

CONFERENCE OUTPUT REPORT

The 6th International Faecal Sludge Management Conference
Celebrating 10 years of FSM Heroes: Past, Present, and Future



*The 6th International Faecal Sludge
Management Conference is dedicated to all
the FSM heroes we've lost.*

*We honour their memory by continuing our
work to meet SDG 6.2.*

Letter from the Executive Director

The last 18 months have been nothing short of unprecedented. As I write this, COVID-19 continues to spread across the globe, highlighting the inequalities and injustices within our current societies and systems. Sanitation and FSM continue to validate their importance in creating resilient, equitable and just societies.

Over the past 10 years, we as a sector have made incredible strides in providing safely managed sanitation to communities across the globe. However, we need to continue to move and modernise – with urgency – towards SDG 6.2.

With this in mind at FSMA, we decided to host a virtual conference, FSM6, that would be wildly different than other conferences in years past. Our goal was to facilitate diverse, sometimes difficult, yet much-needed conversations in the FSM sector.

These conversations highlighted the need for more diversity in the sector, the lack of women in leadership roles and the need for the sanitation sector to emerge from its current silo and interact with other industries.

FSM6 also provided insights into how to implement resilient, affordable and safe sanitation systems. Many organisations presented tools to provide more data to enable decisions to be made around the financing and implementation of FSM.



Jennifer Williams
Executive Director FSMA

As a sector, we need to continue to have difficult conversations and further advocate for diverse voices to come to the table. FSM6 brought attendees from 61 countries, 50 of which were LMICs, to continue to move the needle forward on FSM, yet this is only one event. We need to continue to share knowledge and collaborate if we, as a sector, are to make significant progress towards SDG 6.1 and 6.2.

Within the pages of this report, you will read stories about FSM, key takeaways and the calls to action that bubbled up during the conference. This report represents your eyes and ears to the rich conversations and discussions that took place during FSM6.

Within the FSM sector, we cannot afford to walk alone. We hope you join us in these conversations.



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FSM6 was an opportunity to exchange best practice and share experiences related to faecal sludge management (FSM). Participants joined from 61 countries.

This is the second of two reports that have been released to summarise the event. This Output Report provides a comprehensive and in-depth point of view of the conversations, outcomes and key takeaways that emerged during FSM6. The other document, *FSM6 Highlights*, is intended to be a condensed report that summarises the event at a high level.

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Overview of the Faecal Sludge Management Alliance (FSMA)

Creating a world where all people, everywhere, enjoy equitable access to safely managed and dignified sanitation services.

The FSMA is a member-based network that supports organisations and individuals working in faecal sludge management (FSM). Our goal is to create a collaborative, responsive and collective platform to advocate for the adoption and implementation of FSM as a utility service. We also support our members in their work in helping to achieve SDG 6.2 and improve access to safely managed sanitation.

The need for an FSM Global Standard

A uniform standard in the FSM sector is needed to remove significant sources of uncertainty and disincentives for FSM sector stakeholders and to create market drivers that stimulate demand for FSM approaches.

FSMA is focused on creating a global FSM industry standard that is:

- Built upon existing standards
- Applicable to the full FSM value chain
- Globally and locally relevant
- Broadly accepted
- Developed through a stakeholder inclusive process

We believe a global FSM standard is a powerful way to mobilise and grow the FSM industry and a concrete framework to use when engaging the private sector. If you are interested in learning more about the standard or in participating in the development process, please contact us at info@fsm-alliance.org.

Become a Member!

As the only member network devoted exclusively to FSM, we have an exciting range of benefits to support individuals and organisations in the sector. We will be adding more in the future! [Become a member](#) to stay up to date.

Benefits include:

- Discounts on FSMA conference registration fees
- Exclusive access to FSM-related trainings and webinars
- Networking opportunities with experts, young professionals, peers and sector leaders
- Access to the latest FSM news, publications, sector announcements and case studies

History of FSM

While we have made incredible progress in FSM, work still needs to be done to overcome the “yuck” factor around working with faecal sludge.

The conference's first plenary reflected FSM1 and the sector's last 10 years. Before FSM1, faecal sludge hid behind the term 'sanitation'. In this niche, few people worked to address FSM and had limited academic and practical references to guide them.

According to Jay Bhagwan from the South African Water Research Commission, "Sanitation was all about toilets. There were two options of connecting it to a sewer or pit latrines." Describing the South African context, he continues: "The MDGs brought a lot of attention to sanitation...leading to a sudden spurt in the number of on-site sanitation systems...but nobody was thinking of their operations and maintenance."

Rapid urbanisation trends globally led to "densification, more and more pit latrines in a smaller and smaller space. And obviously, as they gradually overflowed or were badly managed, there was more and more cholera and a lot of other associated health problems" commented Peter Hawkins from Inclusive Sanitation in Practice.

Consultant Neil Macleod shared one particular past challenge from South Africa, "For a municipal utility like eThekweni, providing piped sanitation to all was just totally unaffordable. About \$4.5 billion was needed to connect the unconnected compared to the \$200 million it cost to

provide all with a urine-diverting dry toilet. The costs drove us to realise we had to find other solutions. But the customers were telling us that they do not like looking down and seeing and smelling what they have deposited, they wanted a clean toilet that was safe to use."

The emergence of faecal sludge management was an effort to advocate for better onsite sanitation management and to get the public sector to start to create regulatory frameworks for faecal sludge. Since the first small FSM conference that focused on South Africa, the FSM community has grown. The conference has turned into a much larger, globally diverse set of professionals from different disciplines. Today, FSM is a recognised and thriving sanitation sub-sector that has created space for the development of varied expertise and upgraded skills. The FSM conference has brought different actors together to discuss and brainstorm solutions and to advance faecal sludge management.

While we have made incredible progress in FSM, much still needs to be done to overcome the yuck factor of faecal sludge. For example, FSM needs more product standards and safety processes to help to overcome the stigma around using faecal sludge to create a circular sanitation economy.

Our Country Host: Indonesia

The International Faecal Sludge Management Conference alternates locations between Asia and Africa. For FSM6, Indonesia was selected to be the host country due to its innovative approaches to incorporating FSM into its urban sanitation plans. PD Pal Jaya and DKI Jakarta were selected as our local co-hosts, working with the Ministry of Public Works and Housing and the Ministry of the National Planning Agency.

Selecting Indonesia for FSM6

Ambitious Goals

The Republic of Indonesia, an island nation with a population of more than 270 million, is on a journey to improve sanitation service delivery across the country. With limited sewer-availability, Indonesia will rely heavily on on-site sanitation systems and FSM to achieve their target to provide **access to safely-managed sanitation for 15% of the population by 2024**. Substantial resources are needed to achieve this goal, given that Indonesia currently only has an access rate of 7%. More than 500 septage treatment plants and thousands of desludging trucks must be provided, and a total investment of IDR 140 trillion (USD 10 billion) will be needed to meet the target.

In six sessions, the Indonesia Track featured 18 high-profile speakers, representing central and local government ministries and agencies, utilities as well as international partner organisations. The presentations covered a wide range of FSM aspects in Indonesia, ranging from national policies, FSM enforcement, regulations and financial considerations, to innovative approaches in FSM operations, sludge treatment and reuse.



Lessons from Indonesia

Huge Market Potential for FSM

According to a recent UNICEF study on safe sanitation, Indonesia has a market potential of up to USD 3.4 billion for the various products and services needed to achieve Indonesia's SDGs target by 2030. Due to the enormous number of septic tanks in Indonesian cities, there is a tremendous growth potential for desludging service providers, as demand may increase significantly once mandated scheduled desludging schemes are established. However, more initiatives are needed to stimulate this market. Public awareness must be raised to encourage the use of proper septic tanks and regular desludging must be incentivised. On the supply side, the knowledge and skillsets of sanitation contractors and manufacturers must also be improved. **Standard specifications and service regulations must be introduced.**

Embracing Innovation

Many regional and city governments have started to deploy novel initiatives and digital applications to improve service delivery. These include **scheduled desludging schemes**, the introduction of **digital data collection systems** to map customers, service providers, septic tanks and treatment plants, as well as **mobile applications** that help facilitate collection, transport and treatment of faecal sludge (see next page).

Institutionalised Collaboration

To make this progressive vision a reality, Indonesia has developed clear guidance on how different actors work together. While the central government develops the country-wide FSM strategy, provides capacity-building, technical and funding support, it is the district and city governments who are responsible for the implementation of FSM operations on the ground. Those who want to prepare an FSM development plan, construct a septage treatment plant, increase the capacity of their service providers, are invited to get government assistance, including guidance on scheduled desludging preparation, tariff calculation, and septage treatment plant design.

Government actors also collaborate directly with utilities and other service providers, as well as with international development partners (such as IUWASH PLUS, SNV and UNICEF), while raising awareness among private households is another strategic cornerstone.

Associations like **AKKOPSI** and **FORKALIM** are examples of these formalised communication streams (see next page).

Indonesia Track:

Key Initiatives and Case Studies

Strong Associations

Formalizing communication and knowledge exchange between sanitation stakeholders is a key priority in Indonesia's FSM strategy:

AKKOPSI (Association of Cities and Districts Concerned about Sanitation) is made up of 490+ mayors and district leaders committed to accelerating sanitation development. The forum coordinates information exchange by hosting the biennial *City Sanitation Summit* and through regular *Advocacy & Horizontal Learning (AHL)* activities, convening regional leaders as well as central government officials, allowing for vertical and horizontal communication.

FORKALIM is an association of about 50 wastewater service providers from different cities and districts in Indonesia. The association establishes peer learning opportunities through its *Twinning* program, in which service providers from different regions are paired together to learn from each other. Learning themes include the operation of treatment plants, establishing tariffs, scheduled desludging, as well as managing customers.

Data and Digitization

Management information systems (MIS) have been deployed in several Indonesian cities. The system consists of three parts: the main portal, a desludging operator application and a septage treatment plant application. The web-based main portal serves as the hub for all data related to customers, service providers, desludging trucks and treatment plants. It can be used to control and monitor the entire desludging process: Setting the desludging schedule, disseminating service orders, tracking the trucks and making sure they dispose the sludge at the treatment plant. The MIS can also consolidate financial information and produce periodic financial reports.

The **Android-based desludging application** is used by desludging operators to receive service orders from the main office, verify customer information, record the desludging operation and septage volume, as well as take additional desludging orders from new customers. The **septage treatment plant application** is used to record truck arrivals and departures, as well as the volume of septage received by a treatment plant. It can alert the supervisor of the risk of illegal disposal by comparing data of the volume of desludged septage to the volume of septage disposed of in the treatment plant. There are many benefits from using the MIS and associated apps. It keeps everyone accountable while ensuring that the service runs as smoothly as possible.

Updates from Regions



Several Indonesian regions have made substantial progress in their FSM service delivery:

- **Solo** city has implemented a mandatory citywide **scheduled desludging scheme** that has significantly increased access to safe sanitation, while generating enough revenue to cover its own operating costs and even subsidizing the operation of the city's sewer system.
- All civil servants in **Kendari** must sign up for periodic desludging services.
- **Makassar** city, like many others, has developed a database for the city's septic tanks.
- **Sidoarjo** district, **Metro** city, **Tasikmalaya** city, and many more have increased their budget allocation for FSM considerably.
- Several regions have deployed **digital apps** as well as **cashless payment** options to facilitate FSM service delivery.



The Big Ideas

"We can put a man on the moon - why can't we empty toilets?"
Peter Hawkins

In 2011, for the first time FSM1 brought together people working in the emerging field of faecal sludge management. The past 10 years have seen a change in how sanitation is viewed and firmly established the need to address and champion FSM. The importance of FSM is key to advocating for change but there is an urgent need to build safely managed sanitation systems that are affordable, circular, equitable and community-led.

