



ABIDJAN 2023

The Faecal Sludge Management Alliance Presents

THE OUTPUT REPORT OF FSM7



FSMA



Letter from the Executive Director

At the end of FSM7, it is clear that sanitation as a sector cannot continue to walk alone and achieve SDG 6.2. The world's communities will not have clean water until we also have safely managed sanitation. Maintaining a divide between water and sanitation has not brought the world closer to reaching SDG 6.2.

FSMA was honoured to partner with the African Water Association, newly re-named as the African Water and Sanitation Association (AfWASA) to host the joint 21st African Water Association International Congress & Exhibition and the 7th International Faecal Sludge Management Conference in Côte d'Ivoire. This joint event unified and united the entire WASH sector in Cote d'Ivoire, in a way I have not seen before.

With our partners, AfWASA and SODECI in Abidjan, this event hosted over 70 sessions from esteemed colleagues and diverse exhibitors. This effort could not have been possible without the support of the Government of Côte d'Ivoire, the Steering Committee, and all our institutional partners. FSMA would also like to thank *Ministre de l'Hydraulique, l'Assainissement, et de la Salubrité* and the *Ministre des Eau et Foret*, ONAD, ONEP. And, of course, AfWASA and SODECI.

There's no better place to see the growth of new ideas creating exciting change than in Cote d'Ivoire. Cote d'Ivoire is a vibrant country and an economic powerhouse.

This conference really underlined for me the need to see fresh, new solutions to tackle SDG 6.2. I encourage every seasoned professional reading this to consider doing more mentoring, more delegating, and more listening. I've found the younger generations can teach us a lot about how to set aside our differences and work together.

I also encourage you to invest more time in learning. I constantly learn from the younger generation's no-nonsense approach to diversity - in representation and problem-solving. They look at our world differently, and I believe they hold the key to progress. If we could apply some of their curiosity and questioning mindset to our daily work, we could get closer to achieving our goals. We should question more what kinds of interventions and infrastructure we use for sanitation. The last few years have clearly shown that water-based sewer systems aren't the silver bullet that so many thought to be the case.

To all the young professionals in the audience - I see you and encourage you to be brave and share your ideas. We're listening.

Only together, can we avoid the limitations of the mono-infrastructure approach that we have used in the past. The future of water and sanitation is innovative, integrative, and inclusive.



Jennifer Williams
Executive Director
FSMA

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We cannot have clean water without clean sanitation.

This report highlights the conversations, outcomes, and key takeaways that emerged during the 21st African Water Association International Congress & Exhibition and the 7th International Faecal Sludge Management Conference.

This is the first report of two that will be released summarising the event. This report is intended to be a snackable report summarising the event at a high level.

An In-Person Conference in Côte d'Ivoire Inspiring Commitments

FSMA was honoured to co-host the 7th annual International Faecal Sludge Management Conference with AfWASA and SODECI in Côte d'Ivoire.

Selecting Côte d'Ivoire for FSM 7

With a population of 26 million and a growing economy, Côte d'Ivoire continues to prioritise improving access to water and sanitation.

Côte d'Ivoire has previously set impressive targets for water and sanitation access. In a 2015 survey, 50% of the country had access to improved sanitation facilities[3]. In response, the government created a Sanitation and Drainage Sector Policy Letter in 2016 to set sanitation targets of "75% access to improved sanitation facilities in urban areas" and "100% of collected wastewater is treated"- to be completed by 2030 [2].

In the 2019 Joint Monitoring Program (JMP) report, the proportion of the population with access to improved sanitation was 59%, with 73% of the country having 'at least basic' sanitation - 58 percent and 88 percent coverage in rural and urban areas, respectively [1]. **More work is still needed, and FSMA has been keen to support the efforts.**

This joint event brought together international experts conveying around the theme "Acting for sustainable resources management and access for all to water and sanitation in Africa". This event accelerated Côte d'Ivoire's progress and commitment towards building more water and sanitation infrastructure.

"There is great potential for the development of the sanitation market in Côte d'Ivoire" - Aminata Diarra & Safaa Fakorede

Inspiring Commitment from Côte d'Ivoire to Accelerate Change

The conference's focus on strengthening action to ensure access to water and sanitation for all of Cote d'Ivoire has inspired the government and its citizens. At the event's closing ceremony, the *Ministre de l'Hydraulique, l'Assainissement, et de la Salubrité* made the following declaration, **now known as the Abidjan Declaration.**

The ministers committed to:

- (1) Guarantee access to water and quality sanitation systems for all by considering the right to water and the right to **sanitation as part of a single right**
- (2) Guarantee the availability of resources in quantity and quality for improving access to water and sanitation
- (3) Ensure sustainable financing for water and sanitation services

In addition to these overarching benchmarks, the ministry's commitment provided concrete and actionable goals. One example was announcing that 20 sewage sludge treatment plants in 17 Ivorian cities will be constructed, notably in Abidjan and Yamoussoukro. This construction will utilise joint financing of the government and private sectors. This funding will also include building modern latrines to supply sludge to the newly constructed treatment plants.

This statement and its resulting commitments prove the power of conveying government, businesses, and non-government organisations in specific countries across the globe. This event was a unique opportunity to give Côte d'Ivoire the momentum and support to make a systematic change to increase the availability of sanitation and water infrastructure across the country.

The Faecal Sludge Management Alliance (FSMA)

FSMA is focused on creating a world where all people, everywhere, enjoy equitable access to safely managed and dignified sanitation services

The Faecal Sludge Management Alliance (FSMA) is a member-based network that supports efforts in faecal sludge management (FSM). We are a collaborative, responsive, and collective platform that advocates for adopting and implementing FSM to support inclusive sanitation planning as a public service.

Since 2020, FSMA has focused on using the momentum of FSM6 to create opportunities beyond the bi-annual conference to share knowledge, resources and expertise between organisations and individual members working in FSM.

Connecting the WASH Ecosystem Through Diverse Mediums

FSMA Connects to A New Audience's Ears

In addition to connecting with our members during 26 different FSMA hosted webinars, FSMA created a new podcast series titled "FSMA Presents". Along with our quarterly magazine, this podcast created a new platform and medium to discuss and explore unique stories, knowledge and perspectives related to FSM.

FSMA Expands the Toolbox Beyond Sanitation

FSMA's FSM Toolbox now has more flexibility and can import custom surveys of all services, not just those sanitation-related. This allows city planners to use one tool to collect and keep multiple datasets in a centralised location. It also allows surveyors to collect data on mobile devices - even without a network connection. This new functionality allows for municipalities and other surveyors to easily collect data beyond FSM.

Walking Together, Uniting Water and Sanitation

“If water is life, sanitation its twin brother brings dignity to life” - Mr Bouake Fofana, Director General of the Ageroute+

For years, water and sanitation professionals have worked separately – in silos – to achieve their universal access goals. They have competed for attention and interest from funders and policymakers. But that is changing.

By conveying a conference where two separate WASH organisations came together – one originally focused on water, the other on sanitation – we’ve created opportunities to encourage discussions and discovery to improve universal access to water and safely managed sanitation globally. Together, as a joint effort.

AfWASA Our Partner and Collaborator

[The African Water and Sanitation Association \(AfWASA\)](#), initially the Union of African Water Suppliers (UAWS), was established in February 1980. AfWASA came out of the desire of some African water utility managers to pool their human, technical, and financial resources and optimise the training of men and women in the sector to create synergy around the search for solutions to improve access to drinking water for the African people. AfWASA has convened water professionals internationally for years to promote learning and build strong professional relationships in the water sector.

During the successful proceedings of the event bringing together water and sanitation, AfWA officially changed its name to AfWASA, adding “sanitation” to its name and mandate. This radical change shows water professionals the importance of including and uniting efforts with sanitation professionals.

Taking the Abidjan Declaration Pan-African

At the closing ceremony of the event, the [Abidjan Declaration](#) committed African countries beyond Côte d’Ivoire to scaling sustainable management of resources and access for all to *both* water and sanitation across the continent.

The declaration:

- Invites ministries in charge of water and sanitation issues and all technical and financial partners to commit to this declaration;
- Calls to create a ministerial platform for coordinating and sharing between the different African countries to follow up on the commitments and pool advocacy efforts on water and sanitation issues;
- Commits to strengthen cooperation through regular meetings on the progress of the commitments and reflecting on common strategies.

We are excited to see the developments across Africa as this Abidjan Declaration continues to create tangible efforts to bridge the gap between sanitation and water.

