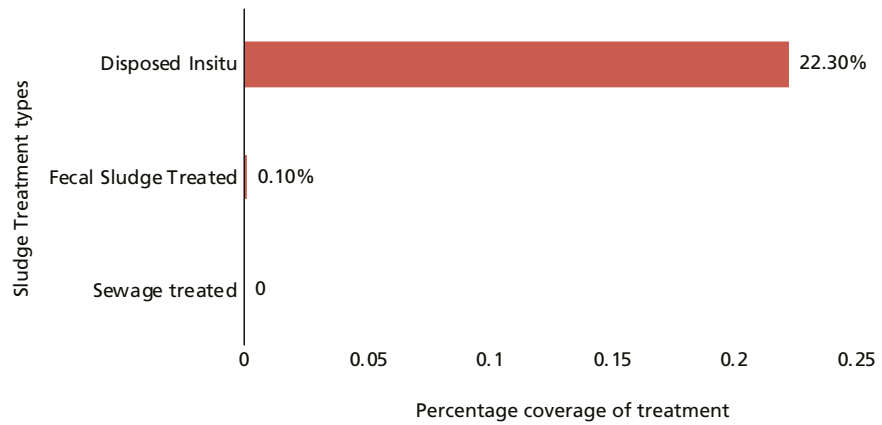
Source: Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHCDGEC, MoH, NBS, OCGS, and ICF. <https://dhsprogram.com/pubs/pdf/FR321/FR321.pdf>, viewed on 23rd May, 2021

**Graph 3: Shared facilities in rural and urban Tanzania (mainland)**



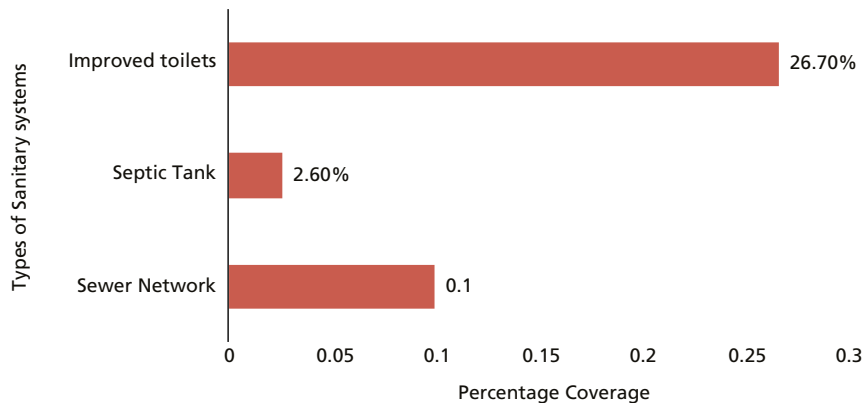
Source: Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHCDGEC, MoH, NBS, OCGS, and ICF. <https://dhsprogram.com/pubs/pdf/FR321/FR321.pdf>, viewed on May 23, 2021

**Graph 4: Status of sludge treatment and disposal in rural Tanzania**



Source: Joint Monitoring Progress 2019 data, <https://washdata.org/data/household#!table?geo0=country&geo1=TZA>

**Graph 5: Types of sanitary systems and their coverage in rural Tanzania**



Source: Joint Monitoring Progress 2019 data, <https://washdata.org/data/household#!table?geo0=country&geo1=TZA>

The latest JMP<sup>22</sup> report says that since the year 2000, Tanzania has been able to increase the availability of basic water services by 30 per cent and sanitation services by 26 per cent. The data also says that only 42 per cent wastewater is being treated. It shows that the country not only needs to eradicate open defecation, but also manage its water sources, ensure proper sanitation facilities in schools, households and healthcare centres, and treat and dispose of faecal sludge. Graphs 4 and 5 explain the percentage coverage of the type of treatment available for various kinds of sludge, and the types of sanitary systems available.

As per the Tanzania Water Sanitation and Hygiene Budget Brief 2018,<sup>23</sup> despite being home to 70 per cent of the nation’s population, the rural areas are disadvantaged in

terms of proper availability of drinking water and sanitation services. Only 56 per cent of the total population of Tanzania has access to improved water sources – 46 per cent of the rural population enjoys this access, while for urban Tanzania, the figure is 77 per cent. The figures for sanitation are worse – just 16 per cent of the total population has access to improved sanitation. The rural share stands at 8 per cent, while the urban share is 31 per cent.

The issue of low access to improved sanitation in comparison to access to basic (safe) water sources also finds a mention in the latest JMP report.<sup>24</sup> Healthcare centres in the country lack adequate WASH facilities – only 44 per cent of their toilets are functional, 42 per cent have access to WASH facilities, and 41 per cent have access to improved water sources. Research indicates there is a direct link between mortality and low or inadequate access to WASH facilities.<sup>25</sup>

In Tanzania, around 9 per cent of all mortality in children under five years has been reported to be due to diarrhoea in 2010. About 18,500 children under five die due to diarrhoea every year. In adults, diarrhoea accounts for 6 per cent of all mortality, while morbidity due to diarrhoea has been estimated to be 6 per cent of the total disease burden (DALY, or disability adjusted life-years).<sup>26</sup>

A study in Illala district of Dar es Salaam has reported that lack of access to a toilet, long distances travelled to fetch water, and poor general living standards and associated hygiene were all significantly linked to increased rates of maternal mortality.<sup>27</sup> Similarly, another study of a larger number of households in Tanzania has linked increased poverty, in part measured by toilet access and the condition of the toilet, with higher mortality.<sup>28</sup>

Cholera outbreaks are a common occurrence, with about 5,800 cases reported annually. The country has faced massive outbreaks in 2015 and 2016. In October 2015, around 12 regions were affected, and the cumulative number of cases was 4,835; there were 68 deaths. By the end of January 2016, a total of 14,628 cholera cases were reported, including 228 deaths. The practice of open defecation by households, for instance in Mwanza and Mara regions, has contributed to an outbreak in the Lake Zone.

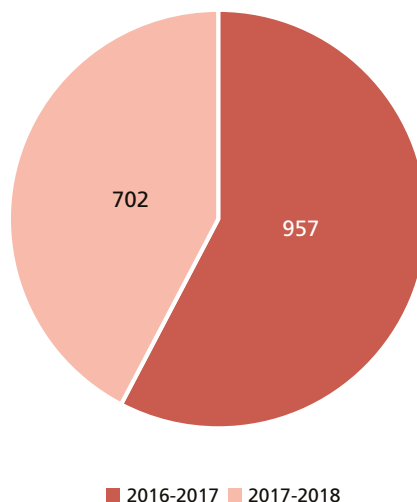
Many urban areas lack functional drainage and wastewater treatment systems, improved sanitation facilities, and appropriate mechanisms for disposal and management of faecal sludge and solid waste. The situation is worse in peri-urban, unplanned settlements and rural areas. Poorly built toilets in these areas are affected by extreme weather conditions like cyclones and floods – they collapse and contaminate the groundwater and surface water.

In 2008, Tanzania had joined 32 other African nations in signing the eThekweni Declaration: under it, the country committed to allocate a budget of 0.5 per cent of its GDP to the water and sanitation sector. However, only 0.3 per cent was actually allocated for the entire water sector in FY 2016-2017.<sup>29</sup>

As per the budget brief of 2018, Tanzania spends only US \$61 per capita for WASH services, a figure which is lower than many other African countries. The approved funding allocation for the water sector has decreased in FY 2017-2018 (*see Graph 6*). This was due to the fact that only TSh 291 million of the approved budget was spent in

FY 2016-17. A similar lag in execution was witnessed in the Water Sector Development Plan II, where only 32 per cent of the approved funding was released in FY 2016-17; moreover, the allocation in 2017-18 was reduced by 41 per cent.<sup>30</sup>

**Graph 6: Funding for the water sector in Tanzania (in billion Tanzanian Shillings)**



Source: UNICEF, 2018, "WATER, SANITATION AND HYGIENE BUDGET BRIEF 2018 –Tanzania", <https://www.unicef.org/esa/media/2351/file/UNICEF-Tanzania-Mainland-2018-WASH-Budget-Brief-revised.pdf>, viewed on May 23, 2021

The spending is inequitable as well. In FY 2017-18, 48 per cent of the total budget was allocated to rural water and 39 per cent to urban water – only 1 per cent was given to sanitation and hygiene.<sup>31</sup>

There is no provision of collecting user fees for maintenance of existing water and sanitation resources: facilities have slid into disrepair because of this. Lack of trained staff on the ground at the Local Government Authority (LGA) level is also a problem. Low utilisation of budget and inadequate allocation of funding to water and sanitation has been a major cause behind postponement of WASH activities. Recognising this, the government has now introduced new funding protocols. It is believed that decentralisation of fund utilisation at the LGA level will improve the scenario – at present, a mere 30 per cent of the allocated budget is getting used.<sup>32</sup>

## Existing policies, strategies and actions

Historically, Tanzania has crafted policies and guidelines at the central level. Since 1990, the trend has changed – decentralisation of power is being encouraged, along with more community participation and private sector involvement (see Tables 1 and 2).

**Table 1: Regulatory bodies in Tanzania**

Regulatory bodies	Functions
Ministry of Water and Irrigation (MoWI)	Responsible for regulation and coordination of the national water policy, the Ministry finances and monitors project implementation of Basin Water Boards (BWBs), urban water supply and sanitation authorities (WSSAs), and Local Government Authorities (LGAs). The MoWI budget is almost 70 per cent less than what is allocated to other natural resources.
Local Government Authorities (LGAs)	Primary implementers of WASH services, LGAs look after community needs. The President's Office Regional Administration and Local Government (PORALG) manages the reporting of water sector activities by LGAs. PORALG allocates 0.1 per cent of the national water sector budget to facilitate monitoring and reporting.
Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC)	MoHCDGEC is the chair of the National Sanitation and Hygiene Steering Committee and is responsible for setting sanitation and hygiene policies for implementing agencies such as LGAs. It is also responsible for implementing the National Sanitation Campaign which aims to increase WASH in health facilities.
Ministry of Education, Science and Technology (MoEST)	MoEST is responsible for implementing school WASH, and aims to improve access to latrines and running water in schools.

