

# Citywide Inclusive Sanitation Scaling and Sanitation Innovation

*For Safely Managed Sanitation*

## Project Highlights

2022-2025



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This booklet summarizes the key activities and learnings from the project "Citywide Inclusive Sanitation Scaling and Sanitation Innovation". It highlights efforts to strengthen urban sanitation systems across Nepal featuring capacity building initiatives, mentor-city exchanges, digital learning platforms, and strategic partnerships that have advanced inclusive and sustainable sanitation solutions. It also provides insights into project implementation, outcomes, and future pathways for scaling CWIS.

# Sanitation Scenario

Rapid urbanization is placing significant strain on urban sanitation systems, increasing reliance on onsite sanitation in areas without sewer networks. In densely populated settlements, limited space for sanitation infrastructure further complicates the installation of onsite systems and restricts access for desludging services. Moreover, existing policies often fail to adequately address the needs of informal settlements, creating barriers to achieving citywide sanitation. As a result, the sanitation service chain remains incomplete, limiting potential public health and environmental benefits. In this context, Environment & Public Health Organization (ENPHO), together with International Training Network - Bangladesh University of Engineering and Technology (ITN-BUET), has been implementing various actions in Nepal and Bangladesh and has achieved notable progress. Yet persistent post-achievement challenges remain, driven by high population density, spatial constraints, and continued reliance on onsite solutions.

Nepal became Open Defecation Free in 2019, a major milestone in improving sanitation. Today, 95.5% of households have toilets, but only 10% are connected to sewer systems. Most wastewater and faecal sludge are still untreated, and rapid urban growth has made the problem worse. Many cities rely on unregulated services with limited capacity. To achieve safe sanitation for all, stronger municipal systems, better technical skills, and a shift in mindset from household responsibility to a shared public service are essential.

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Global priorities have shifted from the MDGs—where efforts focused primarily on toilet construction—to the SDGs, which emphasize safely managed sanitation across the entire service chain. While sewer systems continue to receive significant attention, the majority of households still depend on onsite sanitation, underscoring the need for scalable and resilient non-sewered sanitation solutions.



## CWIS in Nepal

Citywide Inclusive Sanitation (CWIS) responds to evolving sanitation needs by strengthening existing systems. It expands and improves services according to city context, promoting continuous upgrades through appropriate technologies and sustainable business models. By fostering innovation and enabling private sector engagement and investment, CWIS shifts the focus from short-term projects to enduring, citywide sanitation solutions.



### Capacity Building for CWIS promotion and implementation

Effective faecal sludge management remains a major constraint to achieving SDG 6.2, underscoring the urgent need for skilled human resources across the sanitation service chain. In response, ENPHO, in collaboration with ITN-BUET and with support from the Gates Foundation, implemented the 'Citywide Inclusive Sanitation Scaling and Sanitation Innovation' project to strengthen stakeholder capacities for advancing CWIS and FSM in South Asia. The initiative focuses on capacity building, policy advocacy, action research, technology assessment, gender mainstreaming, and knowledge dissemination. It positions ENPHO as a resource agency to support municipalities in sanitation planning, service and business models, and PPP approaches, while empowering workers and women's groups in sanitation enterprises. By engaging policymakers and promoting IMIS and CWIS principles, the project aims to improve governance, institutional systems, and access to practical tools for scaling safely managed sanitation.

# Project Highlights

## Established ENPHO as a resource agency to build capacity of related stakeholder focusing Nepal

- Identify and engage potential government and non-government partners to establish collaborations for training package development.
- Formalize agreements with national and international resource agencies to support implementation.

## Developed experiential learning and capacity building modules through the mentor city approach

- Showcase two model cities in Nepal highlighting best practices in CWIS-FSM, governance, service models and worker safety.
- Host national and international cross-learning visits for other cities to replicate these models.

## Knowledge, learning and management

- Prepare and disseminate policy briefs.
- Advocacy for CWIS promotion
- Sharing the learning in international workshop and conference

## Developed capacity building and training packages

- Assess capacity and training needs on CWIS and FSM, and develop tailored training modules and materials.
- Establish a digital learning platforms.

## Executed capacity building and training delivery modules

- Establish a CWIS-FSM learning platform and conduct ToT events with sector partners to build a resource pool.
- Roll out trainings and orientations on CWIS readiness, sanitation business, technical and cross-cutting issues.
- Provide hands-on support to municipal officials and follow up with participants.