FSMA & AfWASA's Joint Congress By The Numbers

- 77** Sessions
- 35** Partner Hosted Sessions
- 35** Technical Sessions
- 7** Sessions Organised by the Event Sponsor, African Development Bank
- 2** Plenaries
- 1** High-Level Symposium
- 1** Film Festival



Delegates: 1,022



Visitors: 2,584

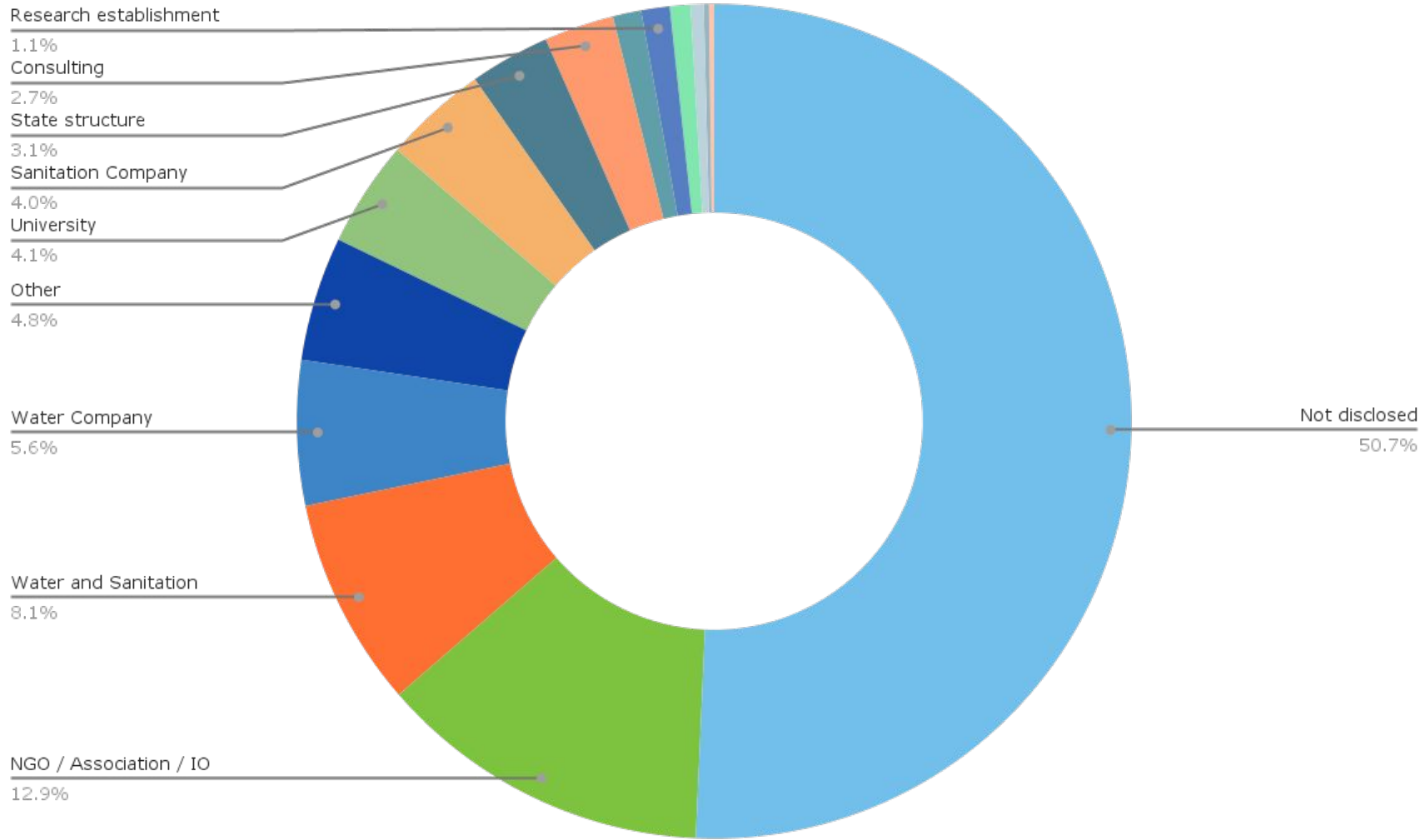


Exhibitors: 146

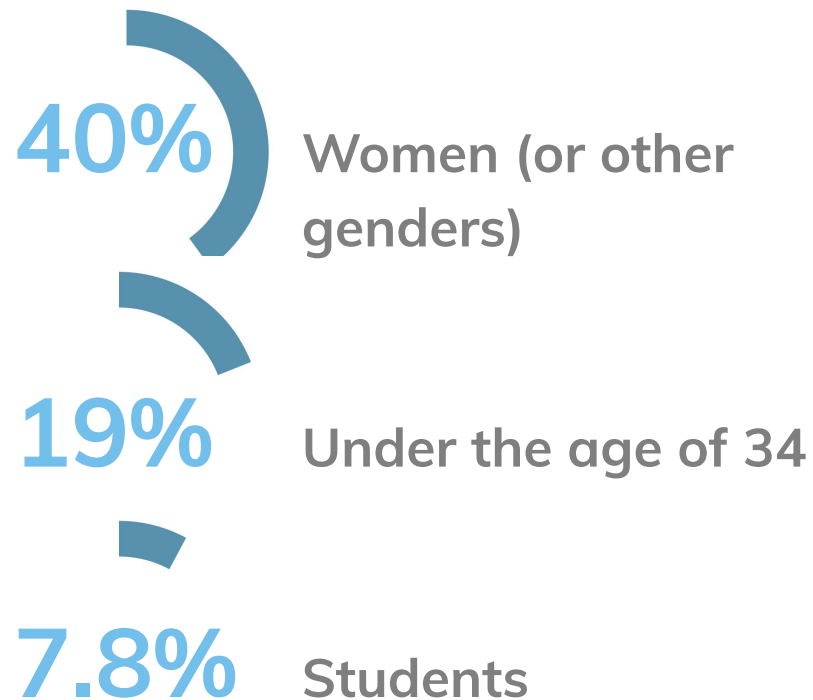
Attendee Top 5 Countries



Participant Breakdown



Who Joined the Congress, and Why?



This was a joint event between water and sanitation organizations, and the sessions with the highest participation rates focused challenges relevant to both focuses.

The sessions that had the highest participation included:

- The technical session on “Access to Sanitation Services for All,” which had the highest participation rate of 69.4% of all participants
- The session “The Governance and Performance of the Water and Sanitation Sectors” had 51% of the participants interested and attending
- The session “The Management of Water Resources and Climate Change” had a participation rate of 38.8%

Key Emerging Topics During FSM7

Uniting Water & Sanitation

For all sectors to meet their SDG goals, we need more practical collaboration. FSMA and AfWASA's collaboration is one example of the power of uniting sectors. Additional partnerships between water and sanitation were shared during the conference.

Representative Voices

To achieve SDG 6.2, we need to ensure everyone is at the table. This has been said time and again. However, it has remained elusive. In addition to traditional stakeholders, we need voices from service workers, architects, urban planners, and construction development to be heard.

Diverse Ways of Sharing

The congress created unique opportunities to share stories and lessons learned between organisations managing FSM. As an example, this event included a film festival and pit emptying challenge as ways of sharing information in new ways.

Persisting Themes from FMS6

Themes previously seen at FSM6 in 2021 continued to have a strong presence at FSM7.

Those themes include:

- (1) Unique Financing for FSM,
- (2) City Wide Inclusive Sanitation (CWIS) and
- (3) Standards to Accelerate FSM Change

1

Unique Financing for FSM and CWIS

Financing for WASH – particularly sanitation – remains a challenge and opportunity for the sector. It is estimated that it will take \$114 billion to achieve the SDG 6 targets. Sanitation progress in low- and middle-income countries has historically been financed by grants, which are not sustainable.

There is a need for innovative financing mechanisms to support efforts in improving WASH services across the value chains, such as exploring:

- Corporate grants to demonstrate projects that help reduce GHG emissions – from emptying to treatment
- Green bonds that could be innovative mechanisms to fund WASH projects.
- Using innovative finance mechanisms in the climate sector for WASH

2

City-Wide Inclusive Sanitation (CWIS) to Improve WASH Access

CWIS is a framework that the WASH sector considers useful to ensure inclusive access to water and sanitation in urban settings.