Source: World Bank. 2018. *Reaching for the SDGs: The Untapped Potential of Tanzania's Water Supply, Sanitation, and Hygiene Sector. WASH Poverty Diagnostic*. World Bank, Washington, DC, <http://documents1.worldbank.org/curated/en/167791521012037920/pdf/124255-PUBLIC-P159820-the-untapped-potential-of-Tanzania-s-water-supply-sanitation-and-hygiene-sector.pdf>, viewed on May 23, 2021.

**Table 2: Policies, programmes and regulations**

Year	Policy, strategy or regulation
1991	<b>First National Water Policy</b> introduces user charges and begins a decentralisation process.
1997	<b>Waterworks Act No 8</b> enables the creation of Urban Water and Sewerage Authorities (UWSAs).
2001	<b>Energy and Water Utilities Regulatory Act (EWURA)</b> creates the national regulator.
2002	<b>National Water Policy (NAWAPO)</b> is adopted – sets the vision for the sector till 2022.
2003	Dar-es-Salaam water supply is leased to a private sector company, City Water Services (CWS).
2005	<b>Water Sector Development Program (WSDP) Phase-I (2006-14)</b> is conceived.
2005	<b>National Water Sector Development Strategy (NWSDS)</b> is developed to strengthen legal and institutional frameworks for NAWAPO implementation.
2006	<b>Water Sector Development Program (WSDP)</b> with a budget of US \$951 million over five years, begins.
2007	<b>National Health Policy</b> provides direction for sanitation and hygiene provision in the country.
2009	<b>Water Supply and Sanitation Act</b> makes LGAs responsible for “meeting part of the costs incurred by community owned water supply organizations in the major rehabilitation and expansions of water schemes and payment for costs of service rendered” and establishes District and Township Water Supply and Sanitation Authorities (WSSAs).
2009	<b>Water Resources Management Act</b> is passed, allowing the transformation of customary rights into statutory rights and empowering the Ministry of Water and Irrigation to limit groundwater abstraction to volumes that would not harm the quantity and quality of the water or the environment above.
2012	<b>The National Sanitation Campaign (NSC)</b> is launched to promote the use of improved latrines.
2014	<b>Water Sector Development Program (WSDP)-Phase II</b> begins.

Source: World Bank. 2018. *Reaching for the SDGs: The Untapped Potential of Tanzania's Water Supply, Sanitation, and Hygiene Sector. WASH Poverty Diagnostic*. World Bank, Washington, DC, <http://documents1.worldbank.org/curated/en/167791521012037920/pdf/124255-PUBLIC-P159820-the-untapped-potential-of-Tanzania-s-water-supply-sanitation-and-hygiene-sector.pdf>, viewed on May 23, 2021

The 2002 National Water Policy strengthened the pro-poor outlook, and also focussed on cost recovery from the community. Sanitation was integrated in the policy – in 2007, it was made a part of the National Health Policy as well.

In 2005, a Sector Wide Approach (SWAp) was adopted. This process eases the system of donor activities and the technical and financial implications. In 2007, under the Water Sector Development Plan (WSDP), regulatory frameworks were changed to focus more on the following guiding pillars:<sup>33</sup>

- Increasing community involvement for user fees and operation and maintenance (O&M) of structures
- Increasing private sector involvement for better service delivery
- Establishing an efficient and equitable service delivery system
- Easing the institutional framework for better coordination
- Strengthening the monitoring and evaluation system

The WSDP has been one of the largest ventures aimed at improving Tanzania's water resources, governance, service delivery and capacity building. It has had a funding of US \$1.414 billion, in which the Government of Tanzania contributed 28 per cent and 18 per cent came from the World Bank<sup>34</sup>.

Under the Local Government Act of 2006, local governments have been made responsible for providing water and sanitation services at the grassroots level. Besides the local governments, community organisations in rural areas have also been made responsible for owning, operating and maintaining water supply systems by the National Water Sector Development Strategy of 2006.

The President's Office-Regional Administration and Local Government (PO-RALG) monitors the work, mobilises resources, and plans and coordinates with local governments for decentralised water and sanitation services. It has the power to alter the budgets prepared by LGAs.

LGAs work in consultation with the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), but a nodal organisational structure for implementing sanitation programmes is absent. In rural areas, community-owned water supply organisations (COWSO) such as the village-level water committees exist, but they have been prone to political interferences. Local government bodies provide technical and financial support to these COWSO. However, such organisations currently exist in only 10 per cent of the villages.

This devolving of powers to the local government authorities has enabled the Ministry of Water and Irrigation to focus on policy formulation, coordination, monitoring and regulation. It also focuses now on developing more infrastructure and repair the existing systems. Under the Ministry's guidance, the National Environmental Standards Committee prescribes procedures and standards for water quality.



## 3. Sanitation in schools

- Tanzania needs to focus on school sanitation as more than 40 per cent of its population is school-going.
- Different government agencies are involved in providing safe water and sanitation to schools. Their responsibilities range from making policy to implementation and monitoring.
- Free education has motivated citizens to send their children to schools, but increase in the number of students has not meant a concurrent improvement of water, sanitation and hygiene facilities in schools.
- With over 60 per cent of the schools located in rural areas, the country can only offer limited sanitation access for these schools.
- The most observed toilet facility is the pit toilet with washable slabs. But Tanzania needs to focus on emptying of the pits and safe disposal of the sludge.
- Enough funding has been allocated for WASH in schools – the country needs to administer it for safe management of faecal sludge to meet the SDG 2030.

As per 2018 estimates<sup>35</sup>, two-fifth of Tanzania’s population – roughly 43.5 per cent – is under the age of 15. In the light of this, it becomes all the more important that the country is able to provide better quality drinking water, sanitation and hygiene facilities, so that the young are safe from diseases in the post-COVID world and the dropout rate from schools can be controlled.

In 2016, the National Guidelines for Water, Sanitation and Hygiene for Schools was laid down by the Ministry of Education, Science and Technology to ensure availability of toilets, water supply and functional hand washing facilities in schools.<sup>36</sup> The guidelines provide standards for school construction, operation and maintenance of sanitation, hygiene and drinking water facilities. They also lay down the roles and responsibilities of various stakeholders in the process, as well as the norms for selection of technologies. Table 3 details the various stakeholders and their responsibilities.

**Table 3: Stakeholders and their responsibilities**

Stakeholders	Roles and responsibilities
Ministry of Education, Science and Technology (MoEST)	Developes policies, frameworks and guidelines for School WASH. Ensures budgeting, planning and monitoring activities.
Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC)	Coordinates formulation of policies and guidelines, coordinates with technical committees and enforces rules and regulations.
President Office – Regional Administration and Local Government (PO-RALG)	Coordinates with MoEST, MoHCDGEC in implementing the acts and guidelines, supervises and monitors WASH activities. Ensures adherence to standards and mobilises funds.
Ministry of Water and Irrigation (MoWI)	Ensures technical standards and adequate provision of water in schools. Coordinates and monitors water sector activities related to WASH in schools.
Development Partners (Donors)	Responsible for capacity building, monitoring and financing support
Local Government Authority (Council Director, Municipal Executive Director, Town Director, District Executive Director)	Ensure provision of resources, technical guidance. Organise trainings and assessments. Ensure cost effective design, construction and maintenance.
Council of Water and Sanitation Team (CWST) - School WASH led by Council Education Officers	Serves as communication link with all stakeholders, collects and analyses data, prepares plans and proposals related to WASH in schools.
Ward Development Committees	Coordinate budgeting and implementation activities
Village government	Coordinates with local artisans, prepares and manages financial activities and mobilises WASH activities.

Source: UNICEF, 2018, *Water, Sanitation and Hygiene Budget Brief 2018 –Tanzania*

Tanzania also has the 2016 National Guidelines for Rural Community-led Total Sanitation (under the Environmental Health and Sanitation Section of the Ministry of Health, Community Development, Gender, Elderly and Children<sup>37</sup>), which focus on involving students for ending open defecation and behavioural change.

## The gap: Tale of two reports

The question is when the country and its government is aligned with the vision and the targets, and is also trying to involve the community in meeting them, where is the gap?

Two studies conducted to assess the situation of WASH in schools throw some light on possible answers to this question. One of these, a global baseline study, was conducted by the UNICEF and the WHO in 2018<sup>38</sup>, while the other was a 2020 UNICEF<sup>39</sup> study on school water, sanitation and hygiene (SWASH) specifically for Tanzania. The two reports have different service level indicators for evaluation (see Tables 4 and 5) and hence, slightly varying data estimations. The UNICEF-WHO report's data is completely based on a survey; the SWASH report takes into consideration data from interviews, as well as from the UNICEF report.

**Table 4: Service level Indicators considered for evaluation of School WASH by the Joint Monitoring Report, 2018**

Service level indicators	WHO-UNICEF (2018) Global Baseline Report on drinking water, sanitation and hygiene in schools
Basic service	<b>Drinking water:</b> Availability of improved source and water <b>Sanitation facilities:</b> Availability of improved facilities that are single-sex and usable (functional and private) <b>Hand washing facilities:</b> Availability of facilities with water and soap
Limited service	<b>Drinking water:</b> Improved source exists, but water is unavailable <b>Sanitation facilities:</b> Improved facilities that are either not single-sex or not usable. <b>Hand washing facilities:</b> With water, and without soap
No service	<b>Drinking water:</b> From an unimproved source or absence of a water source <b>Sanitation facilities:</b> Unimproved facilities or none <b>Hand washing facilities:</b> Unimproved facilities or none

Source: *Drinking water, sanitation and hygiene in schools: global baseline report 2018*, New York, UNICEF and World Health Organization

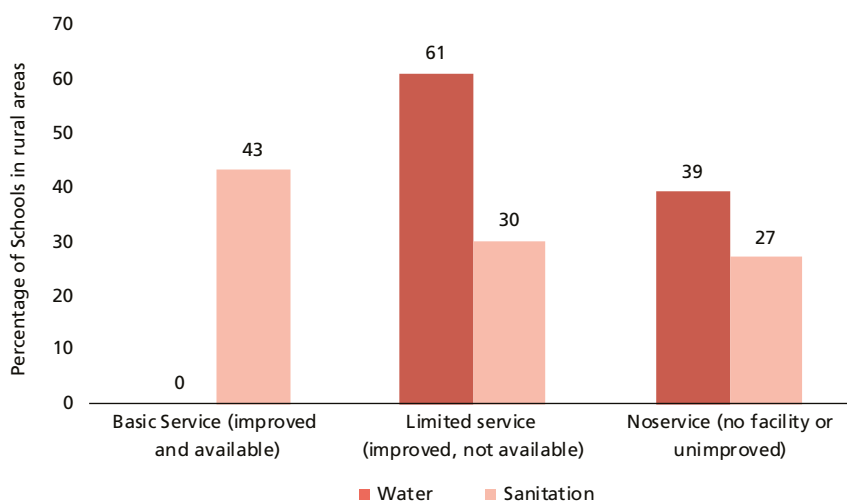
**Table 5: Service-level Indicators considered for school WASH evaluation by SWASH report**