## Executed action research and studies contributing to CWIS agenda

- Conduct a research and findings dissemination.

# Strategic Partnership Development

Series of consultation meetings were undertaken with a range of government and non-government organizations to identify potential partnerships for cascading the training, thereby institutionalizing capacity-building efforts. During the project period, formal MoUs were signed with the National Institute of Urban Affairs (NIUA), the Local Development Training Academy (LDTA), the National Water Supply and Sanitation Research, Innovation and Capacity Development Center (NWSSRICDC), and Kathmandu University (KU), enabling collaborative development and delivery of training programs.

**International Institutes**  
Engagement with  
NIUA, CAWST



**National Government  
Training Institutes**  
Partnerships with  
NWSSRICDC and LDTA

**Academic Institutions**  
Collaboration with KU

## Trainings rolled out by partners after strategic partnership

<b>NIUA</b>	Online training on FSSM and IWSM
<b>NWSSRICDC</b>	CWIS ToT - I & II, Intro to CWIS (2 events), FSTP Design, CWIS ToT Refresher
<b>LDTA</b>	Intro to CWIS

As a result of these partnership efforts, the NWSSRICDC has formally included the developed training packages in its annual training calendar, ensuring continued nationwide roll-out. Similarly, the LDTA has incorporated sessions on CWIS into its regular training curriculum, further institutionalizing the approach within government training systems.

# Faecal Sludge(FS) & Wastewater(WW) Testing Unit Establishment

A specialized faecal sludge and wastewater analysis unit was established as an extension of the existing ENPHO laboratory, enabling expanded testing services for faecal sludge and wastewater. The unit is equipped with modern instruments and operated by trained and experienced personnel. Its establishment was supported technically by the Naturally Acceptable and Technologically Sustainable (NATS) Lab of the Asian Institute of Technology (AIT), Thailand.

Established a  
FS/WW testing  
unit within  
ENPHO existing  
Lab.

**453** Faecal Sludge Samples

**610** Waste Water Samples

**6** Compost Samples

Around 19.5 million revenue generated.



*FS & WW Testing Lab*

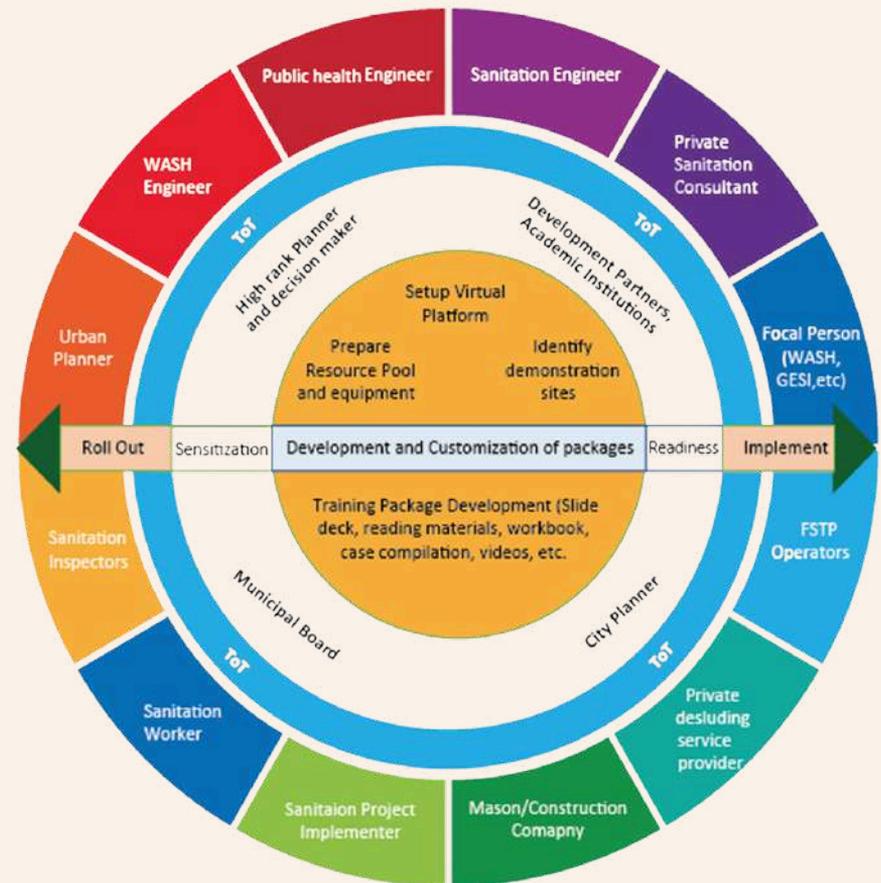
# Training Packages Development

A comprehensive capacity need was assessed across all levels—from frontline implementers to senior decision-makers. The assessment revealed four priority thematic areas and the need for specialized training packages to strengthen the skills essential for effective implementation of CWIS. Under the four thematic groups including Readiness, Cross-cutting, Business and Technical, training packages were developed to build the competencies required across the sanitation service chain.