Wai and Sinner are two Indian cities implementing CWIS principles. Both cities implemented FSM plans through a council resolution that involved the private sector, scheduled cleaning of onsite systems, land for treatment facilities and taxes. They have also implemented an inclusive scheduled service for desludging septic tanks.

In January 2022, Wai successfully completed its first 3-year cycle of scheduled desludging. **This desludging cycle included over 3,600 septic tanks, and 19 million litres of septage treated -improving groundwater in the city.**

3

Standards to Accelerate FSM Change

As in FSM6, several FSM7 sessions mentioned the need to use standards for managing water and sanitation systems. **Some presentations indicated taking advantage of ISO Standards that can already be used to improve management, including ISO 9001 (Quality Management), ISO 14001 (Environmental Management Systems), and ISO 50,0001 (Energy Management).**

The Sanitation Readiness Index (SRI) is a new digital platform for manufacturers and technology owners of non-sewered sanitation systems. SRI helps them assess their systems' readiness for ISO 30500 Standard certification. SRI covers the three core pillars of ISO 30500: Technology owners can assess their technologies for compliance with ISO 30500.

Addressing Gaps of Funding for Sanitation

During FSM7, several presentations mentioned the challenges with accessing financing for sanitation (and water) enterprises and initiatives. Desludging companies must invest in new assets with their own funds when bank loans are inaccessible, container-based sanitation (CBS) service providers struggle to cover operating fees, and informal service providers struggle with low willingness to pay. Professionalization is a good way for sanitation service providers to access finance and improve performance, but there remains much to do to get there.

Covering CBS Costs

the [CBSA \(Container Based Sanitation Alliance\)](#) and [WSUP \(Water and Sanitation for the Urban Poor\)](#) brought together sanitation stakeholders on the remaining funding gap when delivering sanitation in urban informal settlements, and the mechanisms for reducing the gap for CBS solutions. User fees and product sales only cover about 30% of the operating costs.

Private sanitation providers reduce this funding gap through:

- Optimizing efficiency through scale, improving routes, and collections.
- Cross-subsidies from higher-income customers, where feasible.
- Selling higher-value products, such as biochar, co-compost, black soldier fly larvae, biogas, etc.
- Providing additional services such as pit emptying and mobile toilets at events. While this doesn't directly improve CBS costs, it improves overall business health.
- Exploring additional income streams from carbon credits and contracts.

In most cases, these approaches still do not eliminate the funding gap. This is expected: most countries with full or near-full sanitation coverage have subsidised sanitation services, including the capital and operating costs.

Key Action Areas

1. **Sanitation needs to be put on the political agenda.** We need to find sanitation champions within authorities and work with them to elevate sanitation advocacy within governments.
2. **Sanitation is a public good.** Like many public goods (such as roads), it cannot be expected to cover its costs from user fees directly: a funding gap will remain and will need to be covered by the public sector.
3. **Informal areas need a coordinated and integrated response,** by working across ministries and authorities to understand housing, infrastructure, services and informal economics.
4. **The funding gap can be significantly reduced,** as creative operators have shown, using cross-subsidies, operational efficiencies, higher-value by-products, carbon finance, and results-based funding.
5. **The enabling environment for sanitation operators is varied,** and goes beyond funding and contracting, for instance with tax breaks, and in-kind support.

Increasing Private Sector Finance Mechanisms

Since FSM6, it continues to be difficult for water and sanitation organisations to attract and secure private financing. Some projects and governments continue to innovate and build a portfolio of financing incentives and models unique to water and sanitation businesses, highlighting growing public interest in engaging the private sector in WASH financing

The large financing gap, limited public budgets, and economic fallout from COVID-19, means that public resources alone are insufficient to meet global WASH infrastructure investment needs. Fortunately, private sector engagement in WASH services has become more attractive to many governments.

Many countries have legal frameworks for incorporating public-private partnerships (PPPs). In most cases, PPPs require public capacity and management of the design and implementation. There is a need for developing and/or streamlining legal frameworks for PPPs to make them more amenable to governments' risk aversion and to strengthen institutional and financial systems.

In addition, country governments struggle with engaging the small private companies and informal operators who provide the bulk of WASH services, especially sanitation. The public sector needs to better facilitate partnerships with the private sector, especially as the private sector has a growing interest in participating in the sanitation sector.

Progress has started to show as noted in various USAID WASH-FIN projects. For example, in Senegal, the private sector's participation in sanitation has been growing due to the country's experience and success with PPPs in water supply. Similarly in Kenya and South Africa, the governments have been working with development partners to encourage the growth of private companies developing innovative sanitation technologies.

There is evidence of public sector interest in engaging the private sector to close the financing and service challenges. National governments should closely monitor these changes and be ready to engage and provide necessary refinements to make the enabling framework appropriate to local demand and conditions.

WASH-FIN Experience

- **Bulk Water Supply Build-Operate Transfer | Lusaka, Zambia**
In Zambia, WASH-FIN piloted new forms of PPPs by supporting Lusaka Water to design the first-ever vendor financing for metering. If successful, this would allow Lusaka to use enhanced customer metering, a key input in reducing and managing non-revenue water.
- **Municipal Concession Renegotiation | Mbombela, South Africa**
WASH-FIN supported Mbombela in restructuring its 30-year concessional loan for water supply and sanitation services in the loan's 20th year. WASH-FIN built the City Concessionaire Management Unit's capacity and provided legal expertise. This work resulted in a commitment to increase capital investment in water and sanitation by five-fold.
- **Water Supply Concession Design and Refinement of O&M Contracts | Mozambique**
WASH-FIN explored private investment and improved PPP options to rehabilitate existing water systems and expand service coverage with a focus in small towns. **WASH-FIN strengthened Mozambique's process of outsourcing and contracting by improving both the contract framework and procurement process, and developing a model to enable private financing.**

Key Conversations Overheard During FSM7

Case studies in the summary report include stories from India, Senegal, Uganda, Burkina Faso, South Africa, and beyond.

For the seventh time, FSMA brought together people working in the field of FSM. However, for the first time, FSMA partnered with an organisation outside of the traditional sanitation sector to make it happen. This partnership allowed unique voices to be highlighted and discussions to take place. New conversations are needed more than ever as we continue to make progress towards the SDG 6 targets.

The previous FSM6 report talked about how the world is not on track to meet SDG 6.2. In the two years since FSM6, unfortunately, we are still off track as a sector. It's time to invite new voices and partnerships to the table. The need remains clear. There is an urgent need to build safely managed sanitation systems that are affordable, circular, equitable, and community-led. The approaches need to improve faster, learning from each other in manageable, effective, and equitable ways.

Throughout the 77 sessions held at this joint event, several themes from FSM6 persisted, and a few newer key topics emerged, including **(1) Uniting WASH with Diverse Sectors**, **(2) Representing Different Voices Inclusively**, and **(3) Creating Strong and Diverse Pathways of Knowledge Sharing**.

Throughout the congress, there were rich and detailed discussions around specific work being done. Some of the best conversations that occurred during the congress were around these case studies of things done in practice for water and sanitation projects. As a result, the report focuses on case studies throughout the key emerging topics and beyond.

Uniting Water and Sanitation in WASH

“Water is life, and sanitation is dignity” – Dr. Doris Ba

Water is a key operational component in many sanitation systems. In these systems, water is used for flushing, waste transportation, or wastewater treatment.

Unfortunately, many gaps still exist in ensuring safe sanitation systems, which, in turn, jeopardise water systems. Approximately 80% of global wastewater is emptied into water bodies untreated [1]. Sanitation and water have the unique goal of creating a better world for both people and the environment. Without safely managed sanitation, there cannot be clean water.

Since these sectors are uniquely linked, there are opportunities to create unique regulations, frameworks, and partnerships that allow for the creation of circular, safely managed water and sanitation systems. Water reuse, especially the reuse of treated wastewater, is an underutilised resource in centralised and decentralised systems across the globe. By integrating water and sanitation, other sectoral integrations are possible.

It is essential to bring together water and sanitation professionals to create sustainable systems. We have worked too long separately – it's now time to recognise their connectivity.

“Every time water and sanitation engineers mess up, it ends up in the river. If you want to know how well a city is managing its water and sanitation, look at the river. Thus, focusing on one of the elements to the exclusion of the rest is a recipe for failure” - Neil Armitage, UCT

Water and Sanitation Colleagues Already Accelerate

Chennai, India

To protect against the vagaries of nature, build resilience, and increase water availability, [Chennai Metropolitan Water Supply and Sewerage Board \(CMWSSB\)](#) is working to diversify water supplies through desalination and treated sewage reuse. The city's water demand has increased by more than 50 percent over the past decade due to increased population, industrial development, and larger household needs triggered by economic growth and lifestyles.