Indicators	School Water, Sanitation and Hygiene Assessment Report (SWASH) 2018-Tanzania (UNICEF-2020)
Drinking water	<b>Improved water sources:</b> Have the potential to deliver safe water by preventing water contamination; include piped water, boreholes or tube wells, protected dug wells, protected springs, and rainwater. <b>Unimproved sources:</b> Include unprotected dug wells or springs and surface water (such as lakes, rivers, streams, ponds, canals or irrigation ditches). Location of the water/source Availability of water at the main source Availability of treated water Availability of water for disabled children
Sanitation	<b>Improved sanitation facilities:</b> Can hygienically separate excreta from human contact – includes flush/pour flush to piped sewer system, septic tanks or pit latrines, ventilated improved pit latrines, composting toilets or pit latrines with slabs. <b>Unimproved facilities:</b> Include pit latrines without a slab or platform, hanging latrines and bucket latrines. Location of the facilities Cleanliness of the facilities Student to drop-hole ratio
Hygiene	Hand hygiene and menstrual hygiene Type and availability of hand washing facilities Availability of soap and water Location of hand washing facilities Accessibility for young and disabled children Menstrual hygiene facilities provided at school level

Source: UNICEF, 2020, *2018 School Water, Sanitation and Hygiene Assessment-Tanzania, Main Report*, <https://www.unicef.org/tanzania/media/2356/file/National%20School%20WASH%20Report%202020.pdf>, viewed on May 23, 2021

According to the WHO-UNICEF global baseline report<sup>40</sup>, a majority of schools in Tanzania have limited water and sanitation services – as per the study, this means schools may have access to improved sources of drinking water but this water was unavailable; also, the sanitation facilities were improved, but were either not gender-based (separate toilets for girls and boys) or were unusable during the survey (see Graph 7). Twenty-three per cent of the country’s schools have basic hygiene services – which means separate, usable toilets for girls and boys. Only 6 per cent of the schools have sanitation facilities that can be accessed by students with limited mobility.

**Graph 7: Percentage of schools in rural areas with basic, limited and no service**



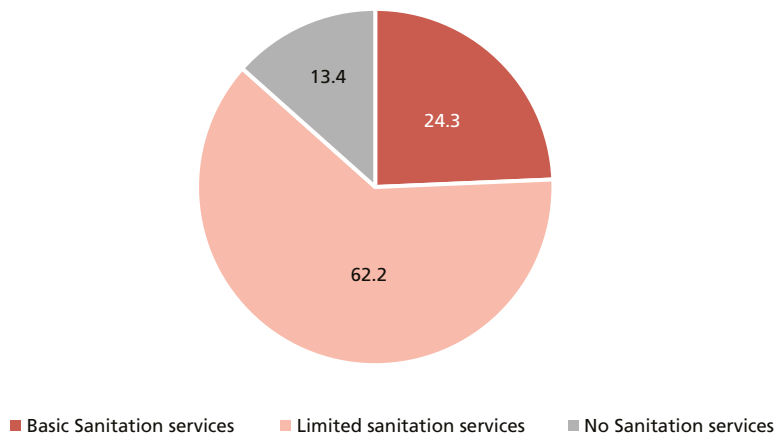
Source: Joint Monitoring Report - Hygiene Baselines pre-COVID-19 Global Snapshot, 2020

The report<sup>41</sup> also noted that Tanzania is among the top 25 countries where the number of schools with no drinking water went down to 29 per cent in 2016 from 54 per cent in 2010 – a decrease of 25 per cent. Schools in rural areas had 30-37 per cent lesser basic sanitation and hygiene facilities compared to those in urban areas – about 62 per cent schools in rural Tanzania had limited sanitation services, said the report (see Graph 8).

The SWASH report<sup>42</sup> notes that policy measures and fee-free schemes have encouraged many students to enrol for school education. However, schools lack enough sanitation and hygiene facilities to cater to the growing number of their students; new investments in schools do not focus on sanitation and hygiene either.

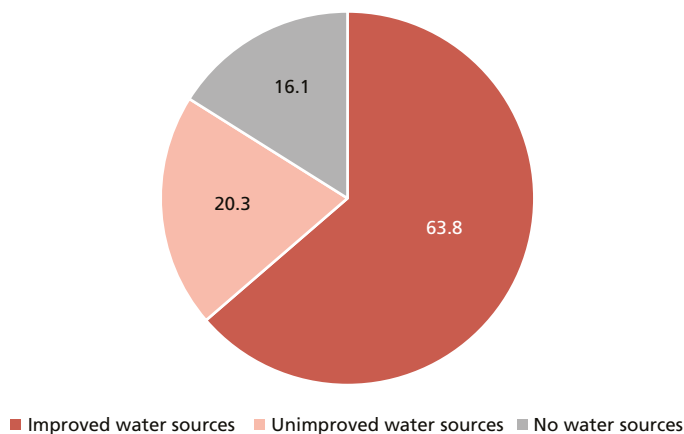
According to the report, approximately 64 per cent of the schools located in rural areas have access to piped water supply or bottled water or rainwater; about 20 per cent have access, but to unprotected sources of water. Sixteen per cent of the schools did not have any access to drinking water sources (see Graph 9). Schools in urban areas fare comparatively better. In roughly 50 per cent of the country, less than 50 per cent of the schools have access to basic water services (see Map 2).

**Graph 8: Percentage distribution of rural schools on the basis available sanitation services**



Source: Joint Monitoring Program - global baseline report 2018

**Graph 9: Percentage distribution of schools by drinking water supply sources**



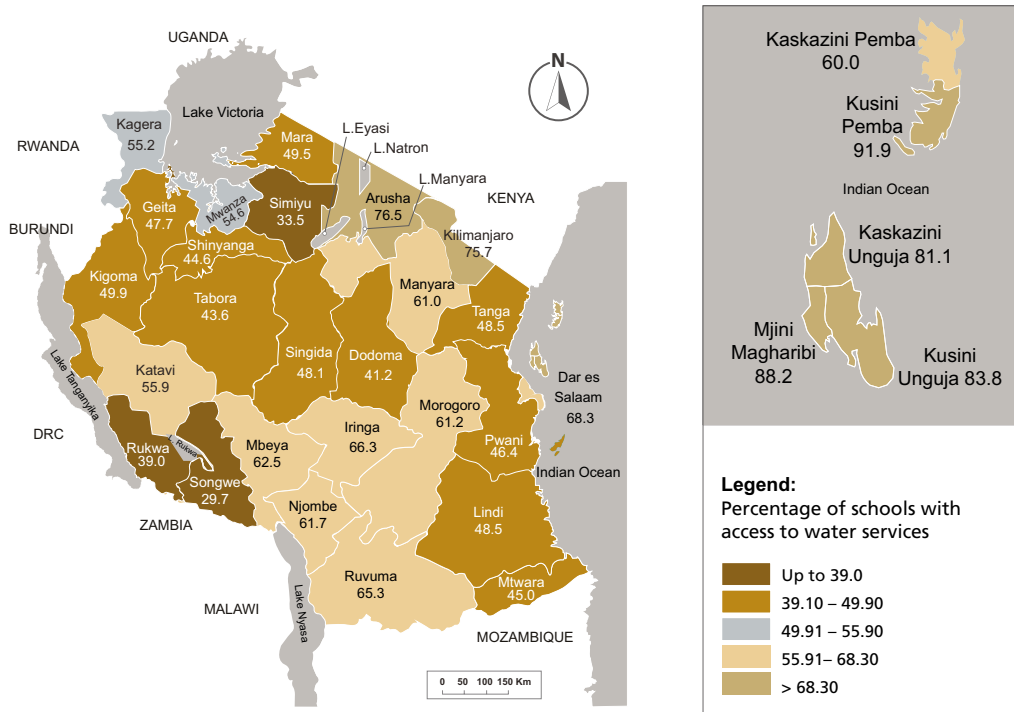
Source: UNICEF, 2020, 2018 School Water, Sanitation and Hygiene Assessment-Tanzania”, Main Report, <https://www.unicef.org/tanzania/media/2356/file/National%20School%20WASH%20Report%202020.pdf>, viewed on May 23, 2021

About 57 per cent of the surveyed schools in rural areas had drinking water sources within the school premises, but only about 28 per cent had access to treated water supply. The key treatment methodologies practised were by boiling or chlorination.

The SWASH survey also collected information about water use: roughly 38 per cent of the community collected drinking water from these schools, and about 16 per cent also paid for it.