Collectively, the world is not on track to meet SDG 6.2. However, this does not mean that we should take our feet off the gas pedal. At FSM6, key themes emerged as to how to better implement FSM. These included the strong need for uniform standards, diverse leadership and collaboration between all stakeholders.

Uniform Standards

FSMA is developing a uniform standard to promote, formalise and sustain the FSM sector. Developing industry-driven standards will create a sustainable way for the FSM sector to flourish.

Increasing Equality

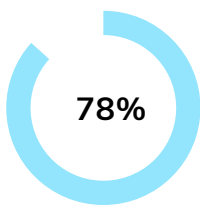
Involving women, indigenous people and people of colour in high-level leadership positions in the WASH space is critical to the achievement of SDG 6.2. FSM needs to promote more diverse leadership now.

Eliminating Silos

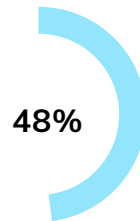
The sanitation sector needs to develop a better way of working that acknowledges failures, shares knowledge and incentivises collaboration. This would improve progress and reduce redundancies.

FSM6 by Numbers

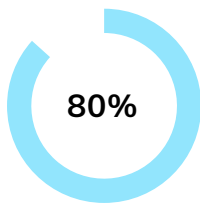
Speaker Breakdown



78% of speakers were from low- and middle-income countries (LMICs)

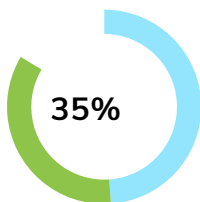


48% of speakers and presenters in the track sessions were female

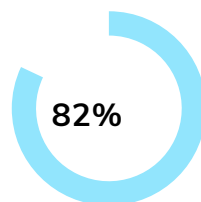


80% of abstracts were from LMICs

Participant Breakdown



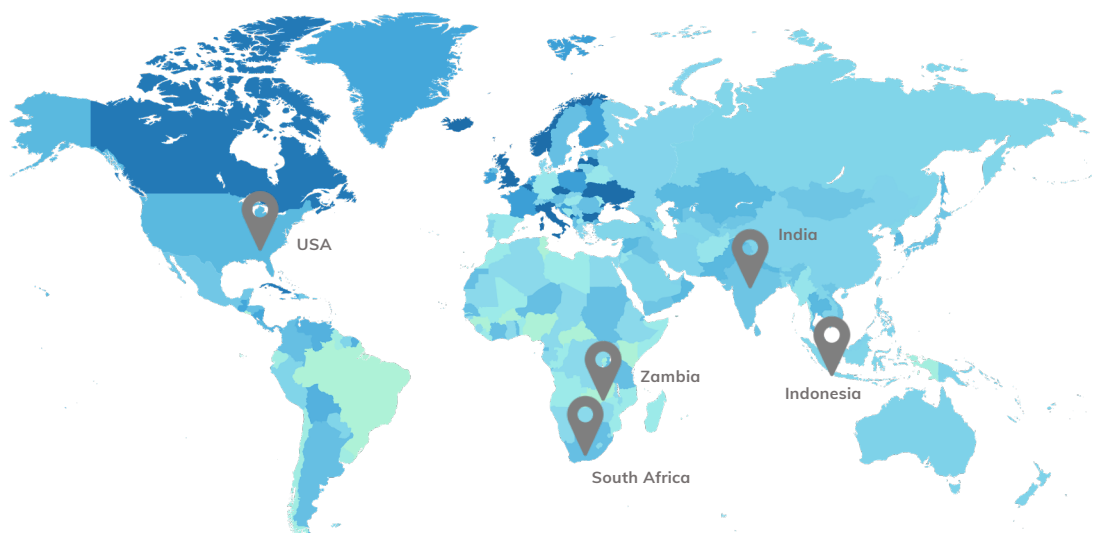
35% of 585 attendees, over one-third were female*



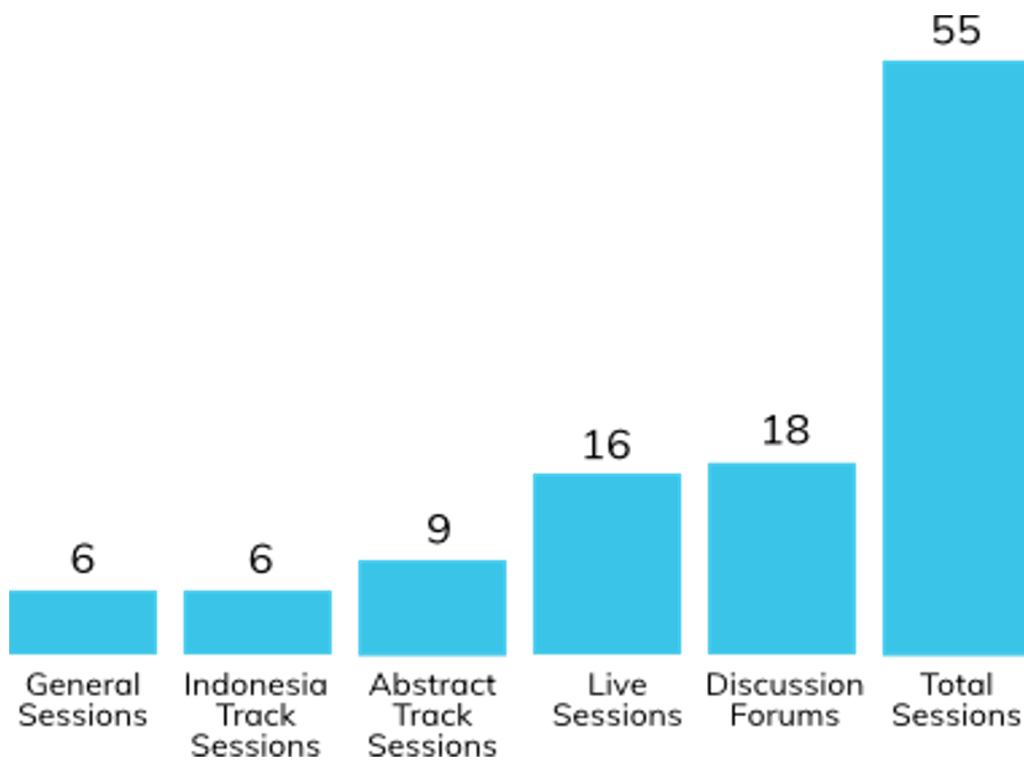
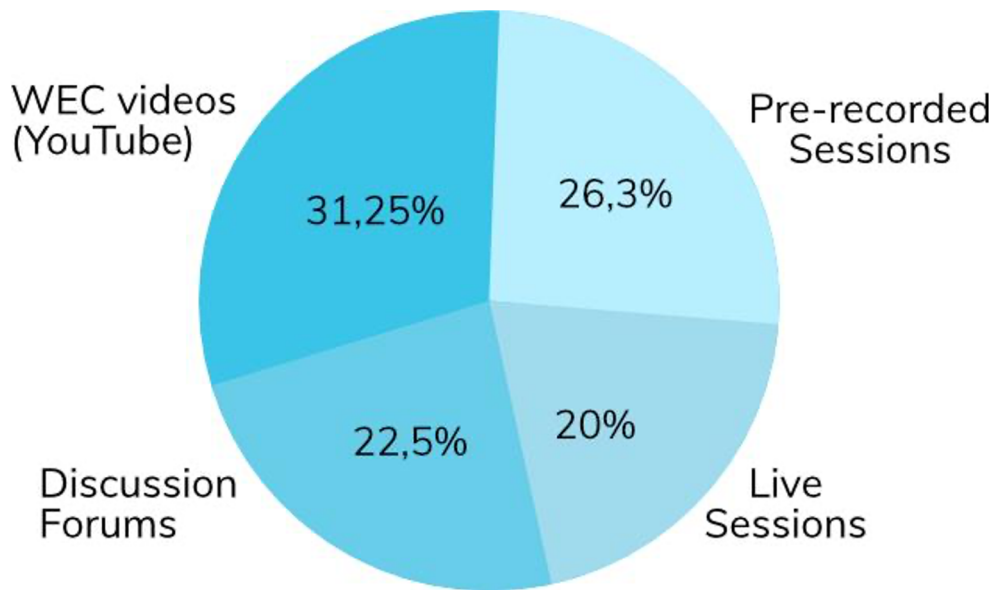
82% of 61 countries in attendance, most were from LMICs

*16% of participants did not disclose a gender.

Attendee Top 5 Countries



Programme Breakdown



Key Conversations



Over the course of four days, FSM6 held 55 sessions that were organised around three different tracks to help facilitate conversations on key aspects of the FSM sector. The following topics were repeatedly discussed by attendees and panellists alike.

- Strong call for more diversity in the FSM sector
- Importance of co-treatment in urban sanitation: treating septic, sewer and pit latrine waste
- Need for standards and regulatory frameworks
- Need for unique financing and affordable systems
- Importance of building effective partnerships

The following pages highlight these key discussions.

More Diversity in the FSM Sector

“Often we become entrenched and inherited in systems and outdated paradigms that meaningful change starts to feel out of range.”
Mei Yee Chan

Diversity, equity and inclusion in WASH are not new topics for a sector that has generally seen white males from high-income countries implementing solutions in low-income countries. However, with the Black Lives Matter movement gaining global support in 2020, the sanitation and FSM sector needs to build upon these conversations with actions to create a sector where local communities and diverse perspectives lead the direction, implementation and scaling.

Without diverse leadership, the WASH sector will continue to experience failures, dwindling sanitation resources and overall low sanitation coverage in developing nations.

There is a disproportionate disparity for women in WASH as they are far less likely to be involved in decision-making. These disparities affect women at every level in FSM, including the informal and waste emptying sectors. General challenges for women include lack of mentoring, lack of industry readiness to accept women, lack of family support or childcare, lack of appropriate safety gear (i.e., PPE) and societal taboos of working with waste.

During FSM6, there was a strong call for better data to improve women’s position in the WASH sector. Other actions to improve the disparity included introducing job quotas, increasing the visibility of women, developing mandates to improve the livelihood of informal sector workers and including more men in the conversation.

Intersectionality is needed to increase the number of women in WASH and to ensure that all women flourish.

There are disproportionate health economics and social outcomes in black and brown countries due to racial disparity in policies and development.

In the last year, there have been many global acts of solidarity calling for the end of the current systems of inequality and exclusion for a new world of equality, love and justice.

Decolonising Development

“Without diverse leadership, the sector will continue to experience failures”
Euphresia Luseka

Diversity in the sanitation sector has been a key topic of discussion throughout 2020 and 2021. As a key conference for the WASH profession, bringing together diverse stakeholders, FSM6 held and facilitated discussions aimed at increasing diversity and inclusion in the sanitation sector. One of such conversations was the second plenary, “Shifting Paradigms and Approaches: Adapting to a Changing World”.

Hosted by Mei Yee Chan, the plenary’s speakers included Jamila White of blakQuity, Rubayat Khan, CEO of Jeeon, Euphresia Luseka, a WASH Governance Specialist, and Jennifer Williams, the Executive Director of FSMA.

Jamila White spoke on the disproportionate health economics and social outcomes in black and brown countries due to racial disparity in policies and development. The recent global acts of solidarity arising from the Black Lives Matter movement call for the end of the current systems of inequality and exclusion for a new world of equality, love and justice. There is a need to decolonise development.

The Five Rs which are key in decolonising development include:

- 1. Recognise the harm and damage done**
- 2. Repair through reparations**
- 3. Restore land to pre-colonial times**
- 4. Redistribute global power and resources**
- 5. Reimagine the world we are in to create the world we want to live in.**

Rubayat Khan talked about how beneficiaries of development work have little power in designing or reviewing the projects in their community. “Development work is an unmarked cemetery of projects that were not designed or evaluated right.”