Changing climate has reduced the available water supply from monsoons for years. In 2005, some industries started reusing wastewater by purchasing secondary-treated sewage to overcome water shortages. From 2015-2019, the CMWSSB established two tertiary treatment and reverse osmosis plants (2 x 45 MLD) to supply high-quality treated wastewater via a grid to industries in and around Chennai. Having industries use treated wastewater ensured uninterrupted

water availability for those requiring high quantities of water. The initiative has been environmentally and financially sustainable; more importantly, it has brought in revenue to CMWSSB to sustain their sewage treatment operations.

CMWSSB plans to complete indirect potable reuse plants to increase water reuse capacity. Indirect potable reuse includes tertiary and ultra-filtration treatment of secondary treated sewage, blending the treated sewage with lake water, water treatment of blended lake water (treated sewage + lake water) and localised water distribution.

Dakar, Senegal

In Dakar, the city has reduced 20% of its water bills by recycling wastewater from faecal sludge treatment facilities. The recycled water is mostly used for flushing toilets and other water-based systems.

Additional Instances of Sanitation + Water Uniting

Congress data showed that colleagues want sanitation AND water - more than half of participants joined sessions on both topics. Participants indicated that future conferences should unite these two, focusing on integrating rural areas, addressing climate change, accounting for environmental resources management in WASH, and linking WASH efforts to green tech and policy development.

Addressing Antimicrobial Resistance

Daba SENE, Sanitation Regional Division of Dakar Water and Sanitation

Dakar's water and sanitation divisions collaborate to fight antimicrobial resistance (AMR) in Senegal.

The government created a campaign to combat AMR called "One Health" across various government agencies. This initiative allowed the Sanitation Department to contribute to the National Global Health Security Program, leading to the development of an integrated monitoring guide for AMR in 2022.

There is a national technical committee called The Sanitation Agency, of which Dakar is a member. This committee is revising the National Action Plan for managing biomedical waste.

Before 2022, previous health plans had not considered water and sanitation.

Sanitation Integrated in Urban Water Management

FSM is closely linked to a city's water supply and distribution. Despite this, most urban areas have separate administrations for water and wastewater. This means sanitation planning and management is carried out separately from these other sectors. This creates silos, which break the water cycle.

Following the launch of the [IWA Principles for Water-Wise Cities in 2016](#), over 32 cities globally, 70+ individuals, and 60+ local authorities and institutions have endorsed this initiative. A holistic approach is fundamental for considering the interlinkages of all SDG targets to accelerate SDG 6 with environmental, economic, and social dimensions.

Review of Principals | Outputs

- Change the assumption made while developing the principles that there is safe and reliable water and sanitation for all. This becomes the primary level of action and ultimately, the foundation for achieving "water-wise cities".
- Integrate and amplify inter-sectoral collaboration, underlining capacity development (South-South learning) and political will as key principles.
- Frame the principles in the context of climate and biodiversity crises.
- Adopt an integrated approach including drinking water supply, wastewater (including grey water), drainage, and sanitation.

Conversations | What's happening in water?

Managed Aquifer Recharge in India and Kenya

Cranfield University studied various managed aquifer recharge (MAR) for their potential for groundwater recharge. Using managed aquifer recharge (MAR) in dryland regions can increase groundwater availability during drier seasons. Two MAR technologies were studied: (1) check dams and infiltration ponds in Rajasthan, India, and (2) sand dams in Kenya. The two systems provide the communities with multiple uses of water.

Overall, MARs harvest rainwater and retain run-off water, increasing the amount of available water during dry seasons and diversifying uses for drinking, irrigation, animal watering, brickmaking, and paid laundry services.

In Kenya, researchers selected three sand dams in Makueni County. In India, researchers selected check dams and infiltration ponds of various scales in the village of Laporiya in Rajasthan Province.

- In Laporiya, the shallow infiltration ponds called *chaukas* were particularly focused on water level monitoring. Although designed by the community to increase soil moisture and promote the growth of grasses for pasture, water level monitoring revealed that they are also recharging the underlying aquifer.
- In Makueni, water level monitoring revealed that, in some dams, water was stored behind the dam well into the dry season, while in others it was leaking away and recharging aquifers.

Conclusions

Both MAR systems provide the communities with multiple uses of water. MARs increase the amount of available water and enable diversification of uses, and should be considered by water managers to develop water resources meeting the local domestic and productive needs.

Piped Water for Low Income Urban Residents

There remains a wide disparity in urban access to safely-managed drinking water. Residents of low-income areas, often characterised by ambiguous land tenure status, tend to face the greatest challenges in accessing safe water.

To learn more, *Urban Resilience by Building and Applying New Evidence in WASH (URBAN WASH)* selected and studied six cities that have been successful in achieving relatively high levels of citywide water access despite limited economic resources. Selected cities included Abidjan (Côte d'Ivoire), Ahmedabad (India), Bangkok (Thailand), Cairo (Egypt), Phnom Penh (Cambodia), and Porto Alegre (Brazil). In addition, this study included a literature review and key informant interviews with local experts.

Conclusions

There is **no single approach or arrangement** to determine progress. Different types of progress, such as utility-driven, regulator supported or municipality-driven, can underlie citywide water service improvements by:

- Providing explicit measures for low-income customers to improve safe water access and affordability. Connection subsidies have improved access where social tariffs were not enough.
- Bypassing land ownership requirements for service providers to overcome challenges for those with uncertain tenure.
- Having the electricity sector contribute learnings to circumvent or eliminate land tenure requirements for service provision.

Conversations | What's happening in water?

Water Reuse Pioneered by Industry in Chennai

In Chennai (India) the demand for water in the city has increased by more than 50% (up to 1,200 million litres per day (MLD)) over the past decade. This growth is due to an increasing population, industrial development, and larger per capita needs triggered by economic growth and lifestyles.

To overcome water shortages during frequent monsoon failures, in 2005, three interested petrochemical production industries started reusing wastewater by purchasing treated wastewater, and then further treating it to use it and meet process water needs. Industries started this activity to address the acute water shortage. They purchased and processed 30 MLD of secondary-treated wastewater. Over the years, they also invested in augmented technology and in-house reuse facilities.

With increasing water shortages and rising demand, the Chennai Water Utility (CMWSSB) established two tertiary treatment and reverse osmosis plants (45 MLD each). These plants were completed in 2019 in supply high-quality treated wastewater to industries in and around Chennai.

Conclusions

- Climate change created water scarcity, driving wastewater reuse
- Wastewater reuse helps Chennai build resilience and water security
- **This practice has a CAPEX payback period of 4 - 7.5 years.**
- **Wastewater reuse is cost-effective for industries and financially viable for cities with regarding the cost of water and infrastructure.**
- Revenue from the sales of treated sewage and greenhouse gas emission reduction further contributes to financial sustainability

Utilisation of Rural Water Services

[IRCWASH](#) studied the different pathways of the 'utilisation' of rural water supply can happen, the factors that drive these processes, and the strengths and weaknesses of the resulting models.

The study investigated 33 cases of utility-managed rural water supply from 22 countries in Europe, the Americas, Asia and Africa. The study reveals a variety of models for utility-managed rural water supply along the urban-rural continuum. These models include urban-focused utilities, which provide rural services, mixed urban-rural, and rural-focused utilities.

Conclusions

- Promoting different utility models for delivering water services in rural areas is critical to achieving universal access and safely managed service levels.
- Sustaining water utility performance happens when strong systems and enabling environment are in place.
- **We must invest in sharing and transferring technical knowledge and best management practices between large, established and smaller rural utilities.**

Expanding the Definition of “WHO” are Sanitation Providers

The sanitation value chain improves when all people are included and allowed to contribute to efforts. Congress participants included young professionals, women, mayors, journalists, and practitioners of different types.

Empowering the Transgender Community in India

The CHALLENGE

As Odisha set targets to treat 100% of its wastewater produced, it faced two large and seemingly unrelated obstacles:

- Lack of trained operators in the sanitation service chain
- Lack of employment opportunities for the marginalised transgender community

The SOLUTION

Odisha created the Community-Based Livelihood Model (CBLM) to empower women and transgender people. The vision of this organisation is to provide opportunities to move from traditional unskilled work to high-end technical work. Meanwhile, this organisation helps provide a dignified livelihood opportunity for community members.