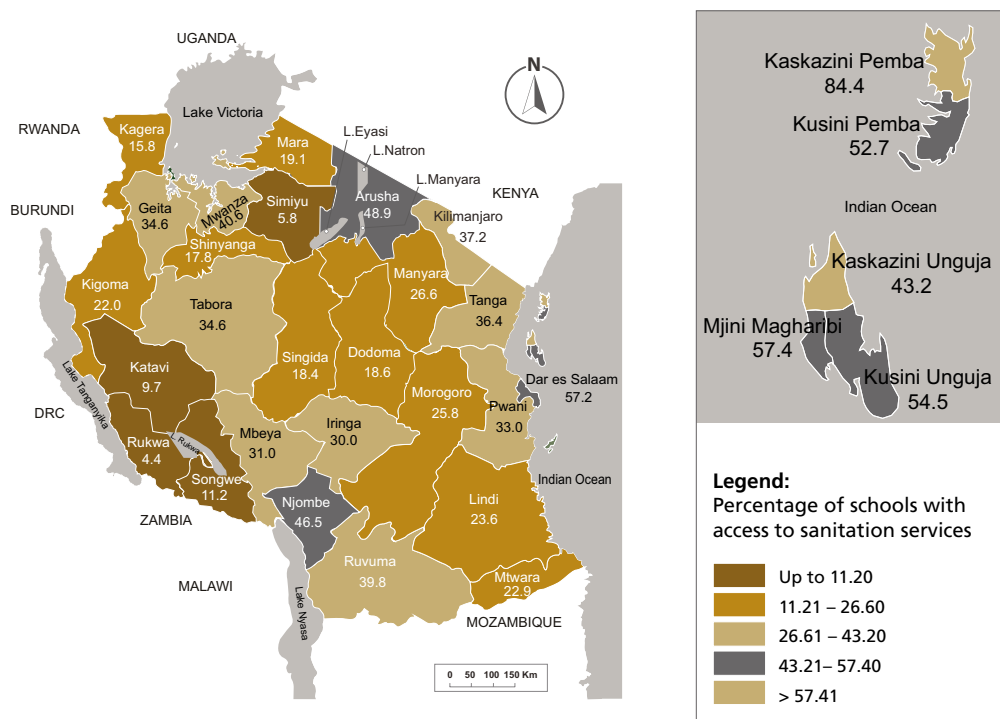
Owing to various government policies, claims the SWASH report, most schools in rural and urban Tanzania now have toilets. Less than 1 per cent of the schools

**Map 2: Schools with basic water services by region (2018)**



Source: UNICEF, 2020, 2018 School Water, Sanitation and Hygiene Assessment-Tanzania, Main Report, <https://www.unicef.org/tanzania/media/2356/file/National%20School%20WASH%20Report%202020.pdf>, viewed on May 23, 2021

**Map 3: Region wise percentage of basic sanitation in schools**

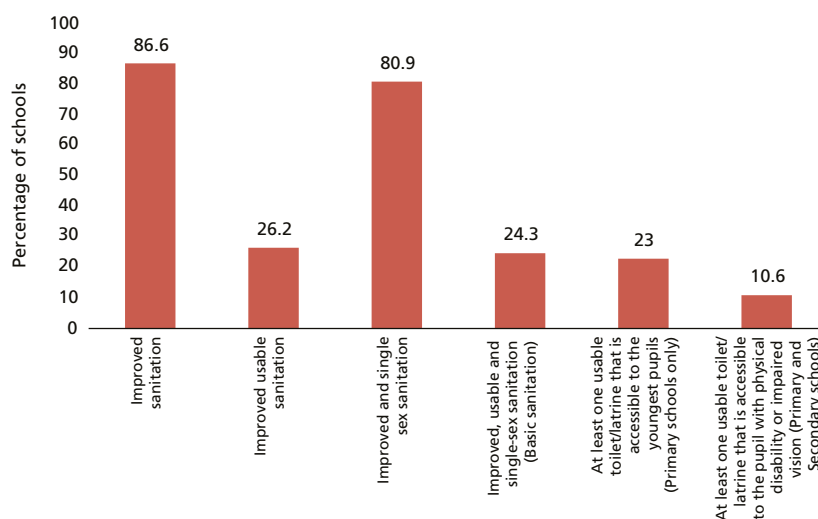


Source: UNICEF, 2020, 2018 School Water, Sanitation and Hygiene Assessment-Tanzania, Main Report, <https://www.unicef.org/tanzania/media/2356/file/National%20School%20WASH%20Report%202020.pdf>, viewed on May 23, 2021

surveyed did not have toilets, which has been attributed to the collapse of toilets that had been built. Eighty seven per cent schools have improved sanitation facilities with pit latrines and washable slabs, ventilated improved pit latrines, flush-to pit latrines, and septic tanks. Roughly 13 per cent had unimproved sanitation facilities. Map 3 shows that only 16 per cent of the total region scores above 50 per cent with respect to availability of basic sanitation in schools.

Although most of the facilities were found to be inside the school premises, except in 2.2 per cent of the cases. Graph 10 identifies that only 10.6 per cent of school toilets are disabled-friendly, and 24.3 per cent of schools have improved sanitation.

**Graph 10: Schools in rural areas on the basis of single-sex, improved and accessible toilets**

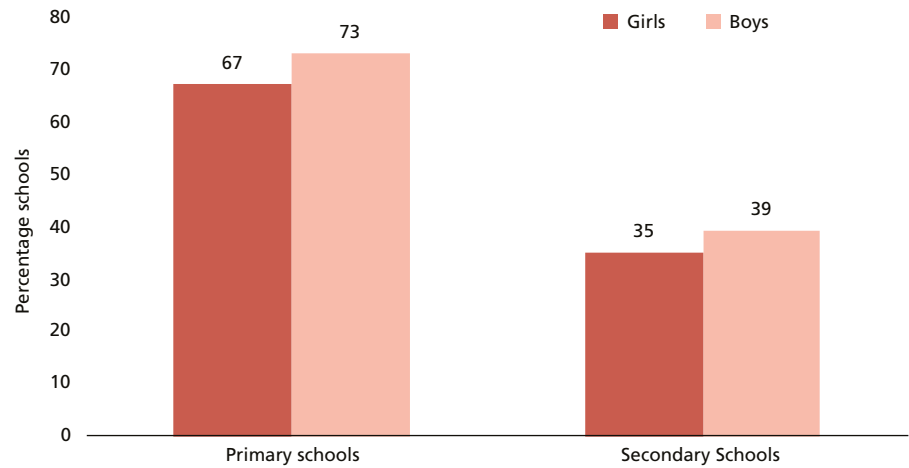


Source: UNICEF, 2020, 2018 School Water, Sanitation and Hygiene Assessment-Tanzania, Main Report, <https://www.unicef.org/tanzania/media/2356/file/National%20School%20WASH%20Report%202020.pdf>, viewed on May 23, 2021

Most facilities were observed to be clean – only 3.2 per cent was found to be unclean. and the percentage of cleanliness was found higher in urban scenarios. Girls’ toilets were found to be cleaner in most cases.

The Water, Sanitation and Hygiene Budget Brief (Tanzania), 2018 also identifies that 52 per cent of schools do not have doors in girl’s toilets and 96 per cent of the schools do not have suitable accessible facilities for disabled children – this results in a high dropout rate. As per the budget brief<sup>43</sup>, the average male and female toilet ratio in primary schools of Tanzania is 1:53 and 1:52, while as per the policies it should be 1:25 and 1:20 respectively. With specific reference to the rural scenario, the SWASH assessment report identifies the ratio as 1:58 and 1:68 for females and males, respectively. It also identifies that only 24.2 per cent of the schools in rural areas have achieved this standard. Only two regions, Kilimanjaro and Njombe, could maintain it in above 50 per cent of their schools. Graph 11 specifies the average ratio of drop hole to students in primary and secondary schools.

**Graph 11: Percentage of schools with average students per drop-hole**



Source: UNICEF, 2020, 2018 School Water, Sanitation and Hygiene Assessment-Tanzania, Main Report, <https://www.unicef.org/tanzania/media/2356/file/National%20School%20WASH%20Report%202020.pdf>, viewed on May 23, 2021

The SWASH report notes that once the pits are filled up, approximately 63 per cent of rural schools dig new pits, and 79 per cent use gulpers or manually empty the pits.

The Budget Brief had identified the year 2020<sup>44</sup> as the deadline for achieving adequate sanitary facilities for all schools under key national targets for WASH, under Health Sector Strategic Plan IV (HSSP-IV). A total funding of Tsh 6.99 billion has been allocated under the Water Sector Development Plan-II for implementing WASH in schools.

While Tanzania has taken some significant steps, many questions, of course, remain to be answered. For instance, where does the faecal sludge go after emptying? For how long will the schools continue digging pits? Are the pits being made lined properly to ensure that they do not contaminate the groundwater?



# 4. Impacts of poor sanitation

- **Eighty-six per cent of Tanzania Mainland rural households use unimproved toilet facilities or have no toilet facilities at all, which increases the risk of disease transmission. Unsafe disposal of faecal sludge and the child faeces have aggravated the crisis**
- **Poor sanitation and open defecation have led to sharp increases in prevalence of diarrhoea between children aged less than 6 months and those between 6-11 months. Lack of adequate safe sanitation is contributing to high levels of stunting among children**
- **Tanzania has reported a very low coverage of toilets in schools, with only one in 10 schools having decent toilets**
- **Poor sanitation costs Tanzania 301 billion Tanzanian Shillings each year, equivalent to US \$206 million – this amounts to US \$5 per person per year or 1 per cent of the national GDP**
- **The country’s sanitation coverage has improved since a ‘latrinisation’ programme was introduced by the government in the early 1970s, but most of rural Tanzania still relies on basic latrines, described as “fixed-point open defecation”**

Unimproved sanitation and open defecation have negative impacts on health. Diseases like diarrhoea, cholera, dysentery, typhoid and hepatitis A occur when unsafe sanitation contaminates drinking water sources or soil and results in environmental degradation of the area. It is clear that achieving the SDG 6 of water, hygiene and sanitation can not only save lives, but also stimulate gender equality, support environmental safety, bolster education, and provide a foundation for economic growth by providing access to toilets and water.

## Health and environmental impacts

In rural areas of northern Tanzania, poor sanitation has been observed to be on the rise, especially among pastoralists and other groups whose main source of livelihood is livestock rearing.<sup>45</sup> According to the Demographic Health Survey 2015-16, the population of Tanzania is young, with 46 per cent of it under the age of 15.<sup>46</sup> Lack of adequate safe sanitation is contributing to high levels of stunting among children in Tanzania. Analysis of the survey data indicates that in rural Tanzania, children are shorter (stunted) in communities where human faeces are managed improperly. This suggests a strong link between sanitation and nutrition. Stunting can impact intellectual and cognitive abilities, and can lead to impaired learning, increased absences from school, and decreased future economic productivity.

Eighty-six per cent of Tanzania Mainland's rural households either use unimproved toilet facilities or have no access to any toilet facilities, which increases the risk of disease transmission, says the Demographic Health Survey 2015-16.

The survey has also stated that poor sanitation and open defecation have led to a sharp increase in prevalence of diarrhoea between children aged less than six months (6 per cent) and those aged between six to 11 months (22 per cent). This is expected because children begin to crawl and walk at this age, and are exposed to a higher risk of infection from the environment.

Majority of the people do not practice hand washing after defecating, whether in a toilet or in the open. Some studies also suggest that citizens in rural areas avoid hand washing because of unavailability of soap as well as limited water availability.<sup>47</sup> Access to water is a critical problem – for women, a shorter distance to a water source is more important than good quality of the water. As a result, improved water supplies are not utilised if they are farther away from household dwellings than the traditional sources.