The solution involves a more private sector approach, switching the mindset from serving the beneficiaries of grants to providing customers with a service. This approach puts an organisation on equal footing with its customers and allows for the inclusive co-designing of a solution. The development community must begin by being humble, accepting how little we understand or confront societal issues in our daily lives. Then the development sector can begin to shift to adopt a more private sector approach.

Euphresia Luseka continued the conversation by focusing on Diversity, Equity and Inclusion (DEI) within the sanitation sector. Collaborative efforts with external stakeholders are key to governing collective action. It is important to reinforce and scale what works and reimagine what doesn’t. Involving women in high leadership positions in the WASH space is critical to the achievement of SDG 6.2. Without diverse leadership and opportunities, the WASH sector will continue to experience failures coupled with dwindling sanitation resources and overall low sanitation coverage in the developing nations.

These are key conversations that must continue forward in order to create a sanitation sector that is diverse, equitable and inclusive.

Importance of Co-treatment in Urban Sanitation

“Good service is valuable to all residents wherever they live or whatever their socio-economic status.”

Nick Alcock

City-wide sanitation refers to collecting, transporting and treating all human waste within an urban area. These city FSM systems are as diverse as the cities themselves. Throughout FSM6, various case studies were shared highlighting the complexity and uniqueness of FSM in cities.

City-wide inclusive sanitation needs to focus on reliable service delivery by both public and private actors.

Key Lessons:

- Design subsidies and financial mechanisms specific to each city’s opportunities and failures.
- Top-down government-only provision of sanitation is rarely sustainable. Engage the private sector as utilities do not have to deliver all services directly.
- Explore FSM opportunities that are both demand-driven and direct to the consumer.
- Informal small-scale service providers play a critical role in urban FSM. However, formal associations could help to scale and validate these informal markets.
- Key additional enabling factors are involving the community in planning, using IT for monitoring and ensuring the safety of all FSM workers.



Challenges of Co-treatment

Many urban cities deal with the challenges of treating different types of waste in one system. **Co-treatment is the process of treating combinations of sewage, septage and faecal sludge in one facility which can be a rather complex process.** Within co-treatment, there are many risks such as the potential for increased flow, too many solids and increased toxins. There are options to strategically adopt co-treatment and minimise risks. Recently, a new e-book, **“Co-treatment of Septage and Faecal Sludge in Sewage Treatment Facilities”** by author **Dorai Narayana**, was published along with an Excel tool and handbook to help design systems and mitigate the risks of co-treatment.

Regulatory Frameworks & Standards

“We need to start developing standard methods to improve communication among practitioners, designers, students and teachers.”
Linda Strande

FSM is a critical part of domestic sanitation for countries that mainly use onsite systems to achieve SDG 6.2. FSM needs its own set of regulatory frameworks and standards to support its growth. **Creating standards and regulatory frameworks would ensure safety for FSM workers and citizens using onsite sanitation systems.**

Creating a suite of regulatory frameworks to address standards across these aspects will help to provide sustainable infrastructure. It will also promote and professionalise FSM services by enabling institutions to train providers and certify safe high-quality services. Creating standards for FSM reuse products ensures the safety and addresses the ‘yuck’ factor often associated with sanitation products.

Creating standards in regulatory frameworks requires **active collaboration from stakeholders** at local and national governments, international agencies, the private sector, academia and service providers.

Creating regulatory frameworks also **requires good data** that helps governments and stakeholders to develop evidence-based regulations that are practical for providers and can be shared widely (e.g., the [FSM Toolbox](#)).

Data systems would also help regulatory agencies to hold providers accountable for complying with standards over time (e.g., the Integrated Management Information System by SNV in Bangladesh).

Lastly, **regulations and standards must be enforceable** and applied by regulatory agencies in each municipality, region and country.



There are several FSM aspects that need standards and regulations:

- Technical onsite product standards (e.g., ISO 30500:2018)
- Service standards such as emptying, maintenance and associated tariffs
- Treatment standards such as for faeces, urine and liquid waste that differ from wastewater
- Faecal sludge analyses that indicate the best methods for treatment
- FSM reuse products such as biochar and composted fertiliser
- FSM in emergency settings

Affordable and Unique Financing

“It is good to remember that most sanitation systems in the world are subsidised in some capacity.”
Caroline Delaire

Financing sanitation is a crucial component to achieving SDG 6.2 and ensuring that all people have access to safe, affordable sanitation. However, like many components of the FSM sector, financing is not a ‘one size fits all’ solution. Exacerbated by the COVID-19 pandemic, providers of FSM technology and service solutions are facing increased challenges to finance their operations in low-income communities.

FSM6 highlighted several financial mechanisms and case studies. Below are some of the key takeaways and quotes.

1 The cost of an urban sanitation chain is poorly understood due to poor documentation, incomplete estimates that only consider parts of a service chain and selective modes of costs (CAPEX or OPEX) and a lack of comparable metrics for quality and scale of service.

2 “Impact Investors have an appetite to take on more risks with pioneering/emerging technology recognising that innovation is part of what makes FSM dynamic.” – Dr. Jeremy Gorelick

3 Governments need to design tax policies carefully to avoid incurring a high cost of taxation both for the government and society. This can be done through VAT incentives to alleviate the costs of sanitation and domestic wastewater treatment services (for both public and private players).

4 Cross-subsidies provide an opportunity to implement a fixed price for the end user, lower than typical market cost and subsidise the difference through the government or private utility. Some sanitation entrepreneurs are implementing tiers, offering different price points based on a consumer’s willingness to pay.

Mechanisms that are trending upwards

- 1. Cross-subsidies:** Cross-subsidies function by creating different price points for consumers based on their ability to pay.
- 2. Results-based financing:** These financial mechanisms provide funding for governments or utilities when specific results are achieved.

Implementing a financial mechanism

- Understand your current market and research your market’s willingness to pay
- Build on evidence as much as possible
- Reduce the need for subsidies but do not eliminate them
- When looking at the cost of sanitation, don’t forget the household infrastructure cost
- Be mindful of the sustainability of financial mechanism

Creating Affordable Sanitation for the End Users

Exacerbated by the COVID-19 pandemic, providers of FSM technology/service solutions face increased challenges in financing their operations in low-income communities. As subsidy models, VAT exemptions and sanitation tax levies can be unreliable. Impact Investing Vehicles should also be considered as alternative sources that can play a vital role in helping to bridge the commercial financial gap towards sustainable FSM service provision.

Impact Investing in SA

- Ethekewini Municipality services 35,000 pit latrines, producing 7,000 tons/annum of faecal sludge. Collaborating with PSS (Pty) Ltd, one treatment technology, **LaDePa**, was available to treat just 2,000 t/a of the FS thus further commercial financing was needed to secure an additional two LaDePa plants.
- As financing from banks was denied for Ethekewini due to the risks of '**Municipal Repayment default**' and '**Unproven Technology**,' Impact Investment was a viable alternative source as it focused more on the environmental and social impacts of the business.

Smart Subsidies

- With **60%** of Kampala's population living in informal settlements, about **90%** of these households depend on onsite sanitation services. **COVID-19** disrupted pit emptying services in these settlements, increasing inequality of access to basic sanitation services.
- To mitigate any catastrophic and costly public health and environmental pollution risks, a relief pit emptying service was rolled out to cater for the most vulnerable residents through a **Smart Subsidy Model** between Kampala Municipality and private emptying services.

VAT on Wastewater

- With tax revenue already on a downward trend in Indonesia, the COVID-19 pandemic has also seen an increase in the need for government spending. With VAT being the main source of state revenue, wastewater treatment goods and services also have a **10%** VAT cap.
- Different VAT policies exist regarding the relation between wastewater and clean water within the VAT regulations of the Indonesian government. The latter is **exempt** from paying VAT, citing its economic benefit compared to the perceptions about wastewater.

Septic Desludging

- Following the achievements of the **Swachh Bharat Mission flagship programme** (India) which saw the construction of over 6 million toilets, a framework of **ODF+ / ++** (the management of onsite waste through Faecal Sludge and Septage Management - **FSSM**) was developed.
- Irregular desludging by households led to overflowing septic tanks that posed public health risks. A citywide inclusive FSSM service involving scheduled desludging was rolled out in two towns of Maharashtra and levied sanitation tax was introduced to fund operations.

The Tools that Assist FSM

FSM Toolbox in South Africa

The FSM Toolbox is a web platform offering a suite of tools and resources designed to assist and guide those interested in undertaking assessments and planning infrastructure improvements.

South Africa (SA) continues to face challenges in the provision of improved sanitation and is still learning about the concept of faecal sludge management.

The Department of Water and Sanitation officials in nine regional offices and a number of water services authorities have been trained on the utilisation of the FSM Toolbox by Emanti Management.

The FSM Toolbox has been introduced and positively welcomed by the SA sanitation sector from the national strategic level to the planning and regulation components and especially at the 'on the ground' user level in the uThukela district.

TEA Model for Sanitation

During FSM6, Dr. Jeremy Guest and his team at the University of Illinois provided an overview of how to utilise their newly built techno-economic analysis (TEA) model for comparing sanitation technologies. A techno-economic analysis expands on a life cycle costing to integrate the technical aspects of a project with an economic analysis and is commonly used for marketed products.

In the example given, Dr. Guest and his students compared a pit latrine to a urine diverting toilet. This model was then shared with participants.

Building Effective Partnerships to Scale FSM

“Co-creation will be key in strategically prioritising interventions addressing necessary changes at the organisation leader and peer level. After all, progress can not be made in silos.”

Euphresia Luseka

A partnership is an ongoing working relationship where different groups share the risks and benefits based on equity, transparency and mutual accountability principles. **FSM is not an isolated issue and needs more partnerships beyond the sector’s current actors to help to create collective action.** Well-coordinated partnerships are better able to create universal sanitation coverage. Including different stakeholders can lead to even more partnership building, capacity building and coordination. **Partnerships can also help decolonisation** - international donors can partner with local groups to redistribute global powers and resources.

Advocacy has been a convening power in the FSM sector, bringing multi-sector stakeholders together and fostering effective partnership building. When creating partnerships, stakeholders must hold clear roles and know what others' roles are in order to create effective collaborations and address gaps while reducing the duplication of efforts.

In particular, the successful implementation and scaling of sustainable and viable FSM solutions require partnerships between the public and private sectors. **Public-private partnerships (PPPs) can be vital to improving service delivery while expanding coverage.**



In PPPs, the public sector creates an enabling environment with policies and regulations and defines budget priorities. In contrast, the private sector has to define and provide the technologies and assist the public sector in implementation. **Some programmes have already seen PPP successes – in Senegal, the Dakar government involved private sector actors in FSM, greatly improving performance at four faecal sludge treatment plants (FSTPs).**

Of course, not all partnerships will work out. One collaboration in eThekweni showed that communal service models (where municipalities partnered with communities) led to complex issues that can be expensive and challenging to maintain. The project resulted in high cost-ineffective maintenance challenges and struggled to balance the ownership of the sanitation systems.

Policy's Role in Creating Inclusive FSM

Local and national policy has a key role in creating inclusive sanitation systems. **Some policy examples from three different papers shared during FSM6 included:**

- **Designing and Planning for Inclusive Onsite Sanitation and Faecal Sludge Management of Products and Services - The case of the Lusaka Water Supply and Sanitation Company (LWSC)**

This paper offers insight into how LWSC provides more inclusive sanitation services where gender and social inclusion issues/challenges in OSS/FSM are identified.

- **Are Minorities Losing Out on Improved Sanitation Work? Key learnings from Bangladesh**

This paper, in collaboration with WaterAid, outlines the preliminary findings on the lives and livelihoods of pit emptiers in Bangladesh. Drawing on detailed qualitative data in two municipalities and one upazila (sub-unit of a district), the paper examines how minority groups who face discrimination according to gender, caste and occupation are 'losing out' on the improvements in FSM, especially in terms of job quality and security.