The [Housing and Urban Development Department \(HUDD\)](#) adopted decentralised wastewater treatment systems (DEWATS), as they are not electrically and mechanically complex.

Using DEWATS has allowed people from diverse backgrounds to learn operation and maintenance (O&M) services. Meanwhile, HUDD partnered with the transgender collective in CBLM to operate and manage faecal sludge treatment plants (FSTPs).

The IMPACT

By providing DEWATS O&M services, transgender members of CBLM increased their savings by 30% while elevating their social status to be treated as dignified professionals in a safe and dignified work environment.

This example had a ripple effect. Now, the transgender collective is engaged in O&M of water treatment plants and water kiosks, and collecting water taxes in cities across the state.

Increasing Female Service Providers in Uganda

The CHALLENGE

[Kampala Capital City Authority \(KCCA\)](#) wanted to integrate gender into its sanitation program. KCCA conducted an analysis and determined:

- There are gender-intentional policies at national and city levels
- 72% of women were dissatisfied with shared facilities' cleanliness
- Less than 5% of women reported participating in leadership related to sanitation
- Fewer women participate in latrine construction, managing public toilets, providing pit emptying services, entrepreneurship, and decision-making
- Women's participation was greater in activities around social and behaviour change communications.

The SOLUTION

The KCCA is currently focused on:

- Strengthening and scaling gender participation in WASH citywide (from 55 - 80%)
- Supporting entrepreneurs in sanitation-related activities (i.e., capacity building)
- Strengthening preparedness for locally responding to climate change-related emergencies for the elderly and women
- Scaling menstrual hygiene management (MHM) across communities

The LESSONS

- Centring women empowerment offered a baseline and additional gender lens to further understand gender differences
- Gender analysis is key to identifying gender gaps and strategies to address these gaps

AfWASA's Commitment to Equality

There are many opportunities where women can work in sanitation and generate their income, such as selling compost, cooking briquettes, and products from urban agriculture.

AfWASA is actively looking to increase women across its organisation at all levels. Its goal is to increase women's representation in AfWASA's governing bodies by 30% by 2027. AfWASA also wants to increase female recruitment in the sector - from 18% of WASH professionals in Africa to 40% by 2030.

Pan-African Association of Sanitation Actors (PASA)



At FSM5 in Cape Town, South Africa, the [Pan-African Association of Sanitation Actors \(PASA\)](#) launched to create synergy in the interventions of private-sector sanitation actors and develop the sanitation sector in Africa.

With 15 member countries and growing, PASA continues to support and foster the technical knowledge and destigmatisation of service workers. At this joint event, PASA had a large presence and held several sessions.

Service providers are a key link in the sanitation service chain. However, colleagues discussed several key issues:

- This essential public service is often at the cost of sanitation workers' dignity and health
- Despite liveable wages and profitable businesses, poor working conditions cause high turnover, putting service providers at risk of labour shortages
- Limited data on sanitation workers has led to insufficient awareness and targeted support from government decision-makers and communities
- A lack of women in the sanitation service chain means that gendered assumptions about the sanitation workforce prevail

From these conversations, it was clear that we need a more holistic approach focused on improving the working conditions of sanitation workers and strengthening the workforce's capacity to accelerate progress towards **SDG 6.2: safely-managed sanitation for all.**

*More case studies will be shared in the upcoming longer report.

“We need to teach people the importance of the job which we are doing. People, they stigmatise us. We don't even mind them because we know that we are doing a very important job to a community”.
- Mulenga Chisanga
Chairperson Norther Emptiers
Plumbing and Sanitation,
Zambia).

PASA: Pit Emptying Challenge

For the 3rd time at an FSM conference, FSMA hosted a pit emptying challenge that allowed teams from different countries to compete against one another as they emptied a “pit latrine”. Judges review each team's actions for correctness, safety, and speed.

The winning team was from Zambia and Uganda. They had a unique approach where they skimmed the trash out of the latrine before pumping. They also used safety ropes to prevent workers from falling into the pit, keeping the team safe. Teams from Cote d'Ivoire came in 2nd and 3rd place.

Though competitive, teams also learned from each other during the competition. This learning experience highlighted the value of bringing international teams together to learn how to manage faecal sludge safely and efficiently while having fun.

Overcoming Barriers for Sanitation Workers

Sanitation workers provide an essential service for society, but often at the expense of their dignity, health and living conditions. Utilizing a combination of desk research and stakeholder interviews, Wateraid collected data on the livelihoods of sanitation workers in 4 countries of Africa (Burkina Faso, Nigeria, Tanzania and Zambia). The findings are distilled below.

Health and Safety

Sanitation workers face injuries, illnesses and fatalities on the job. They also lack access to affordable PPE. There is also a general lack of available health care services.

Potential Solutions:

- Improve health and safety guidelines and workplace regulations for sanitation workers
- Subsidise and/or bulk buy PPE for workers

Financial Security

Sanitation workers deal with low and unstable income. This also includes payment delays. They traditionally have difficulty accessing loans.

Potential Solutions:

- Facilitate linkages between sanitation workers and financial institutions through financing programs
- Train sanitation workers and companies in financial management, labour laws, and financial

Legal Protections

The industry lacks regulations for the health and safety of sanitation workers. It is also difficult to enforce existing workplace regulations.

Potential Solutions:

- Reform legal frameworks to include sanitation worker rights
- Educate sanitation employers on labour laws to improve employment contracts

Dignity

Sanitation workers face discrimination and social stigma. At times, they also deal with a lack of proper equipment and PPE.

Potential Solutions

- Share behaviour change campaigns
- Create sanitation champions in communities
- Provide new and innovative desludging equipment to make their work cleaner

CONCLUSIONS

We must better understand how to address African sanitation workers' health and safety, financial security, legal protection, and dignity. We need to understand their challenges and provide targeted solutions.

To fill these gaps, governments could conduct in-depth assessments. Sanitation sector leaders need to work together to better share insights from their successes and failures of previous sanitation worker initiatives.

Diverse Ways of Sharing Sanitation Knowledge

As the sanitation sector opens its work to integrate other sectors' efforts and expands its definition of sanitation professionals, it is important to ensure that the ways knowledge and information is shared with professionals can be as diverse as the sector itself.

The sanitation sector is at-risk of knowledge attrition as the workforce ages and informal workers are not incentivised to remain committed to their vocations. The sector needs to find diverse ways to capture and share knowledge, ensuring the sector can maintain its wealth of information.

This can be through:

- Sharing actions and best practices through exchanges (such as through the Pit Emptying Challenge)
- Building practical on-the-job manuals and guides that provide structure for young professionals and new hires
- Creating videos that record tacit knowledge from older colleagues for sharing later
- Capturing complex technical challenges and contextual solutions through photography
- Advocating for policy changes and awareness building through short films, musical pieces, and artwork (such as the FSM Film Festival)

Plumbing School Success in Senegal

The sanitation sector has historically had two key ways to learn technical work –through expensive academic programs or informal apprenticeships. This has led to the sector's expertise concentrated in high-income areas within educational institutions while operational sanitation workers have remained informal in many countries.

Professional institutions that can train on vocational technical work such as plumbing are critical to ensuring sustainable management of sanitation systems.

Sen'Eau is a government-led initiative that developed Senegal's first plumbing school. Since its opening, the plumbing school has formally-trained 253 young professionals (20% women) into apprentice roles.

The school has a strong retention rate of plumbing students. 50% of outgoing graduates get recruited by Sen'Eau directly to build Dakar's plumbing workforce.

Using Creative Voices

The sanitation sector is growing in creative methods to help facilitate knowledge sharing – with professionals and community members alike.

CA-POOP is an initiative through Speak Up Africa to help sanitation sector workers celebrate successes, influence political change, share member experiences, and highlight innovative approaches.

Separately from CA-POOP's efforts, FSMA partnered with NIYEL to host a film festival to highlight the intimate stories of FSM across the globe. The film festival showcased 30 creative stories to raise awareness of how safely managed sanitation (or the lack of it) affects lives.

Knowledge management is now a challenge for the future of all whose capital is increasingly made up of 'grey matter'." – Ms Fatimata Sarambe

Diverse Ways of Sharing – FSM Film Festival

During the congress, FSMA partnered with [NIYEL](#) to host a film festival to highlight the intimate stories of FSM across the globe. The film festival showcased creative storytelling to raise awareness of how safely managed sanitation (or the lack of it) affects lives.