The use of sanitary napkins is also an issue – a majority of girls and women have reported using pieces of cloth; only a few use sanitary pads. This leads to unhygienic menstruation and can result in infections, burdening families with extra expenditure on healthcare. A study done in 2020 (*Sanitation and Hygiene in Small Towns of Tanzania*<sup>48</sup>) says: “School girls declared missing school/classes during menstruation for some reasons including lack of sanitary materials, illnesses associated with menstruation, lack of freedom for playing with friends

or boys, fear of shame in case the bleeding becomes uncontrolled in front of people, and lack of private place/changing room for girls.”

Tanzania has reported a very low coverage of toilets in schools, with only one in 10 schools having decent toilets.<sup>49</sup>

Proper disposal of children’s faeces is another area of concern. If faeces is left uncontained, diseases may spread by direct contact or animal contact. The Demographic and Health Survey of FY 2015-16 has stated that 83 per cent of urban children had their stools safely disposed of, compared to only 68 per cent of rural children.<sup>50</sup>

Many studies have shown that people use polythene bags for excreta disposal. They tie up the mouths of these bags and either bury it underground or throw it in the bushes. This leads to contamination of soil and causes health problems. It affects children, who can get infected with soil-transmitted helminths which can cause impairment in intellectual and cognitive development.

Unsafe excreta disposal has had a severe impact on water resources, contaminating the water bodies. With most of rural Tanzania dependent on natural sources of water in the absence of piped water supply, there exists a real threat of a health crisis as a result of use of contaminated water – a report by the United Nations in 2018 has said that formal supply is used by only 15-30 per cent of Tanzania’s population; the rest depend on informal supply.<sup>51</sup> Unsafe water also has cost implications – treating such water is expensive.

A study done by CSE on Sub-Saharan African countries says: “Countries like Madagascar and Tanzania demonstrate the link between inadequate access to sanitation and adverse health impacts clearly. In Tanzania, there has been an increase in open defecation in the last 15 years.<sup>52</sup> Only 17.2 per cent of the rural population has access to any decent toilets. Nine children die every day due to diarrhoea, and one in three children shows signs of stunted growth.<sup>53</sup>

## **Socio-economic impacts**

Poor sanitation and hygiene may lead to school and workplace absenteeism, which in turn may impact academic achievement and workplace performance. These impacts affect not just the individual, but also the community and the wider society, with respect to social, economic and overall development.

Sources suggest that in Tanzania, open defecation is practiced mostly in a male-headed family instead of a female-headed one. The expectation, however, had belied this ground reality: researchers had expected that households headed by women would be the least likely to have a toilet due to gender-based power relations that constrain women’s participation in the sanitation decision-making process; other reasons were women not having the requisite physical strength or manual skills to dig and build latrines, and also lacking the time for this as they are usually kept busy as mothers and caregivers.<sup>54</sup>

Some studies done in rural areas of Tanzania have indicated that women have a better understanding about the importance of having sanitation facilities to improve the health and wellbeing of their children and households. When they are in charge as heads of households, they tend to be more conscious, may invest in sanitation, and can adopt safe hygiene practices.

A 2014 study<sup>55</sup> says people prefer going out to defecate, without worrying about hygiene, safety or social stigma. The key constraints among households that express a desire to build a toilet seem to be the cost (46 per cent said the high cost was stopping them from building one); inability to save or access credit (21 per cent gave this as a reason); and a lack of reliable design consultants or builders (19 per cent). Leading constraints among households with no plans to build a toilet were lack of finance (44 per cent) and traditional or cultural beliefs regarding defecation practices (24 per cent).

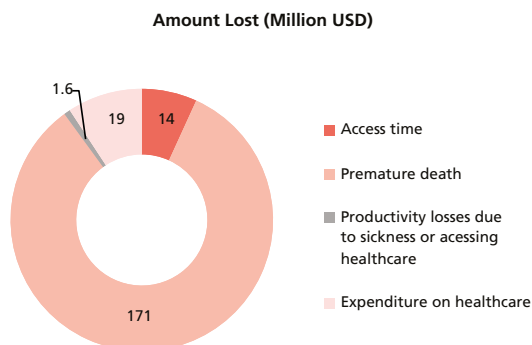
There is also the ‘defiant’ group: those who have the socio-economic resources to construct their own toilets, but still prefer to practice open defecation or share toilets. According to this group, traditional toilets do not match the style of their houses; they do not consider basic pit latrines as an option when building their homes. The fear of flies, bad odour, and the possibility of pit collapse are the concerns raised by these people.<sup>56</sup>

As discussed earlier in this paper, Tanzania had committed to allocate 0.5 per cent of its GDP to water and sanitation by signing the 2008 eThekweni declaration – however, it has managed to allocate only 0.3 per cent for the entire water sector in FY 2016-17, says a UNICEF report of 2018. But an earlier (2017) assessment by the World Bank has pointed out that Tanzania spends US \$61 per capita on WASH – this is more than what is spent by Rwanda, Zambia or Burundi.<sup>57</sup>

Poor sanitation costs Tanzania TSh301 billion (Tanzanian Shillings) each year, which is equivalent to US \$206 million, according to a desk study carried out by the Water and Sanitation Program (WSP) (see Graph 12). This sum is the equivalent of US \$5 per person in Tanzania per year or 1 per cent of the national GDP.<sup>58</sup> The cost of a necessary WASH response to a sanitation epidemic has been estimated at US \$3.8 million a year. Moreover, annual sanitation-related funeral costs (discounted against future funeral costs) have been pegged at US \$2.2 million. These costs heavily burden the citizens and the government of Tanzania. Figure 1 details the areas where Tanzania lost owing to poor sanitation services.

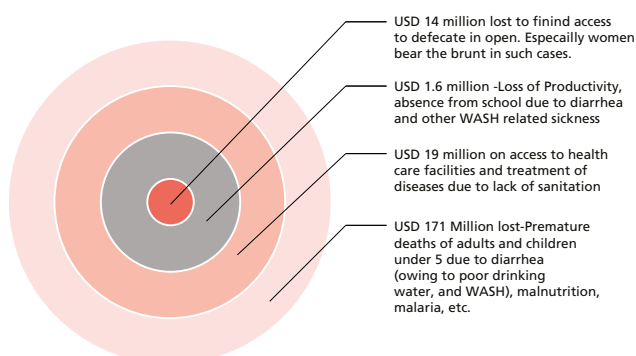
To add to this, poor sanitation leads to a net loss to the economy due to its health implications. Tourism, for instance, can be hit. The World Economic Forum Travel and Tourism competitiveness report ranks countries according to 75 indicators, one of which is sanitation status.<sup>59</sup> Based on the current contribution of travel and tourism to Tanzania’s GDP, addressing the concerns in sanitation could lead to a potential increase of US \$7.1 million annually in the turnover from travel and tourism.<sup>60</sup>

## Graph 12a: USD loss by Tanzania



Source: Water and Sanitation Program - Africa Region -Nairobi, KE, (WSP-AF), 2012, "Economic Impacts of Poor Sanitation in Africa- Tanzania, <https://www.wsp.org/sites/wsp.org/files/publications/WSP-Econ-San-TZ1.pdf>, viewed on 23rd May, 2021.

## Graph 12b: Why so much of losses?



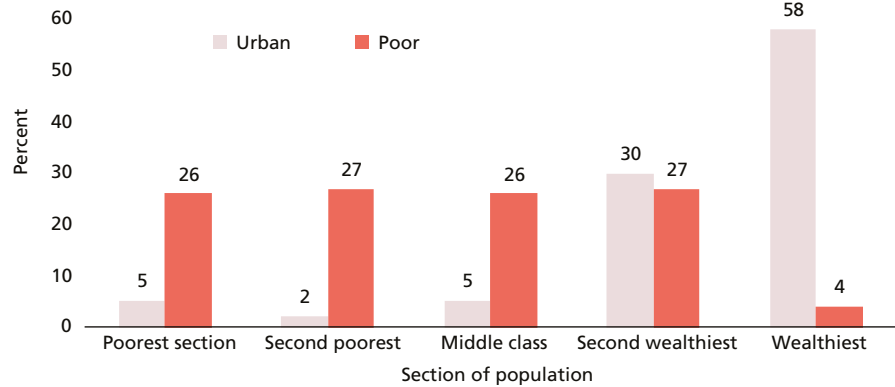
Source: Water and Sanitation Program - Africa Region -Nairobi, KE, (WSP-AF), 2012, "Economic Impacts of Poor Sanitation in Africa- Tanzania, <https://www.wsp.org/sites/wsp.org/files/publications/WSP-Econ-San-TZ1.pdf>, viewed on 23rd May, 2021.

Economic inequality is quite stark. Compared to urban Tanzania, which holds 58 per cent of the country's wealthiest population, rural Tanzania has only 4 per cent; 75 per cent of the population in rural areas falls in the "poor wealth" bracket, compared to 10 per cent in urban Tanzania (see Graph 13).

In some rural areas of Tanzania, the government has implemented the Jirani support system with the aim of improving the sanitation status of the community. The system empowers neighbours<sup>61</sup>:

- to make regular household visits to monitor the availability and condition of sanitation and hand washing facilities, and hygiene behaviour
- to encourage improvement of toilets
- to create a reporting channel to share sanitation and hygiene issues from the village to the district level

**Graph 13: Household wealth by residence**



Source: Water and Sanitation Program - Africa Region -Nairobi, KE, (WSP-AF), 2012, “Economic Impacts of Poor Sanitation in Africa- Tanzania, <https://www.wsp.org/sites/wsp.org/files/publications/WSP-Econ-San-TZ1.pdf>, viewed on 23rd May, 2021.

But the implementation of this programme has its own constraints – jirani have an impartial knowledge at best of the tools and technologies of faecal sludge and septage management; there are also the problems of unstable community leadership, scarcity of resources and low acceptance of intervention.

Tanzania needs access to water and safe sanitation as it is leading to health and environmental impacts as well as social and economic impacts. Having access to water and sanitation will save billion dollars that are being invested in Tanzania. Open defecation not only has higher costs than any other sanitation practise, it has considerable adverse social impacts. Low cost and effective ways of stopping open defecation need to be scaled up in Tanzania. Increased investments in sanitation and hygiene promotion are required not only to realise health and welfare benefits of sanitation, but also to avert large economic losses.