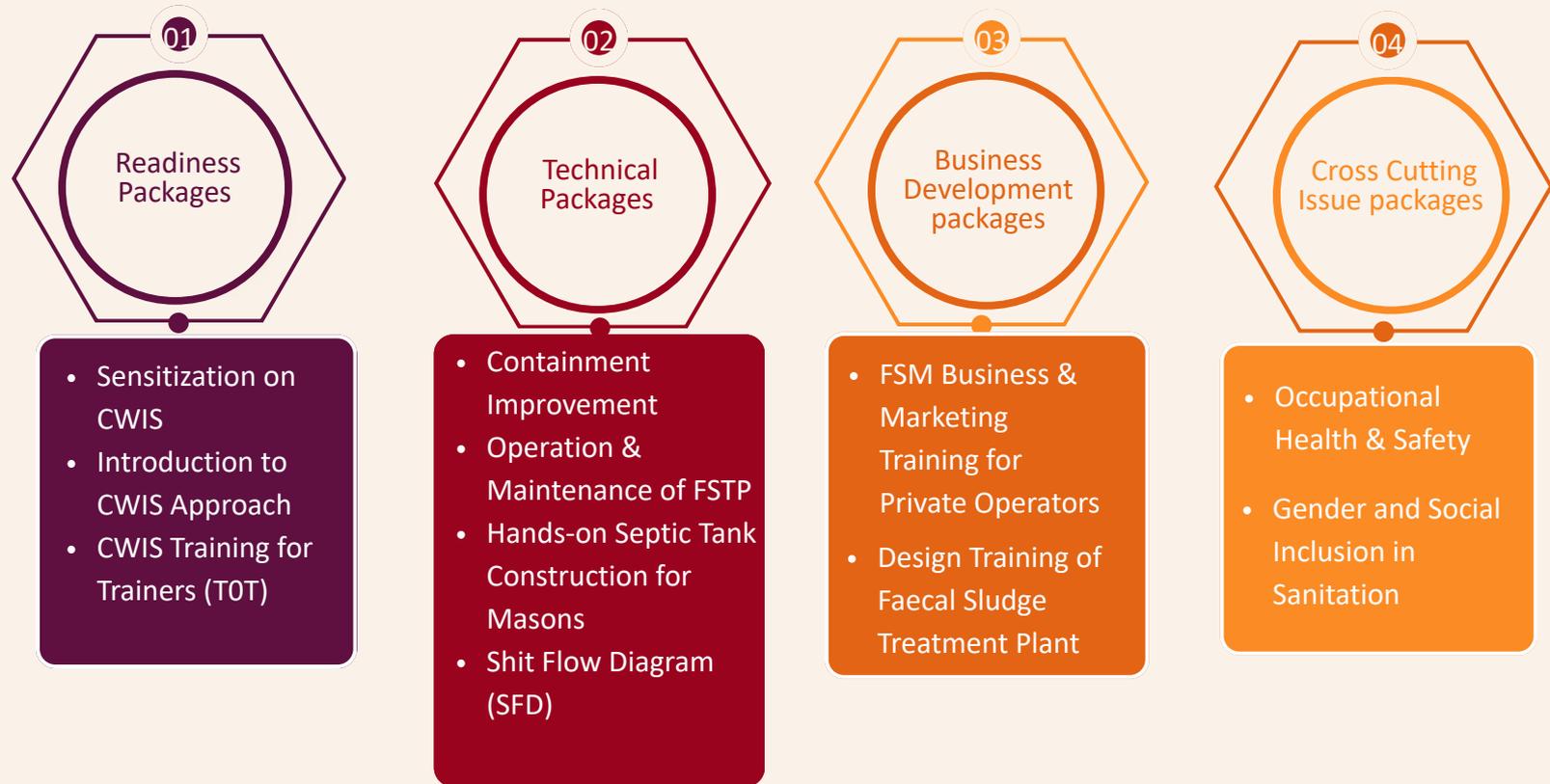
Eight training packages were endorsed by the NWSSRICDC reinforcing their relevance and applicability in the national training landscape.