- **Creating an Inclusive Urban WASH Ecosystem in India**

Swachh Bharat Mission-Urban, or Clean India Mission, was launched in 2014 with the vision of ensuring sustainable sanitation for all in urban India. Historically, however, access to sanitation services and the inclusion of the needs of vulnerable groups - women, sanitation workers, differently abled and transgenders – do not find a place when it comes to the creation of a sanitation infrastructure or the designing of sanitation policies.

To address this critical aspect, KPMG helped the Government of India to design an innovative competitive framework to encourage and incentivise cities to formulate inclusive sanitation policies and programmes and ensure their implementation across 4000+ cities of India.

Policy can help to mitigate potential failures but it cannot help to mitigate failures that are not communicated.

Why do failures occur?

- Lack of coordination and communication
- Politics and bureaucracy slowing projects down
- Poor capacity and project planning that frequently fails to include localisation
- A mismatch of community engagement and donor expectations

How are failures discussed?

- Internally although unequal power dynamics of all kinds encourage peer to peer conversations with little to no escalation of failures
- Occasionally between organisations
- Perception that donors will stop funding organisations if they learn of failures

How can we do better?

Accountability and vulnerability are key to better communication around failures. As a sector, there is a need to share failures among and across partners, including people at the field level.

We cannot implement safely managed sanitation for everyone if we continue to make the same mistakes.

Multi-Sector Involvement

Each of these case studies has demonstrated the importance of a multi-sector approach to FSM services. While FSM/sanitation has often been viewed as an isolated issue, it is important to include actors from different sectors and different types of actors (e.g., public, private, civil society, media) in the work of providing improved sanitation to all.

Senegal

- By recognising the FSM value chain as a multi-actor value chain in Senegal, additional stakeholders have been brought into the picture including multiple government departments, the media, standards association, financial institutions, development agencies, researchers, local authorities, civil society organisations and the private sector.
- The inclusion of these different stakeholders has led to partnership building, capacity building and coordination. Because of this, different actors/stakeholders across the entire sanitation value chain can play their roles effectively.

India

- A study in Tamil Nadu aimed to understand the existing roles of private and public partners in the provision of sanitation services and to identify gaps. The aim was to enhance and modify existing processes and add new processes.
- By acknowledging the existing roles that the private sector (e.g., desludging operators), government bodies (e.g., FSTP construction) and even households (e.g., provision and O&M of onsite sanitation) play, this study led to the institutionalisation of FSM service delivery and increased collaboration between public and private partners. This in-depth understanding was vital to identify the gaps and areas that needed strengthening.

Bangladesh

- Through the WASH4 Urban Poor project and the FINISH Mondial Project, the BASA Foundation has implemented an FSM programme in Sakhipur Municipality. Both projects demonstrate effective PPPs to improve and promote sanitation service delivery.
- The projects centre on a co-compost plant (faecal sludge, sawdust, municipal solid waste) which is owned by the municipality and run by a civil society organisation. Collection of FS is managed by the municipality while solid waste collection is managed by an entrepreneur. In addition to these services, the projects have also focused on raising awareness among the community that is aimed at increasing demand for the services.

Conversations to Amplify Louder

“All our planning is actually climate change resilient. All our projects will have to be climate smart.”

Reuben Sipuma

With 55 total sessions, including 18 discussion forums, FSM6 facilitated many diverse and rich conversations. There were clear topics that were at the forefront of the minds of both panellists and attendees alike as seen in the previous pages of this report. However, as a sector, there are conversations that we, at FSMA, think should be more loudly amplified. Two topics of discussion that we heard during the conference but wanted to hear more of were climate change and intersectionality.

With rising temperatures and frequent extreme weather occurrences, FSM must continue to implement resilient systems while designing for an unpredictable, water-stressed future. Intersectionality is key to building an inclusive, locally-led and diverse sector while decolonising existing practices in FSM.

Climate Change

What more can we do to address climate challenges?

- There needs to be clear correlation of the evidence on climate change effecting sanitation and the cost of ‘no-action’ on existing sanitation systems
- Advocate for climate resilient sanitation in low-income countries
- **Continue the conversation in large forums and stress the effects of climate change on sanitation**

Intersectionality and Inclusion

Sanitation cannot be solved in a silo and must include more intersectionality between diverse people and different sectors (i.e., water, agriculture, energy, transportation).

- **A positive example of intersectionality** - Desludging using a community-centred process led by women supported by different levels of government ensured a more impactful FSM in an informal settlement that was otherwise difficult for the city to sustainably manage (example from India).

Additional Insights From Sponsored Sessions

FSM Logistics

- Faecal sludge management logistics can be instrumental in estimating the transport costs, planning and scheduling emptying, and assisting in recommendations for the location of new treatment plants.
- There is a need to promote FSM services as a viable business. Most pit emptying companies are privately owned and usually face challenges including a lack of funds and financial literacy.
- The objective of private sector involvement is to create FSM businesses that are profitable. In general, pit emptying businesses need to increase revenue while reducing expenditure while maximising the coverage of safe and affordable emptying and transportation service.
- Further conversations will be continued on Sustainable Sanitation Alliance (SuSanA).

Linking MHM and FSM

- Poor Menstrual Hygiene Management (MHM), a result of many factors including water availability and the conditions of sanitation facilities, negatively impacts the general wellbeing, education and livelihood of women and girls.
- Although current and potential menstrual product disposal methods such as incineration, composting and sterilisation reduce the risk and volume of waste, further work is required to reduce the negative impacts on health, the environment and costs.
- Technical design innovations on safe and hygienic collection and wash for reuse or disposal facilities for menstrual products are required in WASH infrastructure.
- Knowledge, guidelines and standards for manufacturing menstrual products and menstrual waste disposal must be prepared and formalised.

SATO Consumer Insights

- How do we build awareness on some of the innovative solutions and the role of sanitation in the community and encourage consumers to purchase toilets?
- Sanitation is not just about the hardware. The four critical aspects are accessibility, affordability, awareness and acceptability.
- SATO's goal is to make better homes a reality for everyone, everywhere. Consumers are at the heart of that goal. Bringing consumers into the value chain at the capture stage is the first step towards driving behaviour change in FSM. Customer insights drive product innovation.
- The main barriers to the adoption of SATO have been price, shared decision making and installation. The key to unlocking adoption barriers is product demonstrations. Adoption is then triggered by a mix of needs and aspirations.

World Emptying Challenge

All FSM workers matter

Sometimes referred to as the 'informal sector' of FSM, pit emptiers are a key cornerstone of a functioning FSM ecosystem in both rural and urban areas. The World Emptying Challenge at FSM6 is an opportunity for pit and septic emptying teams to highlight their exemplary skills and bring visibility to their work.

“During the COVID pandemic, in Punjab in a small town called Bohja, the sanitation workers went door to door collecting container waste from households where it was treated as biomedical waste. The people of the city went to their terraces and showered them with flowers, because they were the frontline workers.”

Abhinav Akhilesh

Twenty-five teams from 12 different countries participated in the World Emptying Challenge and submitted videos of their everyday work routines. These videos were shared online and voted on by participants. FSMA believes that greater visibility is the path to bridging the gap between emptier professionals and the rest of the sector.

FSMA also provided 20 conference scholarships to the participants.

All the countries in the challenge have ensured the protection of workers and the safe disposal of faecal sludge. The challenge showcases effective methods of disposal from different countries and the perception of customers and workers.

World Emptying Challenge Winners

The Popular Category Winner:
Parameshwari Trichurapalli
(India)



The Technical Category Winner:
Brilliant Sanitation Ltd (Uganda)



Highlights from the Exhibition

FSM6's Exhibition had 15 booths from NGOs, networks, product and technology manufacturers, the private sector, PPPs and development firms.

Tetra Tech is a development firm specialising in behaviour change approaches, building sector governance and regulation and strengthening local sanitation providers.

FINISH Mondial is a PPP between WASTE, Amref Flying Doctors and Aqua for All working on a multi-sector approach to improving access to sanitation.

Water Research Commission is a South African agency that researches water and sanitation to provide strategic guidance and offer practical support for governments with technology transfers.

Amalooloo is a urine diversion toilet that incorporates a handwashing system for rinsing/flushing.

SATO is a LIXIL agency that produces sanitation products globally including toilet pans/pedestals, latrine pit odour traps and handwashing taps.

Keysino Separation Technology Inc. provides membrane filtration and fluid separation technologies.

Cinderella EcoGroup provides an incineration toilet originally intended for remote areas in Norway that are now also used in Kenya.

The FSM Network in Bangladesh provides a platform for various stakeholders to collaborate and advocate for proper sanitation.

The Global Sanitation Graduate School has a variety of higher education programmes on sanitation. It also has an online platform for those in low- and middle-income countries on citywide inclusive sanitation.

HomeBiogas offers biogas toilets for households that also produce fertiliser.

The Pitvaq by Partners In Development is a mobile pit emptying device, a small-scale vacuum tanker that can access difficult-to-reach areas.

Highlights from the Exhibition



The **Zyclonic** by **SCG Chemicals** is a modular toilet solution that processes solid and liquid human waste into soil conditioner and treated water.

The **Practica Foundation** is an FSM solutions supporter highlighting the PuPu pump, a pit emptying technology that uses a diaphragm pump.

The **Sustainable Sanitation Alliance (SuSanA)** is an informal global network of sanitation professionals that contributes to meeting SDG 6 with knowledge sharing and working groups.

BORDA is an NGO that specialises in locally appropriate decentralised sanitation across the entire value chain.

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For additional information, please contact us at info@fsm-alliance.org.

ANNEX 1:

Glossary

- **Capital Expenditure (CAPEX):** Initial cost of implementing a sanitation system
- **Citywide Inclusive Sanitation (CWIS):** Sanitation systems that integrate different solutions within a city to benefit everyone with adequate service delivery and safely managed human waste. Ideally, the human waste treatment includes resource recovery.
- **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, this is called septage.
- **Faecal Sludge Management (FSM):** The collection, transport and treatment of FS from pit latrines, septic tanks or other OSS
- **Faecal Sludge Treatment Plant (FSTP):** The facility where decentralised FS is transported for safe treatment
- **High Income Country (HIC):** A country whose gross national income per capita is greater than \$12,000
- **International Organisation for Standardization (ISO):** Organisation focused on developing international standards
- **Low and Middle Income Country (LMICs/LICs):** A country whose gross national income per capita is less than \$12,000
- **Manual Emptying:** The act of manually emptying pit latrines or sanitation systems without vacuums or desludging mechanised equipment

ANNEX 1:

Glossary



- **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
- **Personal Protective Equipment (PPE):** Clothing, masks and gloves that protect workers from coming into contact with faecal sludge
- **Public-Private Partnership (PPP):** A cooperative arrangement between two or more public (typically governmental agencies) and private sectors, usually of a long-term nature. In sanitation, these generally relate to service delivery agreements.
- **Sewerage:** A network of sewer pipes and drains
- **Subsidy:** A financial tool that governments use to encourage economic development, help disadvantaged groups or advance other national objectives
- **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
- **WASH:** Acronym used to describe the Water, Sanitation & Hygiene sector or its activities

ANNEX 2:

Conference Posters

Innovative Technology Aspects

- **Washing versus Wiping: Lessons from Field Testing an Onsite Blackwater Treatment System in India and South Africa (Triangle Environmental Health Initiative)**
 - *Authors: Sarah Hennessy, Brian Hawkins, Sonia Grego, Katelyn Sellgren, Sarani Sasidaran, Prateek Kachoria, Tapuwa Sahondo, Claire Welling, Rebecca Sindall, Brian Stoner*
- **Innovative, stand-alone, electrochemical treatment integrated eToilet for improved public sanitation – On-field learning for improved results (Caltech)**
 - *Authors: Clement A Cid, R J Dijin, K Praveen, Milan Basil Kurian, Pragadeesh Subramani, Claire Welling, Katie Sellgren, S V Midhu*
- **Reusable water from faecal sludge in an instant! (Crane Engineering, Delvic)**
 - *Authors: Andrew Groves, Mark Hassman, Jill Georger, Dr Becaye DIOP, Mansour Fall*
- **Performance Evaluation of Faecal Sludge Treatment Plant at Lubhu, Lalitpur (Environment and Public Health Organization & College of Applied Sciences – Nepal, Islamic Development Bank)**
 - *Authors: Sabuna Gamal, Bipin*
- **Methods and Tools for Faecal Sludge Management Planning. A case study in the city of Jambi (Solvere Infraestructuras, ADB)**
 - *Authors: Jose Cordovilla, Wolfgang B. Clauss, Javier Coloma, Siti Hasanah, Zsigmond Kovács, Anastasia Carolina*
- **Resolving the relative contributions of cistern and pour flushing to toilet water usage (Duke University Center for WaSH-AID)**
 - *Authors: Dr. Sonia Grego, C.M. Welling, S. Varigala, S. Krishnaswamy, A. Raj, B. Lynch, B.R. Stoner, B.T. Hawkins, M. Hegarty-Craver, M.J. Luetgen*
- **Progress on the understanding of faecal sludge drying to overcome technological gaps (WASH R&D Centre – University of KwaZulu-Natal)**
 - *Authors: Dr. Santiago Septien Stringel, Samuel Getahun, Eva Mary, Danica Naidoo, Anusha Singh, Jon Pocock, Konstantina Velkushanova, Christopher A. Buckley*

ANNEX 2:

Conference Posters

Innovative Technology Aspects

- Field testing of an onsite blackwater sanitation system for apartment building using electrochemical disinfection of biologically treated waste (Caltech)
 - Authors: Clement A. Cid, S. Kumar Varigala, M. Hegarty-Craver, S. Krishnaswamy, P. Madhavan, M. Basil, P. Rosario, A. Raj, V. Barani, S. Grego and M. Luetngen
- Development of solar thermal drier technologies for the treatment of faecal sludge (WASH R&D Centre - University of KwaZulu-Natal)
 - Authors: Santiago Septien Stringel, Pareshin Naidoo, Ackhil Ramlucken, Anusha Singh, Freddie Inambao, Craig McGregor
- Electrochemical Stripping for Flexible Recovery of Ammonia-Based Fertilizer and Disinfectant from Faecal Sludge (Stanford University)
 - Authors: Anna Kogler, William D. Chow, Amadou Gueye, William A. Tarpeh
- Evaluation of replacing river sand by manufactured sand as filter media in sludge drying beds (CDD Society, Bengaluru)
 - Author: Sagar Dattatray Patil
- Evaluation of Application of Faecal Sludge-Based Inputs on the Growth of Weeds in Farmlands (CDD - Consortium for DEWATS Dissemination - Society, Bengaluru)
 - Authors: Girija R, Ramakrishna Parama, Gagana S
- BioLet Toilet - An Environment Friendly WASH Solution for School Sanitation (WaterAid Bangladesh)
 - Authors: Md Tawhidur Rahaman, Hasin Jahan, Abdullah Al-Muyeed, Dr. Tanveer Ferdous Saeed, Golam Muktedir, Babul Bala
- Hybrid Treatment System for Faecal Sludge, A Case Study of FSTP Unnao, India (CDD Society, Bengaluru)
 - Authors: Nikhil Gampa, Ritesh Kumar Suman

ANNEX 2:

Conference Posters

Institutional Arrangements

- Planning and implementation of FSSM by using Excreta Flow Diagram (SFD) as a tool for mapping sanitation situation in Uttarakhand State, India (National Institute of Urban Affairs, New Delhi)
 - *Authors: Shantanu Kumar Padhi, B Ashwin Kumar, Gauri Srivastavas, Doab Singh, Laila Khan Khongthaw*
- The regulation of emptying services in low- and middle-income countries: review and lessons learnt from practice (WEDC, Loughborough University)
 - *Author: Alix Lerebours*
- Enabling Environment and Technological interventions in developing a Faecal Sludge Management Master Plan in Kathmandu Valley, Nepal (Citywide Inclusive Sanitation-Technical Assistance Hub, South Asia)
 - *Authors: Isha Basyal, David Robbins, Nene Narvaez, Krishna Ram Yendyo, Nitesh Purna Shrestha*
- Capacity of institutional instruments for citywide inclusive sanitation in Abidjan and Accra (Rivers State College of Health Science and Management Technology; IHE Delft)
 - *Authors: Peter Emmanuel Cookey, Angela Mwila Kapembwa, Professor Damir Brdanovic*

ANNEX 2:

Conference Posters

Characterisation and Quantification at Scale

- Targeted Faecal Sludge and Sawdust Data Collection Informed Design at Innovative Waste to Value FSTP (Stantec, Sanivation)
 - Authors: David Zweig, Jim Lane, Naomi Korir
- Situation Analysis of Faecal Sludge Management in Mymensingh City Corporation
 - Author: Mohammad Toriqul Islam
- Faecal sludge characterization as a measure towards effective management in sub-Saharan countries (Cabinet EDE International-Ingénierie, Conseils, Etudes et Contrôles)
 - Authors: Mamadou Camara NDIAYE, Mariama SAGNA, Hamadou BOUCARI, Cheikh Sidia TOURE
- Beyond the Finish Line – Faecal Sludge Management in Cambodia (SNV Nepal)
 - Authors: Sunetra Lala, Andrew Shantz, Bunleng Tan
- Characterization of faecal sludge after microwave treatment (WASH R&D Center)
 - Authors: Principal Mdolo, Konstantina Velkushanova, Jon Pocock, Chris Buckley

ANNEX 2:

Conference Posters

Health, Safety and Hygiene

- Physical and Microbiological Comparison of Sanitation Technologies in Tamil Nadu, India (The Water Institute at UNC)
 - Authors: Musa Manga, Pete Kolsky, Sudha Ramalingam, Lavanya Sriramajayam, Kavita Wankhade, Jamie Bartram, Jill Stewart
- Feasibility of Solutions to Improve Occupational Safety of Desludging Workers (Indian Institute for Human Settlements)
 - Authors: Srinithi Sudhakar, Mamta Gautam, Mamta Mantri; Kavita Wankhade; Srinithi Sudhakar
- User-friendliness of personal protective equipment for sanitation workers in tropical climates
 - Authors: Prerana Somani, Andrés Hueso
- School WASH – Effective tool to address sanitation and hygiene (Keystone Foundation)
 - Authors: Blessy Oviya, Niladri Chakraborty, Monisha Ravi, Nadini Natraj
- Quantitative Microbial Risk Assessment for Acute Gastrointestinal Inflammation and viral Hepatitis A in Michigan, U.S.A., 2014 – 2018 (Newcastle University)
 - Author: Florian T.H. Kleinhoven
- Key messaging and dissemination around Menstrual Health Management (MHM) (Keystone Foundation)
 - Authors: Monisha Ravi, Niladri Chakraborti, Blessy Oviya, Abhilaasha Nagarajan, Sugantha Priscilla, Vinitha Murugesan
- Health camps for Sanitation Workers: A collaborative initiative to improve their health (Indian Institute For Human Settlements)
 - Authors: Niladri Chakraborti, Monisha Ravi, Vinitha Murugesan

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Conference Posters

Health, Safety and Hygiene

- Evaluation of Prevalence and Changes in Antimicrobial-Resistant Faecal Organisms in Faecal Sludge and Wastewater Treatment Plants, Naivasha, Kenya (Sanivation, Centers for Disease Control and Prevention - CDC)
 - Authors: Naomi Korir, Amy Kirby, Jen Murphy, Emily Woods, David Berendes
- Assessment of the faecal sludge management practices in households of a sub-Saharan Africa urban area and the health risks associated (University of Yaounde I, GeoHealth Centre in University of Bonn)
 - Authors: Wilfried Arsene Letah Nzouebet, Ebenezer Soh Kengne, Guy Valerie Djumyom Wafo, Christian Wanda, Andrea Rechenburg, Ives Magloire Kengne Noumsi
- Pathogen flows from sanitation systems in Dhaka: A quantitative environmental assessment (icddr)
 - Authors: Nuhu Amin, Pengbo Liu, Tim Foster, Mahbubur Rahman, Md. Rana Miah, Golam Bashir Ahmed, Mamun Kabir, Suraja Raj, Christine L. Moe, Juliet Willetts
- Faecal sludge management for pathogen removal – Lactic acid fermentation and vermicomposting (Birla Institute of Technology and Science - BITS)
 - Authors: Prajakta Pratap Patil, Nand N. Kamat, Naveen T. Gaonkar, Peeyush Kumar, Prof. Srikanth Mutnuri

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Conference Posters

Social Aspects

- Positioning FSTPs as resource centres (Indian Institute for Human Settlements)
 - Authors: Abhilaasha Nagarajan, Sasikumar Eswaramurthy, Kavita Wankhade, Vignesh M, Shiny Rehel
- Marketing FSM services to low-income communities: lessons from Bangladesh (Water & Sanitation for the Urban Poor)
 - Authors: Habibur Rahman, Sam Drabble, Pritum Kumar Saha, Jakaria Tuhin, Annie Hall
- People's Perception Towards FSM in Five Municipalities of Nepal under MuNASS project (Environment and Public Health Organization - ENPHO)
 - Authors: Buddha Bajracharya, Bipin Dangol, Bhawana Sharma, Rajendra Shrestha, Kriti Bajracharya, Jagam Shrestha, Kalandhi Devkota, Muskan Shrestha, Asih Budiati, Satish Jung Shahi
- Linking Climate Vulnerability to Latrine Functionality and FSM Practices in Rural Cambodia (iDE)
 - Authors: Rana Abdel-Sattar, Chris Nicoletti, Tyler Kozole, James Harper, Touer Veasna
- A self-reliant and customizable tool for effective awareness-raising on FSM in Paurashavas of Bangladesh (ITN-BUET)
 - Authors: Makfie Farah, Md. Shafiqul Hassan, Shishir Kumar Biswas, Alauddin Ahmed, Saleema Nazenin Siddiqua, Md. Khayrul Hasan, Dr. Tanvir Ahmed
- Diversity and Inclusion in the Global Sanitation Sector's Leadership (FLUSH, Point of Shift, University of Leeds)
 - Authors: Kimberly Worsham, Kelsey McWilliams, Georgia Hales, Ruth Sylvester, Euphresia Luseka

ANNEX 2:

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Financial Aspects

- Encouraging Private Sector Participation (PSP) for sustainable and scalable desludging service delivery in urban India – Financial modelling for city cases from India (Centre for Policy Research)
 - Author: Anindita Mukherjee
- Digital Accountability Platform to Enhance Service Quality: Pilot Promotional Approaches (Triangle Environmental)
 - Authors: Caroline Jennings Saul, Sreyephea Chap, Navy Nop, Samras Piseth, Claire Casher, Tate Rogers
- Decision-making Model for Tariff Assessment in City-Wide Inclusive Sanitation in Indonesia (CDTA MSMIP, ADB)
 - Authors: Wolfgang B. Clauss, José Cordovilla, Zsigmond Kovács, Javier Coloma, Siti Hasanah
- Governance Mechanisms for a Cluster-Approach to FSM Service Delivery in Tamil Nadu, India (Indian Institute for Human Settlements)
 - Authors: Srinithi Sudhakar, Mahima Vijendra, Srinithi Sudhakar, Rajesh Ramamoorthy, Kavita Wankhade, O.L.V Ganesan
- Business model development through sludge characterisation research in Kabwe, Zambia (SNV)
 - Author: Moffat Tembo
- Analysis of the existing Faecal Sludge Management practices and Financial Flow Model across the sanitation value chain in Kigamboni, Dar es Salaam, Tanzania (IHE Delft Institute for Water Education)
 - Authors: Shirish Singh, Misozi Banda-Masanninga, Damir Brdjanovic
- A Systematic Approach to Securing Capital and O&M Funds for Scaling FSM (Indian Institute for Human Settlements)
 - Authors: Srinithi Sudhakar, Kavita Wankhade, Rajiv Raman, Gayathri Ramesh, Navamani Ramasamy, Srinithi Sudhakar, Mahima Vijendra, Anneka Majhi