Furthermore, safe disposal of human faeces is an urgent need of the hour and should be taken care of to achieve SDG 6. While Tanzania has achieved significant growth – averaging 6.5 per cent over the past decade – and a reduction in poverty from 34 per cent to 28 per cent (2007-2012), it has lagged in sustaining and expanding its basic WASH coverage. More than 23 million citizens get their drinking water from unimproved sources, and 41 million use unimproved sanitation facilities.<sup>62</sup>

The country’s sanitation coverage has improved since a ‘latrinisation’ programme was introduced by the government in the early 1970s,<sup>63</sup> but most of rural Tanzania still relies on basic latrines, described as “fixed-point open defecation”. Over the years, many of those basic latrines have lacked adequate maintenance or have fallen into disrepair. The most common type of toilet facility is the pit latrine, present in almost 89 per cent of households – only 12.7 per cent of households have reported having a pit latrine with slab.

Approximately 26,500 Tanzanians, including 18,500 children under five, die each year from diarrheal disease from poor WASH habits. A new diagnostic shows that improvement in WASH is critical for attaining the Sustainable Development Goals, and in enhancing health and education outcomes.<sup>64</sup>

## **5. An action plan to achieve SDG of sanitation**

- **The main causes of unsafe sanitation practices in Tanzania seem to be lack of adequate investment in the sector, proper regulation, monitoring and evaluation, and non-availability of efficient technologies.**
- **There is a need to develop a strong institutional framework for sustainable management of faecal sludge and wastewater. The country needs to rethink on technologies to treat black and grey water safely – there is also a need for major capacity building programmes.**
- **The connection between water and toilets needs to be understood. To make toilets functional, one needs to have a constant supply of water in toilets. Since the country depends mostly on underground water, Tanzania needs to develop a strong policy on creating decentralised systems for harvesting rain.**
- **There are successful initiatives on sanitation and water management being followed in countries of the Global South like Ethiopia, Bangladesh and India. All of them show that a strong political will aligned with community participation, regulatory interventions and effective monitoring can work wonders.**

Various reports have indicated that most of Tanzania uses unimproved sanitation. While the number of people practising unimproved sanitation declined from 84 to 42 per cent between 2000 to 2017, this does not imply safe sanitation practices.<sup>65</sup> This does not imply safe sanitation practices. Reports suggest that faulty toilets contaminate groundwater and springs in the surrounding areas, resulting in diarrhoeal and other waterborne diseases.

To meet the sanitation goal of the SDGs by 2030, Tanzania is trying to learn from success stories from around the world with regard to behavioural change in construction and usage of toilets. The country has been working with local and private organisations, non-profits and CSOs to motivate people to build toilets.

One of the case studies that the country could examine in this process is that of India. India launched its latest sanitation programme, the Swachh Bharat Mission (Clean India Mission), in 2014. The Mission has aimed at changing behaviour of communities in adopting sanitation facilities at the household level.<sup>66</sup> The main impediments to adopting sanitation facilities in India, the Mission has noted, have been non-availability of land to construct toilets and other such facilities, lack of water connections to toilets, and absence of safe technologies for the management of excreta<sup>67</sup>. In many instances, communities are understood to have also opted for open defecation due to non-availability of safe containment and treatment of sludge.

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 eco-regions of the country needs to be emphasised on.

In Tanzania, pits—mostly the traditional type—seem to be the most favoured option for managing excreta. But 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.

Government agencies which play a role in making people aware about the use of toilets promote pit toilets in different districts, but seldom provide any guidelines about emptying and treatment of the sludge. The pits are abandoned once they are 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. As per CSE's survey in the rural areas and unplanned settlements of Tanzania, many pit toilets are located in areas that vacuum tankers cannot reach. Further, pumped systems can only work with sludge that is fairly liquid and contains less solid matter, such



as trash or garbage.

This huge gap in accessibility to a sanitation system and 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. In Tanzania, there is a 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 into a road drain or onto a nearby open ground.<sup>68</sup>

This clearly indicates the following challenges in the wastewater (grey and black) and faecal sludge management sector in Tanzania (with a focus of rural areas, where most of the population dwells):

- Lack of proper regulations
- Lack of investment in infrastructure
- Lack of efficient technologies
- Lack of monitoring and awareness

## Institutional frameworks for management of faecal sludge and wastewater in rural areas

**Table 6: Proposed institutional roles for sustainable management of wastewater and faecal sludge in Tanzania**

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 households	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 owners association/ water sanitation committees	<p>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</p> <p>Toilets will have water supply for hand washing (and self-cleaning if not dry toilet)</p>	<p>Adequate number of toilets, no contamination of water and soil</p> <p>No fresh handling of sewage</p>		<p>Showing interest in construction of toilets</p> <p>Arranging or planning for resources/ materials for toilet construction</p> <p>Arranging for water supply to toilets (for self-cleaning and/or handwashing)</p>	<p>Handling the funds and resources/materials</p> <p>Monitoring the quality of toilets and their use and maintaining a steady source of water supply to these toilets</p> <p>Reporting issues on emptying, collection and transport of sludge to the water and environmental sanitation department</p>
Sub-county Division/LGA	<p>Collection and transportation equipment for faecal sludge</p> <p>Open drains for carrying grey water out of single and cluster households</p> <p>In charge of treatment systems for grey water (decentralized)</p> <p>In charge of faecal sludge treatment system</p> <p>In charge of water supply to the toilets</p>		<p>Having a menu of safe technologies available for management of faecal sludge and grey and black water</p>	<p>Making the community aware of safe technologies</p> <p>Deciding the type of safe technology suitable for a particular ecoregion</p> <p>Coordinating with the toilet owner association/water sanitation committees</p> <p>Taking part in, allocating contract and commissioning projects to private parties</p> <p>Involving itself in supervision of the implementation of the decentralized systems (for faecal sludge and wastewater)</p> <p>Involving itself in the sustainability of water sources (through different rainwater harvesting techniques)</p>	<p>Making the community aware of safe technologies</p> <p>Deciding the type of safe technology suitable for a particular ecoregion</p> <p>Coordinating with the toilet owner association/ water sanitation committees</p> <p>Taking part in, allocating contract and commissioning projects to private parties</p> <p>Involving itself in supervision of the implementation of the decentralized systems (for faecal sludge and wastewater)</p> <p>Involving itself in the sustainability of water sources (through different rainwater harvesting techniques)</p>

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	<p>Collection and transportation equipment for faecal sludge</p> <p>In charge of decentralized wastewater systems and faecal sludge treatment systems</p>		<p>Politically can promote the provision of excreta and wastewater management</p>	<p>Defining appropriate standards for treated wastewater and faecal sludge</p> <p>Spreading awareness on faecal sludge and wastewater and sensitizing the community for effective treatment and reuse</p> <p>Monitoring infrastructures</p> <p>Coordinating with stakeholders</p> <p>Building capacity of the artisans in the construction of decentralized systems of culturally acceptable and affordable treatment of excreta, wastewater and water management systems</p>	<p>Enacting by-laws of excreta and wastewater management</p> <p>Mandating provisions of such sanitary conveniences in large public gatherings. Makes provisions for approvals before such gathering</p> <p>Setting out the structure of tariff</p> <p>Monitoring contractors</p> <p>Monitoring the work schedule of the water and environmental sanitation department</p> <p>Monitoring performance of the decentralized systems</p> <p>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)</p> <p>Enacting reuse regulations based on market demand, application guidelines based on agronomic trials, etc.</p>

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 Health, Community Development, Gender, Elderly and Children			Can promote politically provision of excreta and wastewater management	<p>Sourcing funds</p> <p>Commissioning research studies and capacity-building programmes on culturally acceptable and economic management of faecal sludge and wastewater</p> <p>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</p> <p>Approving major decisions in the local government areas and the states</p> <p>Supporting public awareness on wastewater and faecal sludge management</p> <p>Getting involved in overall supervision</p>	<p>Developing, reviewing and updating periodically policy guidelines for wastewater and faecal sludge management</p> <p>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.</p> <p>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</p>

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)	<p>Collection and transportation equipment for faecal sludge</p> <p>Laboratories to test the quality of the treated faecal sludge and wastewater</p>		<p>Have a menu of safe technologies available for management of faecal sludge and grey and black water</p> <p>Research capabilities</p>	<p>Developing partnership with local government authorities in projects</p> <p>Supporting Local Council 5 to design appropriate cost-effective technologies for the communities</p> <p>Helping Local Council 5 with research projects for the management of faecal sludge and wastewater</p> <p>Supporting public awareness on wastewater and faecal sludge management</p> <p>Supporting Local Council 5 on cost recovery of the infrastructure implemented</p> <p>Buying end products of faecal sludge and treated wastewater (e.g. in agricultural industry)</p>	<p>Following the mandate of the faecal sludge management by-law</p>

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 organisations 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	

Source: 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 of 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 organisations (CSOs), non-profits, communities, self-help groups and artisans aware about the safety standards under information education and communication (IEC) activities.

## A regulation for faecal sludge management

CSE proposes a regulation to be brought in for faecal sludge management in rural areas and smaller towns, with the focus on on-site sanitation. The key actions of this regulation should be:

- To ensure that each step of the sanitation value chain – from design to operation and maintenance of the system – is well defined.
- To ensure that insanitary toilets are retrofitted or converted to sanitary ones.
- To give incentives to communities interested in retrofitting.
- To issue licences to private service-providers.

To give incentives for sanitation services, and penalise service providers for violations.

But who will be responsible for implementing this regulation? The district authority (local council) should be in charge of defining the roles and responsibilities of the stakeholders, developing the institutional framework, and enforcing the regulation.

### **Activities proposed under this regulation**

**Retrofitting or conversion of insanitary toilets to sanitary toilets:** A database of improperly built toilets (those which did not follow safe norms or failed to take into consideration soil strength and type and hydro-geological conditions) should be developed. Geo-tagging of all existing toilets will be beneficial. Households should be informed about insanitary conditions. Incentives in the form of discounts on tariffs on water or any other services provided to the community (or households) should be offered 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 gets filled, the other pit gets ample time to decompose the faecal sludge, and the decomposed sludge can be emptied by household owners or the 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. It should be made compulsory for all property owners to provide proper covers.

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, newspapers 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 gear including rubber gloves, rubber boots, face masks 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 the case of malfunctions, 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, minimise 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:
- The applicant shall display the company name, company logo, contact number and business registration number of the transporting vehicle on both sides;
- The applicant shall display the service area and final point where the sludge will be transported;
- 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
- 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

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



### PPP model for faecal sludge treatment plant at Leh, India

Situated in the Himalayas at an altitude of over 3,500 metres above sea level, with a harsh climate (the temperature ranges from  $-40^{\circ}\text{C}$  to  $35^{\circ}\text{C}$ , 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 identified 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 partnership with Blue Water Company (BWC), a private provider of turnkey wastewater management solutions, to implement and manage every aspect of faecal sludge management in Leh, India. BWC financed, built 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: *PPP model for faecal sludge treatment plant at Leh, India*).