The FSMA Short Film Festival had stories ranging from community members championing sanitation solutions to the daily life of sanitation workers. There was even a tale of an open sewer narrating its relationship to its neighbors! The ultimate thread of these diverse stories highlighted the challenges and successes of those involved with improving sanitation worldwide or impacted by its absence.

The film festival showcased thirty short films from countries across the globe.

Countries that participated in the FSM7 Film Festival (and the number of films): Bangladesh (7), Côte d'Ivoire (3), Germany (1), Haiti (2), India (6), Kenya (2), Nepal (2), Rwanda (1), Senegal (1), Singapore (1), Uganda (1), UK (1), Zambia (2)

From the films submitted, three films won the festival. The full list of films is in the annexes.

GOLD

The Shhh Job: Sanitation for Liveable Cities

Location: Zambia
Submitted By: BORDA, GiZ, BMZ, SuSanA

Lack of access to basic sanitation services can lead to disease outbreaks. This is especially true among the poorest community members who depend on onsite sanitation and FSM services.

As Zambia works towards improving access to better sanitation for all, it is important to recognise the important work done by front-line sanitation workers. We must also tackle the stigmatisation related to faecal matter and sanitation worker's vocation. This film highlights how they help make Lusaka a healthy and liveable city.

Silver

Koko et Les Lunettes Magiques (Koko and the Magic Glasses)

Location: West Africa
Submitted By: Afrika Toon

Popokro is a village in West Africa. The inhabitants there are sad and sick. The Popomi family lives in this village. This family hates hygiene, stripping it from their daily lives. Also, led by the father Papa Popo, the family members defecate everywhere. The Popomi family have a song: 'We do this everywhere and then it doesn't go somewhere... it doesn't kill the Popomi'. Also, the Popokro village members refuse to go to the hospital, visiting the local healer Kpita.

However, Koko, one of the children in the Popomi family, still has some questions about hygiene.

Bronze

Sinnar: The Sanitation Journey of a City

Location: India
Submitted By: CWAS, CRDF, CEPT University

This video captures the journey of Sinnar City to become a model for sanitation with the support of organisations such as CWAS, CRDF, CEPT University.

The city resolved to pioneer scheduled desludging and established an FSTP using its own funds.

Sinnar is in Maharashtra, which recently became Open Defecation Free++, where everyone can access safely managed sanitation.

Creative and Diverse Ways to Share Knowledge

Niyel Uses Creative Media to Engage People with Sanitation

Niyel continuously uses media in novel ways to break the sanitation stigmas:

- Filmed a documentary in 2018 titled, "In Pursuit of Poop - Breaking the Silence"
- Created an online "Poop Trivia" game to reach and educate the general public about sanitation
- Encouraged young people to create their own documentaries, resulting in 9 documentaries in 7 African countries directed by young people
- Created dynamic platforms encouraging discussions between decision-makers and communities, leading to interactive radio broadcasts, co-organized visits, public debates, commitment of African celebrities for better sanitation, and a hymn to sanitation produced by Africans and for Africans

Niyel continues to recommend that governments to ensure an enabling environment where the private sector, communities and the media fully contribute to ensuring that every African has access to WASH services

“Time passes, and men gain immaterial wealth, without which no organisation can develop, maintain itself, or resist an increasingly demanding environment.”Fatimata Sarambe, ONEA

Capturing Knowledge

Knowledge management starts from the fact that organisations already have latent knowledge and know-how acquired through experience, The WASH sector needs to start valuing this tacit knowledge by capturing it through different means - from forming standard protocols to work guides, to instructional photographs and recordings of older staff sharing their wealth of knowledge.

With this content, we need to share and transfer the knowledge within organisations and beyond. This transfer of knowledge can:

- Improve organisational performance and sectoral practices
- Train and onboard new professionals to ensure service continuity
- Promote expertise and experts that can share information internally and externally

Using Technology for Providing Sanitation Services

As more municipalities and utilities oversee onsite sanitation management, it's more important to enable utilities to properly service and manage these systems by using technology.

IT Enabled Systems to Better Manage Onsite Systems in India

In the city of Wai, homeowners used to call desludging operators only when their onsite septic tank overflowed. In 2015, 10,000 onsite systems were surveyed to create a baseline assessment. This data is currently being converted into an online database. This database is continuously adding new data as Wai implements a 3-year emptying schedule on all onsite systems in their city.

Wai is continuing to improve its FSM capabilities. With the support of CWAS (Centre for Water and Sanitation) and CRDF (CEPT Research and Development Foundation), Wai is developing an end-to-end monitoring system for FSM.

This system, SaniTrack, schedules desludging operations and collects data from their FSM processes. SaniTrack is increasing the effectiveness and efficiency of all FSM services in Wai.

Tracking De-Sludging Vehicles Through Axle Load Sensors

The Tamil Nadu Urban Sanitation Support Programme (TMUSP) implemented GPS devices to monitor desludging activities per government policies and regulations. However, the GPS devices did not provide information on the loading and unloading quantities of faecal sludge. TMUSP implemented axle load sensors on FSM trucks to capture this data.

The axle sensors helped provide key data on FSM, including the daily travel distance of FSM trucks, desludging and decanting time and the quantity of waste managed per truck per day.

Moving Forward

TMUSP will use the data from the axle load sensors to plan and schedule onsite system desludging to optimise their FSTPs and provide improved FSM services for their state.

Using GIS for Managing Faecal Sludge in Burkina Faso

The FSTPs in Ouagadougou, in their current state, cannot treat the large quantities mechanically emptied sludge. It is estimated that 4,282 m³ of sludge is produced in Ouagadougou daily, while the capacity of its three FSTPs is 384 m³/day. To improve FSM for the city, *Institut 2iE* conducted a study using GIS to monitor FSM trucks.

Using GIS, this study determined the quantities of faecal sludge produced in different regions across the city. Some of the findings from this study included:

- One district of the city had the highest concentration of parking locations for emptiers
- There was a distribution of unregulated desludging sites throughout the city
- Certain areas in the city had high health risks due to unregulated desludging sites

With this data, *Institut 2iE* proposed locations for three new FSTPs. They also proposed new parking locations for emptiers that would optimise driving routes and decrease driving times, thus reducing air pollution.

GIS is a powerful tool to improve FSM in developing countries. To be effective, all urban sanitation systems should shift from paper to digital for GIS to provide the most value.

High-Income Water Software for Low-Income Settings

Water software services are available in high-income settings that would support utility workers in low-income countries, such as in Africa. [WATURA](#) is a French-based Software-as-a-Service company offering services and training for utilities entering the African WASH sector.

Low Tech Solutions for Cost-Efficient Climate Resilience

As communities continue to deal with changing climates and resulting impacts on water systems, it's critical to utilise systems with low-energy footprints and investigate low tech solutions further. Further case studies will be shared in the longer report released later this year.

Developing Solar Thermal Drying Technologies

Drying faecal sludge reduces its mass and volume, disinfects the waste and leads to more efficient resource recovery. However, some dryers are expensive with high CAPEX and OPEX.

The [University of Kwazulu-Natal in South Africa](#) developed a pilot-scale solar thermal drying technology for treating faecal sludge from onsite sanitation facilities. It also developed a screw conveyor solar drier and compared it to greenhouse dryers.

The results from the comparison showed that solar thermal drying prototypes have great potential for treatment. In particular, they have low energy consumption and small surface area footprint.

In addition, after testing it with real faecal sludge, the prototypes decreased running and capital costs by improving the solar dryers and optimising the operation.

Evaluating Greenhouse Solar Dryers

[CDD India](#), a pioneer of DEWATS technology, recently reviewed Greenhouse Solar Dryers (GHSDs). This review assessed if these GHSDs could reduce Helminth eggs. This study happened in Angul, Dhenkanal, Karunguzhi and Devanahalli.

Conclusions

- Reduction of Helminth eggs in sludge is a function of temperature, time, and moisture content
- GHSD will help increase the sludge temperature and eliminate the Helminth eggs in the treated faecal sludge
- GHSD is a cost-effective and low-resource DEWATS solution compared to Galvanised Sheets (GIs), as it reduces the Helminth eggs, drying time, and land requirement
- Though GIs will also lead to inactivating Helminth eggs, the time required for drying is higher and requires more time to reduce pathogens compared to GHSD

Scaling Low-footprint, Community-Based FSM

To successfully implement community-scale faecal sludge treatment, communities need simple, robust, and low-footprint solutions. Therefore, the [MEWS \(Management of Excreta, Wastewater and Sludge\)](#) group at Eawag is researching ways to increase performance and reduce the footprint of community-scale treatment solutions.