ANNEX 3:

Session List

Main Stage Events

Opening Ceremony

Closing Ceremonies

Plenaries

PAST - Our Origins: Celebrating with Heroes from FSM1

PRESENT - Shifting paradigms and approaches: Adapting to a changing world

FUTURE - Evolving to achieve more inclusive sanitation in the future

Sector Hosted Sessions

Inclusive, Sustainable FSM - Towards a Transformative Future

Methods for Faecal Sludge Analysis

Linking MHM and FSM: Report from the Menstrual Hygiene Day 2021 and Beyond

How to ensure that the sludge reaches the treatment plant? An analytical workshop on the challenges and solutions in planning emptying and transportation of faecal sludge

Capture and Behaviour: SATO's consumer insights from peri-urban Accra with global examples and perspectives

TRACK 1: Gender, Equality and Inclusive Sanitation Service Level

Designing and planning frameworks and policy for sanitation

- Are minorities losing out on improved sanitation work? (Bangladesh)
- Designing and planning for inclusive onsite sanitation and FSM (Zambia)
- Creating an inclusive urban WASH ecosystem (India)
- Impact of the households' behaviour on the FSM value chain (Senegal)

Gender dynamics in service provision and value chain

- GESI across sanitation (India)
- Women of Sama Sama (Ghana)
- "Each for All and All for Each" (India)
- Applying gender analysis for CWIS from BMGF
- Women managed community toilets – COVID

Gender-based violence and sanitation

- Ghosts in the latrines: a trauma-informed approach to creating safety in camps
- ECOLOO – The toilet revolution
- Making public toilets work for women and girls
- Engaging local government in GESI public toilets (Nepal)
- Enlarging spaces for women sanitation workers

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TRACK 2: Service Delivery for Low-Income Communities

Data for decisions on serving low-income communities

- Integrated municipal information systems for accountability and planning
- Improving containment in LICs, septic tanks are not a safe solution
- Classifying and quantifying FS emptying services
- Evidence to action, risk assessments (Ghana)
- Decision support tool for inclusive sanitation
- Safi Sana: Exploring impactful data-driven solutions (Ghana)
- Unpacking the black box of onsite sanitation with policies and standards (India)

Costs and financing sanitation in low-income communities

- Impact investing for FSM scale (South Africa)
- Citywide pit emptying smart subsidy, experiences with COVID (Uganda)
- Financing FSM in low-income areas (Kenya)
- Global sanitation cost benchmarking: CACTUS Model
- Dilemma between tax revenue and SDGs
- Inclusive septic tank desludging services

Service Delivery in LICs: Opportunities and experiences

- FSM in informal settlements, community-led mechanism
- Quantifying user experiences in CBS (Ghana)
- FSM as a citywide utility service (Zambia)
- Bigger is different: learnings from scaling reuse models
- Using a clustering model for urban FSTP (Odisha, India)
- Adopting hybrid strategies to continue profitable service delivery post-pandemic

TRACK 3: The Role of Sanitation and FSM Actors

Best practices for delivering effective partnerships (PPP) for viable FSM business models that increase delivery levels for different consumer segments

- Integrated decentralised FSM in peri-urban districts (Sri Lanka)
- Multisector approach to ensuring sanitation as utility
- Towards sustainable business model for FSM (Bangladesh)
- Roles and responsibilities of public vs. private sector (Tamil Nadu, India)

Practical experiences formalising the informal in FSM and creating opportunities for improved service delivery

- Lessons learned from Lusaka (Zambia)
- Scope of informal pit emptiers for CWIS FSM reaching slums
- Relationship between eThekwin and informal sanitation providers (South Africa)
- Need for collective action on urban FSM

High-impact case studies and promising approaches from Africa and Asia

- Role of private sector on FSM (Senegal)
- Emptying Service Control Committee
- Effective engagement of stakeholders in sustainable urban FSM
- Innovative partnership to CWIS FSM (Vietnam)
- Scaling up FSM infrastructure (Maharashtra, India)

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Spotlight Series

Co-treatment of FS/septage in sewage treatment facilities (India)

Spotlight on citywide inclusive sanitation – including case studies from Africa and Asia

Connecting FSM general practices with FSM in emergencies – Discussing the gap in standards as a shared challenge

Costing strategies for affordable FSM

Climate resilient sanitation in LICs

Scaling viable public and private enterprises in FSM: A Global Perspective

FSM experiences in Latin America

Women in WASH

Regulating FSM through roles & responsibilities, regulations & standards: Containment standard examples from Senegal with further case studies from FSM regulators

Facets of financing in sanitation

How to assess and plan my sanitation and FSM? Implementing the FSM Toolbox in municipalities. Learning opportunities from South Africa

Indonesia Tracks

National Policies

- National policies/frameworks on wastewater and sanitation (achievement, development, and target)
- National FSM roadmap and implementation and acceleration on FSM
- Role of AKKOPSI to support FSM policies for safely-managed sanitation

FSM Enforcement and Regulation

- Regulation and FSM enforcement in DKI Jakarta
- Regulation on domestic wastewater Kota Medan
- FORKALIM introduction and experience in FSM twinning

Indonesia FSM Financial Aspects

- FSM financial aspects: guidelines, opportunities and commitments
- Management of FSM and sewerage, tariff management and cross subsidies
- Initiatives on private sector collaboration for sludge collection

ANNEX 3:

Session List



Indonesia Tracks

FSM Operation

- FSM operation by water company
- FSM operation by UPTD (Local Government)
- Experience from two field locations

Sludge Treatment and Reuse

- Technical guidelines on sludge treatment plant design
- Operational (semi-) mechanical sludge treatment plant
- Optimisation of FSM as intermediate solution for wastewater handling in Jakarta

FSM Operational Support

- Implementation of application Go-Ploong for UPTD Gresik
- Android application for septic tank survey
- Manual for septage handling in pandemic area

ANNEX 4:

Indonesia Track Summaries – Day 1

Panel 1 - NATIONAL POLICIES

National Policies / Framework on Wastewater and Sanitation Achievement, Development and Target

Ms. Tri Dewi Virgyanti
(Director of Urban Housing & Settlements, the National Development Planning Agency, or BAPPENAS)

Indonesia is still in its journey to meet their target of access to sanitation of their population. By 2024, the government targets for 90 percent of the population to have access to improved sanitation in which 15% of that access being safely managed. The majority of access to safe sanitation will rely on on-site unit and fecal sludge management, with only 3% via sewers. This implies that serious consideration must be given to the development of FSM in Indonesia.

The Indonesian government has outlined their strategy in improving FSM. These include improving institutional capacity, enhancing the commitment of regional heads, encouraging change in community behavior, expanding financial cooperation and accelerating infrastructure development. The challenge is huge because Indonesia needs more than five hundred septage treatment plants and thousands of desludging trucks to achieve the 2024 target of access to safe sanitation. This will require a total investment fund of over IDR 140 trillion (USD 10 billion), more than 50% of which will be provided by the central government while the rest should be shared among local governments, the private sector and households. The financial challenge will be even greater because Indonesia is aiming to have around 50% access to safe sanitation by 2030.

There are many good instances of FSM initiatives in Indonesian cities that others could replicate. The establishment of a scheduled desludging service in the city of Solo has increased access to safe sanitation in the city while also generating enough revenue to fully recover the operational cost. The local government of Kendari City requires its civil servants to carry out scheduled desludging. Makassar City has succeeded in developing an excellent FSM customer database. Private sector cooperation has been formally carried out in the city of Bekasi in providing desludging services. Many cities have implemented cashless payments for desludging services.

ANNEX 4:

Indonesia Track Summaries – Day 1

Panel 1 - NATIONAL POLICIES

National FSM Roadmap and Implementation and Acceleration on FSM

Mr. Prasetyo
(Director of Sanitation, Ministry of Public Works and Housings)

Indonesia has set an ambitious target for increasing access to improved and safely managed sanitation. The onsite system, where FSM is required, will be relied upon to achieve most of the targets for access to safe sanitation. However, the improvement of FSM in Indonesia continues to face many challenges such as the many septic tanks that do not meet the standards, the low interest of homeowners to regularly desludge their septic tanks, the number of cities that do not yet have septage treatment plants, in addition to limited institutional and funding capacities.

To address these issues, the Ministry of Public Works and Public Housing (MoPWPH) formulates a multifaceted strategy for FSM development that takes technical, regulatory, community participation, and budgetary considerations into account. The Ministry recognizes that infrastructure is not the only consideration. Numerous efforts have been and will continue to be made by the Ministry, including assisting local governments in preparing their FSM regulations, strengthening the capacity of operators and their personnel, and establishing FSM service rates.

Local governments that demonstrate readiness to improve their FSM will get an opportunity to access technical assistance in establishing scheduled desludging program and funding support to build septage treatment plant. The Ministry has published guidelines for preparing scheduled desludging and designing septage treatment plants. Numerous development programs and partners contribute as well, like IUWASH PLUS, which played a significant role in facilitating the implementation of planned desludging in Indonesian cities

ANNEX 4:

Indonesia Track Summaries – Day 1

Panel 1 - NATIONAL POLICIES

Role of AKKOPSI to Support FSM Policies for Safely Managed Sanitation

Mr. Syarif Fasha
(Head of the Association of Districts and Municipalities Concerned for Sanitation, or AKKOPSI)

AKKOPSI (Association of Cities and Regencies Care for Sanitation in Indonesia) is made up of leaders from 490 cities and regencies who have expressed commitment to accelerate sanitation development in their respective areas. The organization, which was officially established in 2009, serves as a forum for mayors and regents to coordinate and exchange information on various sanitation development issues. The establishment of AKKOPSI is the result of a city-led initiative in Indonesia, rather than a request from the central government. Since 2013, AKKOPSI has also included drinking water, housing, and slum areas as part of its mission. AKKOPSI is currently the only organization in the world comprised of regional leaders whose mission is to support sanitation development.

AKKOPSI facilitates the central government's collaboration with cities and districts on a variety of water, sanitation and housing programs. There are seven institutions and ministries that exchange information with AKKOPSI on a regular basis, including on the development and implementation of FSM. AKKOPSI members can exchange ideas and success stories through a number of routine activities and communication media.

AKKOPSI hosts a City Sanitation Summit every two years to discuss the most recent issues in the field of sanitation development. The 20th CSS was supposed to take place in 2020, but it was pushed back due to the COVID pandemic. Another activity is Advocacy & Horizontal Learning (AHL), which brings together mayors and regents in an Indonesian city to share their experiences. Such events are typically attended by central government officials, allowing for vertical and horizontal communication.

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Indonesia Track Summaries – Day 1

Panel 2 - FSM ENFORCEMENT AND REGULATION

FSM supporting regulations in DKI Jakarta

Mr. Nelson Simanjuntak
(Head of Raw Water, Clean Water and Wastewater Section of Water Resources Department, DKI Jakarta)

Jakarta is well on its way to improving its domestic wastewater services, including the FSM. Several domestic wastewater regulations are already in place, including those governing FSM implementation. Every building should have a septic tank that meets its specific standard, especially in locations without a sewerage system. It is also required that the septic tank should be regularly desludged. Jakarta already has an institution that carries out a regulatory function, namely the Water Resources Agency (*Dinas Sumber Daya Air*). Its duties include planning the development of domestic wastewater services, as well as controlling and supervising service providers.