## Improving toilet design, FSM and making water available to toilets

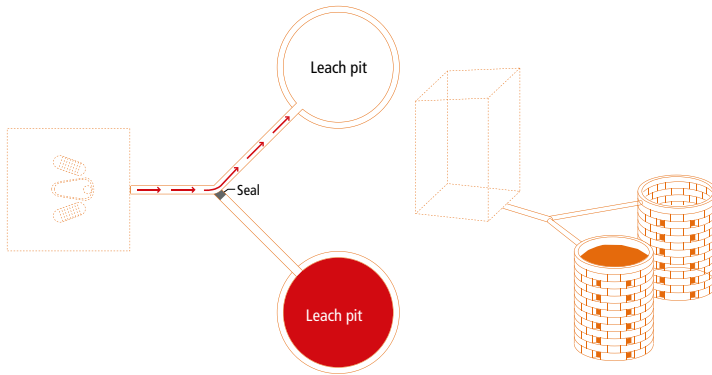
There are critical issues with toilet design and faecal sludge management in Tanzania. While several technological options are available to tackle sanitation concerns, the pertinent question here is what do households want.

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 Tanzania. It explains treatment at the household and neighbourhood levels as well as at the larger level of faecal sludge treatment plants.

## On-site toilet technologies

The following are on-site toilet technologies:

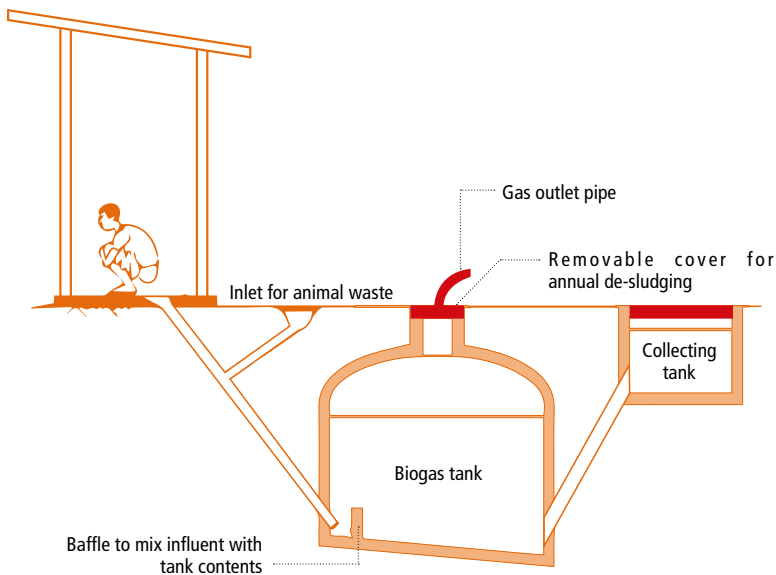
### 1. Dual pit toilet system



- Dual pits can be 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*

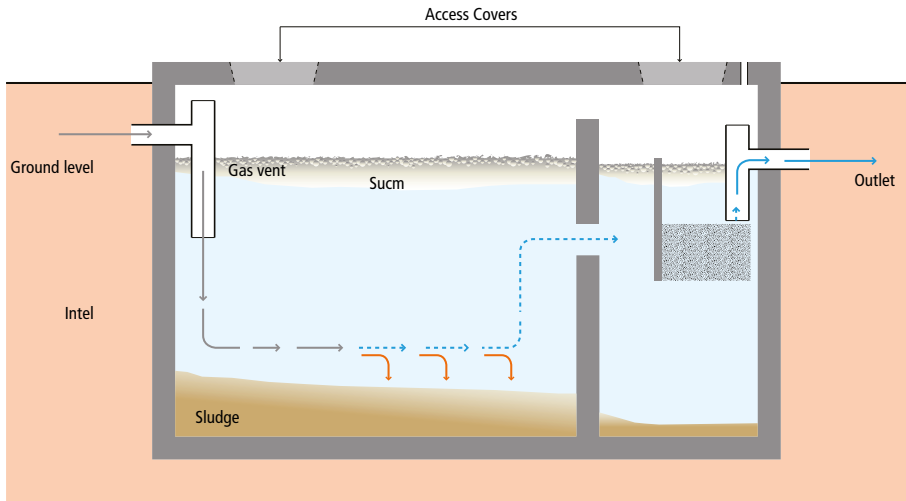
### 2. Toilet-linked biogas plant



- 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*

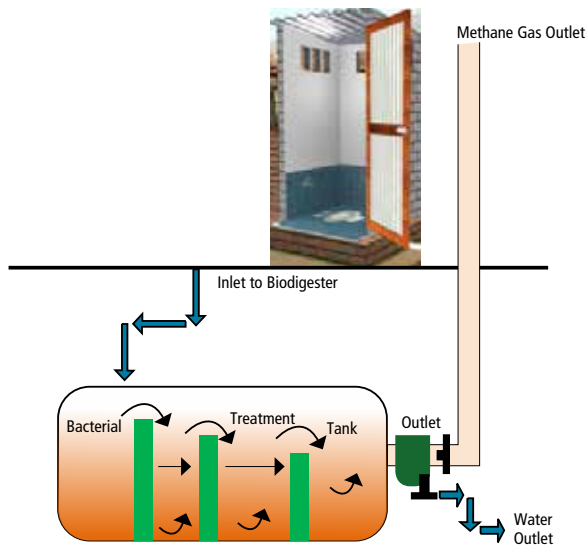
### 3. Septic tank (two-chambered with filter)



- 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.

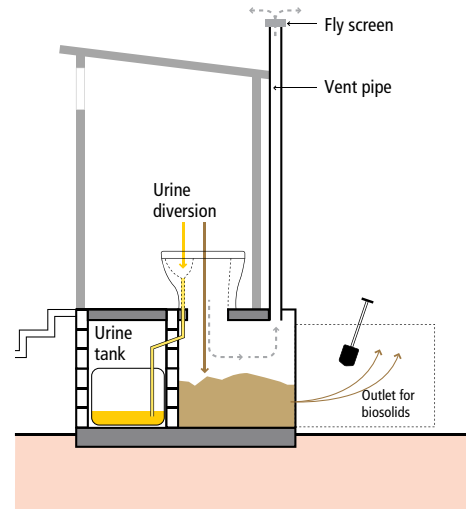
### 4. DRDO—Biodigester toilet



- 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 biolo

## 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 7: 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

**Table 8: Proposed treatment options for wastewater at the household and neighbourhood levels**

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	<p>Wastewater from local laid out drainage system passed into the wetlands</p> <p>Drainage system may carry both black and grey water or either of them to the system</p> <p>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)</p> <p>Masonry or natural structures planted with wetland plants and supported by gravel and boulders at the bottom</p> <p>The process uses natural biological process of plants and soil to clean water</p>	<p>Is technically simple</p> <p>Is ecologically sustainable</p> <p>Can handle large variety of pollutants</p>	Suitable in rural areas
Soil biotechnology	Community	<p>Wastewater from local laid out drainage system passed into the system</p> <p>Drainage system may carry both black and grey water or either one of them to the system</p> <p>RCC, stone-masonry or soil bunds and consists of an impervious containment</p> <p>An under-drain layer lies at the bottom above which lies a layer of media housing microbial culture and plants</p> <p>Physical (like sedimentation, infiltration) and biochemical processes are carried out to treat wastewater</p>	<p>No sludge production</p> <p>No odour</p> <p>Duration of treatment is small</p> <p>Treated water can be stored and used when needed</p> <p>Considered as one of the most efficient treatment technologies</p>	Suitable in small towns, where cost is not a constraint

Source: Compiled by CSE

**Table 9: Proposed steps for faecal sludge treatment plants**

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

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.

## Water availability for toilets

Rural water supply in Tanzania is inadequate.<sup>69</sup> Despite the substantial resources invested to provide safe water, there are a number of water points that are non-functional. As per the latest data<sup>70</sup>, over 40 per cent of the population does not have access to basic water supply; according to the definition given by UNICEF, 'basic water supply' means that the drinking water is coming from an improved source, and the collection time is not more than 30 minutes for a round trip.

Households usually utilise the available water for cooking, drinking and washing – using it for sanitation is the last priority. For sustaining long-term maintenance of toilets, access to water is critical. 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 rural areas.

Groundwater is the primary source – almost 50 per cent of the rural water supply comes from groundwater<sup>71</sup>. There should, therefore, be a provision for rainwater harvesting schemes, including groundwater recharge.

## Proposed steps for the country

- **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.
- **Revive the traditional water harvesting systems:** Tanzania 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 priority should be given to traditional systems as they conserve rainwater.
- **Focus on the sponges:** Waterbodies should be protected and created, and communities should revive degraded waterbodies themselves with minimal involvement from the state. 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 district but the involvement of the community in both its planning and implementation.
- **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.
- **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.
- **Communities should 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. 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



### The gaps, in a nutshell

- Rural sector needs more attention.
- Overlapping functions among various departments – the roles and responsibilities become unclear, leading to a concurrent lack of clarity in policy direction. This leads to overlapping of judicial powers and duplication of work between various agencies.
- Local governmental officials have limited powers and control. A majority of discretionary powers – including those related to financial matters and budgets -- lie at central level. This leads to neglect of local needs and delays in disbursement of funds, thereby hampering the quality of projects.
- Inequitable disbursement of funds, such as less funds for repair and maintenance and more for construction – this poses a sustainability challenge. Also, the rural sector receives less funds than the urban.
- Community-owned water supply organisations have less powers and financial independence – this poses challenges to their long-term sustainability.
- Limited paying capacity of the rural population.
- Though policies and regulations fix the responsibilities, implementation is not being done properly – un-regulated dumping of faecal sludge by service providers, lack of regulation in the informal sector, lack of water quality monitoring, etc are common complaints.
- Lack of centralised and localised monitoring and evaluation
- Poor enabling environment for the private sector

individuals.

- **Incentivise communities for decentralised water supply projects:** The state rural water supply and sanitation agencies should incentivise the communities going for source sustainability projects for water supply through harvesting rain in the form of awards and discounts in water tariffs.
- **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 decentralised water supply projects for this purpose.