To make these solutions more widespread at a community-scale level, MEWS's current research focuses include:

- Producing locally bio-based conditioners to shorten supply chains and lower costs.
- Evaluating sensors for automating conditioner dosage.
- Testing low footprint and reduced energy presses for situations with limited space for dewatering technologies.
- Testing attached growth processes with faecal sludge residue for robustness and treatment efficiency.

Conclusions thus far:

- One key to the uptake of low-footprint solutions is accurate and fast dosing of conditioners based on incoming faecal sludge characteristics.
- Several manually-operated mechanical dewatering options (in combination with conditioners) show potential as low-footprint dewatering alternatives to conventionally used drying beds.
- Aerobic systems attached to growth processes can efficiently remove COD and nitrogen from residuals, which is an important step in treatment before discharge or reuse.

Additional Case Studies: Gender in WASH

The sanitation sector continues to advocate for the inclusion of all people in throughout its value chain. This includes encouraging women to be sanitation professionals and leaders.

Gendering FSM to Foster a Just Sanitation Sector

[OVERDUE](#) is a research-action network funded by the UK Global Challenges Research Fund (2020-2023). OVERDUE is focused on tackling the taboo of sanitation across urban Africa.

OVERDUE is exploring the gendered dimensions of FSM in off-grid situations as an entry point to support just sanitation practices. This work is in Saint Louis (Senegal), Abidjan (Ivory Coast), Antananarivo (Madagascar), Bukavu (DRC), Beira (Mozambique), Mwanza (Tanzania) and Freetown (Sierra Leone),

Addressing Tricky Gender Norms across FSM's Service Chain

- Paid jobs focused on men, so women might not apply to give priority to men as primary income-makers
- Women refusing to manage men - only 1 woman accepted to supervise the rehabilitation of toilets, in Bukavu
- Women have so much domestic work that they can't take a paid position or are blamed for doing so
- It is a taboo to redistribute domestic sanitation work to men (as documented in Saint Louis)

Unfortunately, WASH programs and school clubs haven't historically worked to tackle these gender norms and grow younger generations with new ways of thinking.

The IMPACT

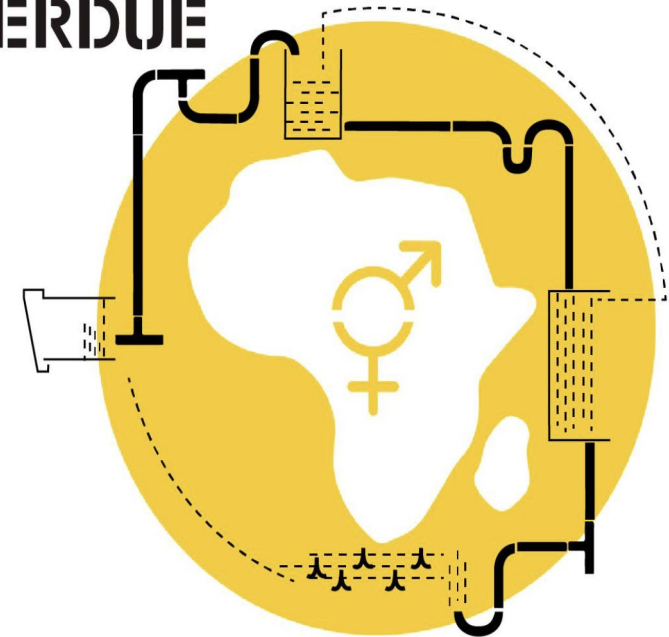
Through OVERDUE's work, they are aiming to:

Advance just sanitation by counteracting the multiple blind spots identified so far.

Build regional capacity by organising co-learning spaces, online courses and knowledge exchanges across the sanitation chain with stakeholders.

Advocate locally by mobilising an alliance across local authorities and community-based organisations to develop a **Charter on African Cities for Just Sanitation**. This charter seeks to reframe the sanitation talks across UN High Level Political Forum and SDG Summit (happening in September 2023).

OVERDUE



Additional Case Studies: Circular Economy

A circular economy offers financial and operational efficiency in sanitation service value chains. By creating valuable products from human waste, circular sanitation economies unlock new products and value from emptying pit latrines and septic tanks.

Treating Waste with Black Soldier Flies in Ghana

Operating since 2016, Sama Sama is a social innovation brand incubated by iDE Ghana to ensure access to high-quality sanitation products and services in Northern Ghana.

As Sama Sama built toilet facilities, they realised ensuring the waste could be emptied was just as important. Sama Sama evaluated 12 circular sanitation technologies. They selected Black Soldier Fly Larvae technology (BSFL) as the most feasible faecal sludge treatment technology. The treatment process relies on the natural growing cycle of the BSFL, which only needs to feed before migrating for pupation.

Lessons Learned During Pilot

- Sama Sama found it was *challenging to find the right people and partnerships within Northern Ghana to support BSFL.*
- Not everyone wants to deal with shit, but they found that more market research could address that gap.
- BFSL isn't an all-season solution. BSFL is most appropriate in Ghana from March to September, or the rainy season.

Using Constructed Wetlands in Burkina Faso

The vertical flow constructed wetland (VFCW) technology presents low-cost treatment options for effective sludge dewatering and mineralisation.

Zie, the World Bank, and UDS Business School assessed biosolid quality accumulated in a typical yard with VFCW with indigenous bamboo species used for faecal sludge (FS) treatment. The experiment compared three different treatments of bamboo-constructed wetlands (CW) and FS loads - (1) a mixture of FS and bamboo biochar,

(2) an unplanted drying bed with FS and bamboo biochar and (3) an unplanted drying bed with FS.

Conclusions

The average concentration of all microorganisms and helminth eggs was reduced at the end of the rest period, with some trace elements in the resulting biosolids

The study highlighted the positives of biosolids recovery potential from FS treatment using the CW system.

A Circular Sanitation Value Chain in South Africa

The sanitation circular economy identifies human waste as a resource, calling it human excreta. This allows us to create a new beneficial ecosystem approach from processing by-products and servicing models that support self-sustaining businesses.

The WRC started the South African Sanitation Evaluation Programme (SASTEP) to demonstrate and enable localisation and industrialisation of these innovative sanitation systems.

South Africa deploys various circular sanitation technologies trials that are now ready for use and community scale. These technologies include a struvite reactor, a pyrolysis reactor, a pasteuriser that creates pellets and a biogas reactor.

Conclusions

- There are resources within human excreta that we can recover and turn into useful products
- Sanitation technologies with resource recovery from human excreta are available on the market
- These options can work in various settings such as schools, informal settlements and rural areas
- Water is an easier resource to recover from human excreta, which can be used for flushing toilets

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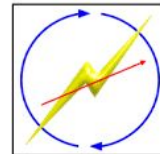
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List of Films in Festival (One of Two)

Title	Filmmaker / Organization	Town	Country
Towards CWIS: Dhaka	Eawag	Dhaka	Bangladesh
Practical Action - WASH in Bangladesh: FSM Operation	Practical Action		Bangladesh
Practical Action - WASH in Bangladesh: FSM Service	Practical Action		Bangladesh
Practical Action - WASH in Bangladesh: FSM Training	Practical Action		Bangladesh
Practical Action - A transformative approach to faecal sludge management in Bangladesh	Practical Action		Bangladesh
Movement on Female Friendly and Safe Public Toilet	UCLG Asia Pacific		Bangladesh
CWIS for a Safe and Healthy Future	WaterAid Bangladesh		Bangladesh
Koko et les Lunettes Magiques	Afrika Toon		Côte d'Ivoire
Proximi Toilet	Afrika Toon		Côte d'Ivoire
Towards CWIS: Abidjan	Eawag	Abidjan	Côte d'Ivoire
#LetsTalk PERIOD Toilet Clip	GIZ		Germany
SOIL: A Transformative Solution for Urban Haiti	Sustainable Organic Integrated Livelihoods (SOIL)		Haiti
Kaka Kakap!	Sustainable Organic Integrated Livelihoods (SOIL)		Haiti
Sinnar: The Sanitation Journey of a City	Center for Water and Sanitation, CRDF, CEPT University	Sinnar	India
Citywide Inclusive Sanitation Model in Wai	Center for Water and Sanitation, CRDF, CEPT University	Wai	India
Sinnar: Enhancing Investments in Sanitation	Center for Water and Sanitation, CRDF, CEPT University	Sinnar	India
Women In Sanitation: Dhanam's Journey	Indian Institute for Human Settlements, Tamil Nadu Urban Sanitation Support Programme		India