Many aspects however still need to be addressed in order to achieve the target of FSM services for 20% of the population. The existing two treatment plants need to be optimized, while new ones should be built. Septic tank assistance to the poor, as is currently running under the septic tank revitalization program, needs to be increased. Jakarta also still needs a regulation that requires all septic tank users to become customers of their local government-owned firm, PD PAL Jaya. This is needed to support the implementation of mandatory scheduled desludging in this city.

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Indonesia Track Summaries – Day 1

Panel 2 - FSM ENFORCEMENT AND REGULATION

Regulation on domestic Wastewater Kota Medan

Mr. Fauzan Nasution
(Director of Wastewater Management,
PDAM Tirtanadi Medan)

Drinking water and wastewater are inextricably linked and impact one another. It is logical that, in both the MDGs and the SDGs, the development goals for the two services are presented side by side. In a number of Indonesian cities, services for both have already been managed by a drinking water service provider. This is also true in the province of Sumatera Utara, where the two services are provided by PDAM Tirtanadi, a commercial company owned by the government of North Sumatra Province.

Indonesia already has all of the necessary regulations in place to encourage cities to provide household wastewater services within its borders. The government has set a sanitation development goal, which is then translated by provinces, regencies, and cities into their own development goals. Domestic wastewater quality standards are in place, as well as technical regulations related to the implementation of domestic wastewater systems. The province of North Sumatra and its capital city, Medan, already have their own set of legislation. This includes tariff regulation for scheduled desludging services, which is then strengthened by the local act of the city of Medan. This indicates that there is a good working relationship between the provincial government of North Sumatra and the city government of Medan.

The sewerage service in Medan City is progressing very slowly, while the FSM service can grow more rapidly. In 5 years, there were only 5000 new connections for the piping service while the FSM service got 7000 new subscribers. In order to pursue the target of access to safe sanitation, the municipality of Medan is more focused on developing FSM services. PDAM Tirtanadi responded well. This is reflected in PDAM Tirtanadi's business plan which set a target of 130 thousand FSM customers in 2025 which is much higher than the target of 32 thousand for sewerage service customers.

Regulations are important. However, it is also critical to continue raising public awareness to create demand for safely managed sanitation service. Advocacy and promotion of sanitation services to the community and other stakeholders must still be conducted.

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Indonesia Track Summaries – Day 1

Panel 2 - FSM ENFORCEMENT AND REGULATION

FORKALIM and Experience in FSM Twinning

Mr. Haidir Effendi
(Head of FORKALIM, Association of Wastewater Utilities)

A number of domestic wastewater service providers in 2013 have formed an association with the objective of establishing partnerships and collaboration between them as well as with the stakeholders. The association, FORKALIM, currently has about 50 active members from different cities and districts in Indonesia. FORKALIM in 2019 launched a Twinning program with a support from the IUWASH PLUS program.

The program gives opportunities for two or more service providers to learn and exchange information from one another. Before a Twinning activity begins, participants must agree in writing on the objectives and scope of the collaboration, as well as the roles and duties of each participant. One of the participants serves will appointed as the mentor, while the other service provider(s) will serve as the mentee(s).

Five Twinning collaborations were successfully completed between 2019 and 2020, involving 16 participants, five of whom served as mentors. UNICEF and SNV benefit from this program by including the cities and districts in which they operate. Each Twinning collaboration has its own learning theme, i.e., designing and operating mechanical septage treatment plants, establishing tariffs and cooperating on scheduled desludging, managing domestic wastewater service customers, and establishing new domestic wastewater institutions.

A Twinning collaboration lasts around six months and is made of reciprocal visits to the mentee's and mentor's respective regions. This program is deemed a success because of the numerous positive outcomes it delivers to its participants, indicating that it will be continued as a FORKALIM activity in years to come.

ANNEX 4:

Indonesia Track Summaries – Day 1

Panel 3 - INDONESIA FSM FINANCIAL ASPECTS

Management of FSM and Sewerage, Tariff Management and Cross Subsidies

Mr. Aris Supriyanto
(President Director of PD PAL JAYA)

PD PAL Jaya, the local government-owned wastewater management firm, provides both sewerage system and FSM. The firm operates a sewerage system to 2,700 building customers which is equivalent to 14% of the population. In addition, PD PAL Jaya has succeeded in providing FSM services to 10% of buildings in Jakarta. PD PAL Jaya has managed to maintain its financial condition well so that its services can continue to run. Their operations have provided significant financial returns in recent years. This is due to the large income from commercial building customers of the sewerage system. However, PD PAL Jaya's profit is expected to decline in the following years due to the expansion of the sewerage system which requires a very large investment capital.

The decline of PD PAL Jaya's profit is also due to subsidy for FSM services. The basic costs for desludging and septage treatment operation are still higher than the rates stipulated in the governor's regulation. For example, the basic cost of a desludging operation is around IDR 42 thousand per cubic meter while PD PAL Jaya can only charge IDR 25 thousand per cubic meter to their customers. In addition, the low number of FSM service customers has caused the income to not be as high as desired. This condition is certainly different when the mandatory scheduled desludging is later implemented. The integration of financial management between pipeline services and FSM services at PD PAL Jaya allows for cross subsidies between the two services.

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Indonesia Track Summaries – Day 1

Panel 3 - INDONESIA FSM FINANCIAL ASPECTS

FSM Financial Aspects: GoI Guidelines, Opportunities and Commitments

Mr. Nugroho Andwiwinarno.
(Financial Specialist of USAID IUWASH PLUS)

Many recommend that the local government drinking water firm (PDAM) should also be assigned to provide domestic wastewater management service. The firm may only be the organization in the city that has the capacity to manage a large number of customers. However, not all PDAMs are suitable for the task of managing domestic wastewater. Many PDAMs have had poor technical and financial performance, so it is feared that the wastewater ALD service will only exacerbate their financial problems.

The Ministry of PUPR, in collaboration with IUWASH PLUS publishes a guideline to assess the viability of PDAMs in managing domestic wastewater. The assessment is based on a number of technical, financial and institutional factors. PDAM will be considered viable if it already able to provide drinking water continuously to more than 60% of the population. Furthermore, PDAM should have the capacity to collect tariff of more than 80% of its consumers, have a positive financial condition, and have a good ratio of employees to customers. A scoring system is introduced in the guideline. PDAM with a total score more than 85 can be considered further to manage domestic wastewater management.

The Ministry of Public Works and Housings, in collaboration with IUWASH PLUS, also publishes a guideline to calculating FSM service tariffs. Service providers are advised to take into account all cost components of technical operations, management administration, promotional and others. The calculation of the basic cost should base on the projected number of customers or the projected volume of service (e.g., volume of collected septage). After the basic costs have been determined, the tariff is determined in an iterative process that takes into account the affordability of the potential customers. If necessary, the calculation should attempt to employ lower or higher operational targets or include cross-subsidy schemes in order to obtain a more desirable tariff proposal.

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Indonesia Track Summaries – Day 1

Panel 3 - INDONESIA FSM FINANCIAL ASPECTS

Initiatives on Private Sector Collaboration for Sludge Collection

Mr. Agung Prasetyo **(Private Septic Tank Desludger in the City of Solo)**

Septic tank desludging is an appealing low-risk business. Given that the majority of households in Indonesia still use septic tanks, the market potential is enormous. The mandatory scheduled desludging program benefits the desludging service providers tremendously, as experienced by those in the city of Solo. A desludging service provider, owned by Agung, in the city could get desludging orders for 200 households in a month. This allows him to own more trucks and to pay more attention to work safety and regulatory compliance.

The desludging business community has grown so vibrant that in 2016, they founded an association to connect with one another, share information and ideas, and provide a link for mutual assistance. There are already more than 40 entrepreneurs among its current members.

ANNEX 4:

Indonesia Track Summaries – Day 2

Panel 1 - FSM OPERATION

FSM Operation by Water Company

Mr. Agustan

(President Director of Perumda Air Minum Kota Surakarta)

Surakarta in the province of Central Java is Indonesia's first city to implement a citywide mandatory scheduled desludging program. The road to successfully implementing the program has been long. Even though it was launched in 2014, the program can only be executed in 2018 due to a number of institutional and technical reasons. It took more time for the municipality of Solo to fine-tune regulations, collect data on septic tank users, establish tariffs and systems, construct infrastructure, engage private partners, and promote the program.

As the domestic wastewater service provider, PDAM Surakarta was also assigned by the mayor to carry out the mandatory scheduled desludging program. Paired with its sewerage system that covers 20% of the city's population, PDAM Surakarta has now succeeded in serving 60% of the population of the city of Solo. The insufficient capacity of the septage treatment plant is a barrier that PDAM must overcome in order to expand their FSM customer base. PDAM Solo, on the other hand, will soon have a larger treatment facility with a capacity of 200 m³/day, which is double the current capacity of 90 m³/day.

The financial benefits of the scheduled desludging program in Solo can be considered as one of the program's major successes. In 2 years, the program has been able to be full cost recovery. The revenue from the scheduled desludging program even subsidized the operation of the sewerage system in the city. Apart from being supported by a high number of consumers, this substantial revenue comes from the combined billing of drinking water and wastewater services. This Solo City experience spurred other cities to establish similar program in their respective cities.

ANNEX 4:

Indonesia Track Summaries – Day 2

Panel 1 - FSM OPERATION

FSM Operation by UPTD in the District of Sidoarjo

Ms. Indah Nursanthi

(Head of Wastewater Management Utility of the District of Sidoarjo)

FSM service in the Sidoarjo Regency (East Java Province), as in most regions in Indonesia, is provided by the implementation unit of local government institution, or UPTD PALD. The formation of UPTD is an effort by the local government to separate the function of the operator from the regulating government agency.

UPTD realizes a huge market potential of FSM services in Sidoarjo because it is estimated that around 450 thousand houses in the regency use septic tanks. UPTD began to take various steps to increase the capacity of its institution as well as to improve the market and the quality of its services. Intensive marketing was carried out, including by providing discount for desludging service, i.e., an IDR 150 thousand cashback for desludging septic tanks in 3 adjoining houses.

A smartphone application is available for the customers to place order for desludging service. UPTD has also introduced a periodic desludging service which they call the Lestari program (Service e-Sedot Feces Periodic). Cooperation with private partners is explored, the existing septage treatment plant is repaired, a new septage treatment plant will be built in the near future and cashless payment for service is considered. Civil servants, military personnel and police are required by the district government to carry out regular desludging of their septic tanks.

Performance target is applied to all UPTD personnel, and it is linked to their salary payment. For example, a desludging truck driver will only be paid in full if he manages to provide service to more than 75% of the targeted number of customers. Performance targets are also set for septage treatment plant personnel so that they inevitably work according to the SOP. All of these efforts have succeeded in improving the performance of UPT in the last 4 years, as can be seen from the increase in the number of buildings and the volume of septage it manages. Unfortunately, this increase was not in line with the increase in UPTD's income.

ANNEX 4:

Indonesia Track Summaries – Day 2

Panel 1 - FSM OPERATION

Experience from SNV's Field Locations

Mr. I Nyoman Suartana
(Senior Urban Sanitation Specialist, SNV Indonesia)

SNV Indonesia assists Kota Bandar Lampung and Kota Metro (Lampung Province) as well as Kota Tasikmalaya (West Java Province) to develop inclusive and sustainable sanitation services. Challenges are encountered in every FSM chain, starting from containment to septage treatment, as well as in the service governance. However, the biggest challenges are in the regulatory and funding aspects.