## Fixing the gaps in existing policies and regulations

Due to the implementation of SWAp (Sector Wide Approach), Tanzania has seen progress in the area of institutional framework. Policies have tried to bring schools, communities and healthcare facilities within their ambit. The country has started decentralising its legislative powers at the local governmental level with the launch of the Water Sector Development plan in 2007.

However, its implementation on ground remains full of local challenges. Funding is being decreased over the years; underutilisation of funds is a concern. 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 more on water facilities and pay less attention to sanitation and hygiene promotion. In the sanitation sector, key gaps are being identified related to leadership, institutional arrangements, by-laws, and capacity development and policy frameworks (see Table 6).

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. This political goodwill still exists, right from the highest political office of the President to the lower levels of leadership. Furthermore, the decentralisation 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.

**Table 10: Gap identification in key functional domains in the sanitation sector in rural Tanzania**

Functional domain	Identified gaps
Political leadership	Sanitation is in the development agenda, but discrepancy exists due to cross-coordination in different policies and departments.
Policy/institutional arrangement	Only restricted to policy formulation and planning. Lack of survey data, misleading data
Decentralisation	Due to political interference and lack of knowledge practical implementation remains difficult
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, lack of proper subsidies for toilet construction, lack of rural sanitation markets
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. Improper allocation of funds and decreased funding in the subsequent years owing to no utilisation of funds. Focus is spending more on water than on sanitation.
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: *Water Supply and Sanitation in Tanzania: Turning Finance into Services for 2015 Beyond, 2011*

There is no need to create new structures in Tanzania 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.

## Learnings from best practices on behaviour change

This section draws attention to a few best case practices from South Asia and Africa, where 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.<sup>72</sup>

### COUNTRY LEVEL

#### Case study: Bangladesh

Bangladesh's drive to improve sanitation started in 2003, after its first nationwide baseline survey. According to the country's Department of Public Health and Engineering (DPHE), the survey revealed that only 33 per cent of Bangladesh's population had improved sanitation (pit latrines with slab), while 42 per cent had no toilets.

Soon, 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?

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, had started in the 1970s. The DPHE, with the help of UNICEF and WHO, had introduced 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.

NGOs, entrepreneurs and microfinance institutions helped supplement and accelerate government programmes along with the development agencies. In 1991, the government formulated a 10-year sanitation strategy. In 1993, it launched a social mobilisation (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 the 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 has been 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.

Political commitment at all levels, from the federal government to the ward level, ensured sanitation received 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 this programme. The programme included a baseline survey, community mobilisation and preparation of action plans that included 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 the 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.

Coordination among line departments has ensured strong monitoring, which has been followed by reporting and verification from the field. Union parishads and paurashavas (municipalities), as the lowest tiers of the local government, collect information from ward water and sanitation (WatSan) committees. Community-based organisations 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 national capital, the LGD and DPHE have introduced standard monitoring formats for different government organisations into the National Management Information System (NAMIS). 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.

In this manner, the focus has been shifted from subsidy-driven toilet construction to bringing about behavioural change in people. A participatory approach has enabled distinct behavioural changes -- respondents have realised the consequences of better sanitation, such as improvement in health and protection of women's dignity.

## **COUNTRY LEVEL**

### **Case Study: Ethiopia**

#### **What worked?**

Ethiopia is a country with strong development priorities and political stability, which has made the country work extensively in removing open defecation. One of the first things that helped was strong political will.

The secret of Ethiopia's success also lies in the fact that it recognises sanitation as a health problem. Sanitation and drinking water are under a single ministry -- under the ministry of health. In fact, the Ethiopian government's Health Extension Programme, started in 2003, and is responsible for rolling out key sanitation interventions in rural areas where 85 per cent of the country lives. 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 the infectious disease that can leave people blind.

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 tariffs and monitor performance. This principle of community 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 customised 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.

The country also has open defecation-free verification and certification guidelines and has 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. Ethiopia also have a system where kebeles are coded according to their open defecation-free status.

## Case Studies from India

### STATE LEVEL

#### Case Study: Sikkim

Sikkim, in the northeastern part of the country, was the first state in India to achieve 100 per cent sanitation in rural and urban households, schools, sanitary complexes and anganwadi centres (facilities in villages where basic healthcare, nutrition and education is provided). As per the data on Swachh Bharat Mission, the state had constructed 57,525 household toilets and attained 100 per cent open defecation-free status. Apart from this, the state also worked on solid and waste management through awareness campaigns.

#### What worked?

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.

These were key to the success of Sikkim's sanitation programme:

- **Strong political and administrative will:** It was made mandatory for all gram sabhas (village councils) to have sanitation as the top priority in their agenda.
- **Stringent law and enforcement:** The state government made amendments in the Panchayati Raj Act so that members of panchayati raj institutions (bodies at the village level) construct toilets in their households. If they failed to do so, their nominations were cancelled in the panchayat elections.
- **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.
- **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.
- **Strong advocacy:** People began to value toilets as a mark of dignity.

### BLOCK LEVEL

#### Case Study: Taranagar Block, Churu District, Rajasthan state

#### What worked?

- **Strong political and administrative will:** The programme was rolled out in campaign mode under the strong leadership of the District Collector (the head of the district administration).
- **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.

- **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.
- **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 defecation-free status.
- **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.
- **Effective institutional arrangement:** Systems were instituted to facilitate the campaign at the district, block, gram panchayat and village or habitation levels.
- **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.
- **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.

## VILLAGE LEVEL

### Case Study: Tamana Village, Ganjam District, Odisha State

#### What worked?

- **Strong will of the village committee to bring about change:** Due to a water crisis, the villagers abandoned had agriculture in the early 1980s. Unavailability of water also made the villagers defecate in open, near the village pond, and contaminate their only source of water. Waterborne diseases were a regular feature in the village. The village committee finally decided that the village needed to change its ways and wanted an

improvement in water and sanitation.

- **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 construction and maintenance work of toilets. The communities were motivated to use local materials and to bear any additional cost.
- **Easy availability of funds:** A local NGO helped the villagers mobilise funds from government resources.
- **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 a piped-water scheme.
- **Water supply made sustainable:** Although the piped-water supply was laid with the help of government funding, the village executive council also created a corpus to be used for operation and maintenance of the piped-water supply. The corpus was created from contributions from 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.
- **Effective monitoring:** The council 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

- Political and administrative will
- Strong, credible leadership
- Awareness and education programmes through a decentralised community-centric approach
- Strong implementation plan
- 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, for instance, emerged as a champion by integrating both sanitation and health under the same ministry.



## 6. Recommendations and conclusion

Tanzania—which has more than 70 per cent of its population dwelling in rural areas—has over 50 per cent of its people practising unsafe sanitation. The country has failed to meet the Millennium Development Goal for sanitation. Though the 2019 Joint Monitoring report says that only 14 per cent of the population goes out to defecate, this does not ensure safe sanitation.

Research reports indicate that Tanzania has given up open defecation, but has moved towards any kind of toilet—of which the pit toilet (with non-washable slab) is the most preferred. This unimproved mode of sanitation adds to the health burden of the country as it contaminates groundwater, the most used source of water for the rural areas. The National Demographic Health Survey of FY 2015-16 has stated that poor sanitation and open defecation have also led to sharp increases in prevalence of diarrhoea between children aged less than six months and those aged between six and 11 months.

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 have invested money to make communities aware about building and using toilets. But real success has occurred only after correct toilet technologies were implemented and toilets had regular supply of water.

Tanzania relies on on-site sanitation facilities. 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.

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 have led to indiscriminate disposal in 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 out the issue of 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, which affects the overall state of sanitation of the country.

### **TASK 1: Strengthen the legal and institutional structures for effective implementation**

- The roles and responsibilities of different stakeholders, from household owners to government authorities and private agencies, should be well defined.
- Capacity-building and awareness programmes should be planned for users, artisans, NGOs, CSOs and government authorities involved in the sanitation sector.
- 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**

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

- Biogas-plant-linked toilets are the best option for every part of the country.
- 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.
- Ecological sanitation toilet is suitable for areas where water is scarce as well as for those areas that get waterlogged easily.
- Septic tanks are suitable in small towns (classified as rural) without a centralised sewer system, where cost is not a constraint.

### **TASK 3: Work on ensuring safe treatment or reuse of household excreta**

- 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.
- Soil biotechnology is the best option to treat wastewater at the community level in small towns, where cost is not a constraint.
- In a Faecal Sludge Treatment Plant, a combination of sedimentation tanks and reed bed filter to effectively separate solid and liquid parts of the sludge is suggested. This should be followed by treating the liquid in stabilisation 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.

- Where there are no existing sewage treatment plants, faecal sludge from a cluster of divisions (combination of several wards) should be carried to a Faecal Sludge Treatment Plant.

#### **TASK 4: Link water availability with sanitation and reuse**

Over 90 per cent of water supplies in the country depend on groundwater. Tanzania has adequate rainwater harvesting potential to cater to its household needs. The country should implement the following:

- Introduce small-scale water harvesting systems.
- Revive its traditional water harvesting systems.
- Focus on building groundwater recharge structures.
- Involve communities (especially women) in small-scale projects. Make them aware and motivate them through incentivised schemes.
- Water should be mandated for functional toilets. Government should provide support to communities.

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Around 70 per cent of Tanzania's population lives in rural areas. Hence, sanitation challenges in the country are mainly driven by the state of sanitation in its rural areas. Only 24 per cent of rural Tanzania has access to basic sanitation facilities. The lack of safe sanitation has led to contamination of groundwater, the main source of drinking water in villages, leading to regular outbreaks of water-borne diseases. The cumulative economic loss due to lack of safe sanitation is huge: the country loses about US \$206 million annually.

To its credit, Tanzania has recognised the challenge and is moving forward to meet it. What it needs is to focus on safe sanitation – starting from retrofitting of faulty toilets, planning for periodic desludging, and ensuring safe transport and treatment of faecal sludge wherever necessary. The country has policies and strategies to promote safe sanitation, but the strategy for treatment of faecal sludge and wastewater needs a reinvention. There is also a need to strengthen the institutional structure to manage faecal sludge, including resource recovery. The country must review budget allocation for the water and sanitation sector.

This document reviews the state of sanitation in Tanzania, and recommends some guidelines for attaining safe sanitation in the country, especially in the rural areas.



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