List of Films in Festival (Two of Two)

Title	Filmmaker / Organization	Town	Country
Operationalising FSM: Approaches and Learnings from Tamil Nadu	Indian Institute for Human Settlements, Tamil Nadu Urban Sanitation Support Programme	Tamil Nadu	India
GastroPak: A Short Film on Gastroenteritis and its Fecal and Water Transmission Management	National University of Sciences and Technology		India
Practical Action - Improving sanitation services and livelihoods in Kisumu, Kenya	Practical Action	Kisumu	Kenya
Fresh Life	Sanergy Collective	Nairobi	Kenya
Towards CWIS: Kathmandu	Eawag	Kathmandu	Nepal
Aerosan Public Toilet in Nepal/ Citywide Inclusive Sanitation	Environment and Public Health Organization (ENPHO)		Nepal
Pit Vidura	Pit Vidura		Rwanda
La révolte des travailleuses invisibles	Observatoire Genre et Développement de Saint Louis (OGDS), OVERDUE Project		Senegal
Jack Sim and The WTO Story	Edupolis Publishing Pte Ltd		Singapore
Towards CWIS: Kampala	Eawag	Kampala	Uganda
Practical Action - Cities Fit For People	Practical Action		UK
The Shhh Job: Sanitation for Liveable Cities	Bremen Overseas Research and Development Association (BORDA)		Zambia
Towards CWIS: Lusaka	Eawag	Lusaka	Zambia

Glossary (One of Three)

Algal Bloom(s): An increase in algae within a water body due to excess nutrients (phosphorus and nitrogen) creating a toxic environment for existing organisms.

Aquifer Recharge: An increase in surface water that drains through layers of earth to increase available groundwater.

Biomass: Organic matter used for fuel. In sanitation, it refers to human waste used for fuel typically through pyrolysis.

Biosolids: The nutrient-rich sludge that is the output of wastewater treatment plants

Capital Expenditure (CAPEX): The initial cost of implementing a sanitation infrastructure.

Centralised: A sanitation system that collects, transports, and treats human waste in one centralised wastewater treatment plant. *Also called sewerred.*

Citywide Inclusive Sanitation (CWIS): Sanitation systems that integrate different solutions within a city that benefit everyone with adequate service delivery and safely managed human waste. Ideally, the human waste treatment includes resource recovery.

Co-compost: Compost processing that combines traditional raw waste materials, such as food and agricultural waste with human waste.

Container-Based Sanitation (CBS): A sanitation system where toilets collect human waste in sealable, removable containers (also called cartridges) that are transported to FSTPs.

Circular Economy: A system of production and consumption of goods that aims to recycle, repurpose and redesign all components.

Circular Sanitation Economy: Wastewater treatment systems that convert human waste into reusable products such as water, energy, compost, and animal feed.

Decentralised: A sanitation system that collects and treats human waste in one or several small facilities rather than one centralised wastewater treatment plant. Also called onsite sanitation (OSS) or non-sewered sanitation (NSS).

Decentralised wastewater treatment systems (DEWATS): An affordable, low-cost wastewater treatment system that uses biological and physical methods to treat waste.

Desludging: The process of removing the solids and scum from a primary treatment tank or septic tank.

Dewatering: The process of separating solids from liquids in biosolids or sludge.

Drinking Water Supply (DWS): The amount of drinking water available for consumption.

Energy-Water-Food Nexus: A phrase that refers to the intrinsic links between the three sectors (energy, water, and food), where policy and regulations in one sector affect the other two.

Enterprise: A private or public company. See also micro, small, and medium-sized enterprises (MSMEs)

Excreta: Another term to describe human waste, referring to both urine and faeces.

Faecal Sludge (FS) / septage: A mixture of human excreta, water, and solid wastes (e.g., toilet paper or other anal cleansing materials, menstrual hygiene materials, etc.) disposed of in pits, tanks, or vaults of OSS. *When it comes from a septic tank, it's called septage.*

Glossary (Two of Three)

Faecal Sludge Management (FSM): The collection, transport, and treatment of FS from pit latrines, septic tanks, or other OSS. *Sometimes called faecal sludge and septage management (FSSM)*

Faecal Sludge Treatment Plant (FSTP): The facility where decentralised FS is transported for safe treatment.

Gender Equality and Social Inclusion (GESI): A concept that addresses improving access to livelihood assets and services for ALL, including the women, poor, and typically excluded and vulnerable groups.

Geographic Information System (GIS): A geographic framework for gathering, managing, and analysing data.

Greenhouse Gas (GHG): Gases in the atmosphere that trap heat, such as methane and carbon dioxide.

Groundwater: Water found underneath the top layers of earth that can be extracted and consumed as drinking water.

Impact Investing: Financial investments made to generate a measurable, beneficial impact alongside a financial return. Typically, investments look for impacts in social, environmental, and governance (ESG) themes.

Informal Settlement: Unplanned and unregulated housing areas typically unauthorised by the government.

Information Communications Technology (ICT): Information technology (IT) stressing the role of unified communications and the integration of telecommunications and computers.

INGO: An international non-profit organization that addresses social issues.

Integrated Water Resource Management (IWRM): A process that promotes the coordinated development and management of water, land, and related resources to maximise the resultant economic and social welfare equitably without compromising the sustainability of vital ecosystems.

Joint Monitoring Program (JMP): A joint program between UNICEF and the World Health Organization that collects data and analyses progress for SDG6.

Manual Emptying: The act of manually emptying pit latrines or sanitation systems without vacuums or desludging mechanised equipment.

Non-Revenue Water (NRW): Water in a contained system that is lost before reaching the end consumer.

Non-Sewered Sanitation: Sanitation systems that collect, transport, and treat human waste without using water to transport waste.

Onsite Sanitation Systems *See also non-sewered sanitation (NSS) and off-grid sanitation (OGS)*

Open Defecation Free (ODF): Communities that have shifted to 100% of households using toilets instead of open defecation.

Operations and Maintenance (O&M): Daily labour, duties, and functions needed to ensure a system's continued operation.

Operations Expenditure (OPEX): The annual cost of operating a sanitation system.

Pay-for-Results (PfR): A policy instrument that pays programs based on the independent verification of results. There are many models of this, including output-based aid, performance-based contracts, and social impact bonds. *Also called results-based finance. Related to impact investing.*

Glossary (Three of Three)

Piped Water: Tap water distributed to end consumers through a series of pipes from a centralised source.

Public-Private Partnership (PPP): A cooperative arrangement between two or more public (typically governmental agencies) and private sectors, typically of a long-term nature. In sanitation, it typically relates to service delivery agreements.

Public Toilet: Toilet allotted for general public use.

Resource Recovery: The recovery of resources from human waste such as water, compost, energy, and animal proteins.

Scale: A process where initiatives extend their services and outreach to more communities, offer more products and services, or expand their geographic reach.

Sewerage: A network of sewer pipes and drains.

Shit Flow Diagram (SFD): A tool to visualise the flow of human waste through a city or town and determine how much of it is safely treated. *Also called an excreta flow diagram (EFD).*

Solid Waste Management (SWM): The collecting, treating, and disposing of discarded solid material, such as organic waste, food scraps, plastics, and household materials. SWM for organic waste can often be integrated with FSM at FSTPs.

Sustainable Development Goals (SDG): Developed by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030.

Underground Sewerage Scheme (UGSS): A specific program in India to build more sewers.

Urban Water Management: The aspiration to design cities that are resilient to climate change and utilise water efficiently.

Value Chain: A set of activities that an industry performs to deliver a valuable product (i.e., good and/or service) for the market. For sanitation, the value chain often includes capture, containment, emptying, transport, treatment, and reuse.

Waste-to-Energy: A process where a facility burns solid waste to produce steam in a boiler used to generate electricity.

Water, sanitation, and hygiene (WASH): Term used by governments and NGOs to describe initiatives that promote the development of systems that provide water, sanitation, and hygiene to communities.

Wastewater: Water that has been used in a residential or industrial process that should be disposed of or treated again before reuse.

Watershed (Also called a basin and catchment): An area of land that catches rainwater and drains to a specific waterbody.

Watershed Management: Implementing programs and land practices to protect and better utilise the water within a watershed.



Appendix