The five approaches introduced by SNV are behavior change, service availability, service governance, service investment funding, disposal and utilization of treated sludge. The implementation of those approaches is adapted to the conditions and characteristics of the city, so that the activities in each city are different. The city of Tasikmalaya is still facing a big problem with open defecation, so the activities there are directed at changing people's behavior so the demand for the use of toilets and septic tanks increase. SNV introduces a pilot project of SANIMAN in 10 urban villages of Tasikmalaya to achieve ODF target towards safely managed sanitation. It is expected that all sub-districts in Tasikmalaya will be able to declare ODF by end of 2022. The approach in Metro city is more focused on improving service quality, at least so that SOPs are properly implemented, septage treatment plant is properly functioning with sufficient funding.

SNV's advocacy assistance and technical guidance in the three cities brings many positive outputs, such as the issuance of regional regulations and mayoral regulations related to domestic wastewater, reduced open defecation practices so that Metro City has reached the 89% ODF level, FSM operations have been carried out according to SOPs, more septage is received at the Tasikmalaya septage treatment plant, a part of village funds is allocated for access to sanitation.

In addition, SNV has also succeeded in assisting the inclusion of domestic sanitation and wastewater indicators in the Climate Resilience Development policy document. Some lessons learned from the SNV program in the three cities are the importance of commitment and support from local leaders to accelerate access to safe sanitation, evidence-based advocacy to stakeholders, and accountable policy and institutional framework. SNV encourages cities to be able to access existing aids, as well as being able to participate in development programs from the central government.

ANNEX 4:

Indonesia Track Summaries – Day 2

Panel 2 - SLUDGE TREATMENT AND REUSE

Technical Guidelines on Sludge Treatment Plant Design

Mr. Endro Adinugroho
(FSM Specialist of USAID IUWASH PLUS)

Septage treatment is one of the components of FSM, in addition to containing black water, desludging and transporting septage. The other two components influence the design of septage treatment plant. Indonesia still needs a lot of septage treatment plants considering there is a possibility that one city will need more than one treatment plant. In addition to proper design and construction, a septage treatment plant requires a complete support system, i.e., the personnel, the procedures and the regulation that will ensure the septage will be disposed of at the treatment plant. If not, more and more septage treatment plants in Indonesia will not be utilized

The Ministry of Public Works and Housings publishes a set of guidelines of septage treatment plant detailed design. The guidelines consist of 1 main book and 5 supporting books. The main book contains the procedures for drafting the FSM concept, determining the characteristics of septage, selecting treatment technology, selecting treatment plant location, and setting stages of planning. Meanwhile, the five supporting books contain guidelines to calculating the dimensions of treatment units (Book A), structural planning (Book B), planning mechanical and electrical system (Book C), planning budget (Book D) and preparing FSM (Book E).

IUWASH PLUS also publishes a septage treatment technology selection guidelines to complement the Ministry's guidelines. The guidelines contain options of treatment technologies, both in the receiving section, pre-treatment section, solid-liquid separation section, liquid treatment section, and solids treatment section. The selection methodology and steps are elaborated in the guidelines, as well as the calculation methods to determine the dimensions of each treatment unit. The guideline emphasizes the importance of septage treatment plant to be design incrementally. This guide has been introduced through training courses to more than one hundred individuals from consultants, local governments, universities and service providers

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Indonesia Track Summaries – Day 2

Panel 2 - SLUDGE TREATMENT AND REUSE

Operational (Semi-) Mechanical Sludge Treatment Plant

Mr. Andrea Sucipto

(Head of Wastewater Management Utility of the City of Bekasi)

Bekasi City (West Java Province) is the first and only city in Indonesia to use its own budget to build a mechanical septage treatment plant. The decision was taken by the city government because the old septage treatment plant always had problems. A new septage treatment plant is needed so that more septage can be handled, as well as to ensure that the effluent will meet the standard. Better treatment capability is needed because it is not uncommon for desludging trucks to carry wastewater other than black water. Limited land area also forces the Bekasi city government to choose a mechanical treatment plant.

Bekasi's mechanical septage treatment plant has a capacity of 120 m³/day and consists of a sludge acceptance unit, screw press, activated sludge, clarifier and sludge drying bed. The septage treatment plant requires 400 KWH of electricity and 12 personnel to operate it continuously. Annual operating costs can reach IDR 1.6 billion. Periodic effluent monitoring shows that the septage treatment plant are always able to produce effluent below the effluent standard. In the near future, the capacity of this septage treatment plant will be increased to 600 m³/day. The Bekasi City Government also plans to build a new mechanical WWTP with a capacity of 250 m³/day.

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Indonesia Track Summaries – Day 2

Panel 2 - SLUDGE TREATMENT AND REUSE

Optimalization of FSM as Intermediate Solution for Wastewater Handling in Jakarta

Mr. Erwin Marphy Alio
(Business and Technical Director of PD PAL Jaya)

The development and operation of a sewerage system is very expensive, so FSM is needed as an intermediate solution for establishing access to safe sanitation. Improvement of FSM should include the revamping of the septic tank so more desludging will be needed, and pollution can be prevented. For this reason, the provincial government of Jakarta has carried out a septic tank revitalization program for poor households. Two thousand households will get septic tanks that meet the national specification standard.

Jakarta government also sees great benefits that can be obtained from the implementation of the scheduled desludging program. It will not be easy to make it mandatory unless the drinking water service can require its customers to manage their wastewater, including to carry out periodic desludging. With the mandatory desludging program, more septage will be managed, less pollution, and higher income for the service provider. It is also beneficial if the treated sludge can be reused. Leaving the treated sludge unmanaged will cause new environmental problems. Several efforts have been made to reuse treated sludge, for example as fertilizers and briquettes.

ANNEX 4:

Indonesia Track Summaries – Day 2

Panel 2 - SLUDGE TREATMENT AND REUSE

Market Assessment for Safely Managed Sanitation in Indonesia

Ms. Maraita Listyasari (WASH Specialist – UNICEF)

UNICEF conducted a study on the safe sanitation market, looking at both the demand and supply sides. Households, service providers, product manufacturers, construction service providers, traders, and the local government were surveyed or interviewed. The study came up with a conclusion that there is a large potential market for safe sanitation products and services. Many improvements are indeed required to ensure that market potential is realized. On the demand side, the survey discovers that households already have a basic awareness of proper toilet design and the importance of a tank to store their excrement and wastewater. They lack sufficient knowledge, however, of the standards for a proper septic tank. They are aware that insufficient containment can result in contamination, but they do not believe their septic tank should be emptied.

According to the study, material stores act as a communication hub for households acting as buyers, manufacturers, and builders. Financial institutions have used the material store as a hub to promote and sell credit facilities to buyers. The study also discovered that many septage treatment plants were not being used to their full potential. Because of the long distance or the perception that the treatment plant can only be used by government-owned trucks, not all desludging trucks are willing to go there. Furthermore, the high disposal costs make them hesitant to use the septage treatment plant. There is also a lack of involvement of the private sector in sanitation services due to the local government's unwillingness to formally involve them. Local governments, in addition to feeling unneeded, lack a cooperating mechanism that they can implement. At the moment, the market for safe sanitation is poorly regulated. On the supply side, not all products have standard specifications or meet them. On the demand side, a lack of enforcement prevents households from increasing their demand for sanitation products and services.

The report proposes that the enabling environment be improved in order to stimulate the market. Local governments should establish their own targets for safe sanitation access, and extensive public education should be performed to raise household sanitation knowledge, as well as that of service providers, manufacturers, and builders. Additionally, local governments should begin enforcing their regulations. Additionally, the report advises that housing developers' expertise and desire to provide adequate sanitation to all homes in their neighborhood be increased. Additionally, the business climate must be enhanced, for example, by making it easier for service providers to obtain licenses. The study suggests a digital platform that will connect all market actors and serve as a conduit for educational information dissemination.

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Indonesia Track Summaries – Day 2

Panel 2 - SLUDGE TREATMENT AND REUSE

Android Application for Septic Tank Survey

Mr. Sabdo Sumartono (Senior GIS/ Spatial Mapping Specialist of USAID IUWASH PLUS)

A management information system (MIS) should be employed to support FSM services, especially when scheduled desludging is mandatory for hundreds of thousands of households. This will improve the quality and consistency of FSM service and ensures that customers receive their desludging service on time. An MIS are developed by IUWASH PLUS for FSM service providers in a number of Indonesian cities. The system consists of three parts, i.e., the portal, desludging truck application and septage treatment plant application. The web-based portal is the brain of the MIS that serve as the hub for all information of customers, service providers, desludging trucks, treatment plants. This portal can be used to control and monitor the operation of the desludging truck. Starting from setting the desludging schedule, taking and disseminating desludging service orders, to tracking the trucks and making sure the trucks dispose of the septage at the treatment plant. Financial information is also managed in the portal, including those related to service revenues, payment receivables to desludging partners. The MIS can consolidate financial information and produce periodic financial report.

The Android-based desludging application is used to receive service orders from the main office, verify customer information, record the desludging operation and septage volume, as well as take additional desludging orders from new customers. The septage treatment application is used to record truck arrivals and departures, as well as the volume of septage received. The MIS can alert the supervisor to the risk of illegal disposal by comparing data of the volume of desludged septage to the volume of septage disposed of in the treatment plant.

An internet connection is used to link the applications to the portal. Accordingly, in order to make use of this MIS, a reliable internet connection is required. There are many benefits from using MIS. The MIS will keep everyone accountable while also ensuring that the service runs as smoothly as possible. However, MIS is just a tool, its effectiveness is highly dependent on its users.

Another apps is available to support the census of septic tanks. Enumerators no longer need to record septic tank data by hand and then input manually to a computer database. The census apps allows the enumerators to directly input data from the site and have them stored in the data management center. Data inconsistencies can be promptly identified, and data can be processed immediately. Using census apps is proven to save a lot of time and effort. IUWASH PLUS only takes one month to carry out a census for around 20 thousand households.

ANNEX 4:

Indonesia Track Summaries – Day 2

Panel 2 - SLUDGE TREATMENT AND REUSE

Implementation of Application Go-Ploong for UPTD Gresik

Mr. Muhammad Arief Setiawan (Head of Wastewater Management Utility of the District of Gresik)

FSM is getting more attention in Gresik Regency, which has a population of 1.3 million with an area of almost 1,200 km². It has a 45 m³/day septage treatment plant, has a residential wastewater system for 5,000 households, 2 desludging trucks, local act on domestic wastewater management and service tariffs. Many innovations are introduced in Gresik Regency. One of them is the GO PLOONG application to support the continuity and consistency of FSM services and other wastewater services in Gresik Regency. This app is designed with many features. Households can place an order for desludging through one of the GO PLOONG features. Registered desludging service providers can also get orders from this app.

The government can use it to maintain regularity in the implementation of FSM services. The operation of desludging, transporting and disposing of septage sludge can be monitored and data recorded. Service rates can also be standardized, both for services provided by the government and those provided by the private sector. The GO PLOONG application can help the government organize scheduled desludging operations providing there is a database of septic tank users. This application also has features for desludging operator, septage treatment plant operator, as well as features for communal WWTP management organizations. There is a special feature in GO PLOONG to help survey enumerators to input septic tank data and customer satisfaction. In addition through a smartphone application, public can also access GO PLOONG through its website.

In addition to technical innovations, Gresik Regency has also innovated an approach to changing people's behavior towards safe sanitation called the JADI SAYANG approach (Happy Toilets and Healthy WWTPs). The next innovation is PUDAK AYU (Regular, Systematic and Continuous Domestic Sludge Extraction) which involves a group of housewives in organizing payments for scheduled desludging collectively and in installments.