Structured, accessible, and self-paced virtual learning programs were also initiated through an Online Learning Management System (OLMS), thereby expanding outreach and supporting continuous professional development.

"Capacity Building Activity Implementation Module"



# Training Packages Development



Overview of Training Packages Across Four Thematic Areas

# Digital Learning Platforms



## Online Learning Management System



Complementing in-person training, the OLMS was developed to strengthen virtual capacity building through a self-paced online platform offering interactive WASH courses for professionals, enabling wider reach and engagement across diverse global audiences.

## National WASH Repository

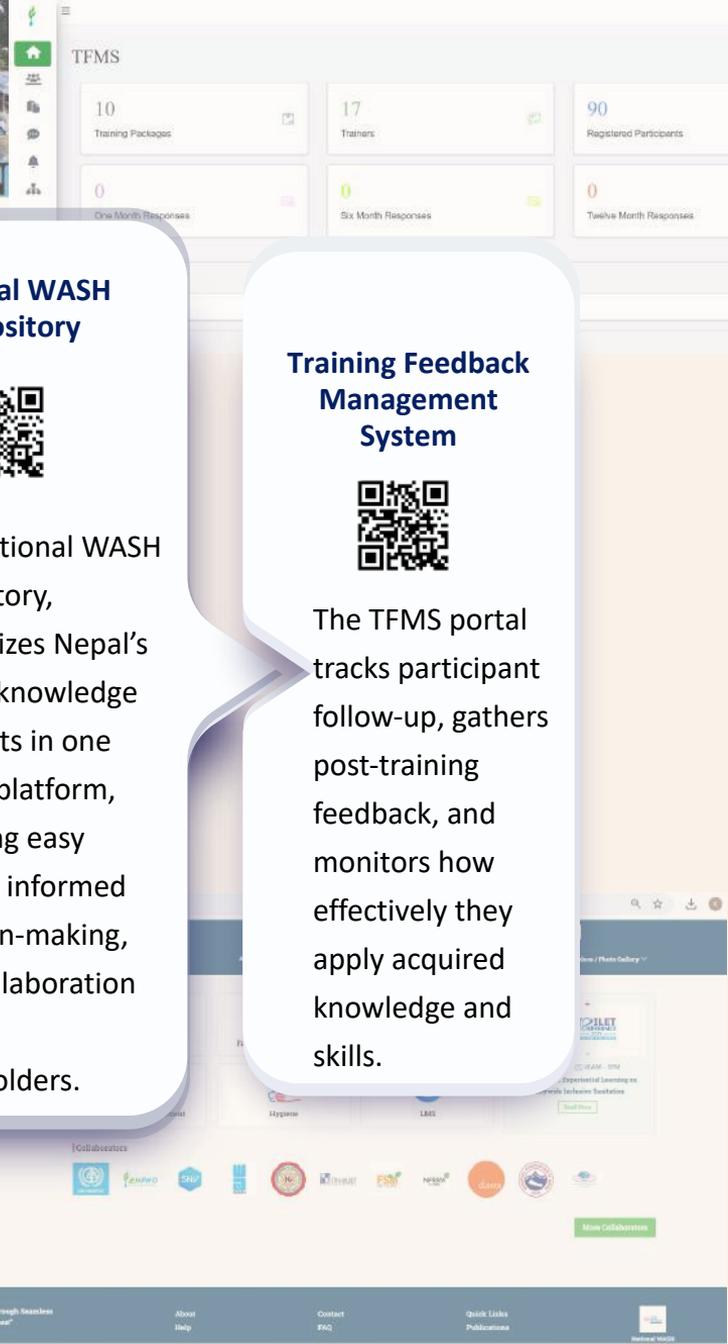


The National WASH Repository, centralizes Nepal's WASH knowledge products in one digital platform, enabling easy access, informed decision-making, and collaboration among stakeholders.

## Training Feedback Management System



The TFMS portal tracks participant follow-up, gathers post-training feedback, and monitors how effectively they apply acquired knowledge and skills.



# Training Model Endorsement

Eight training packages under four thematic groups have been endorsed by the NWSSRICDC. The training packages are;

1. Introduction to CWIS Approach
2. CWIS Training for Trainers
3. Containment Improvement
4. Operation & Maintenance of FSTP
5. Hands-on Septic Tank Construction for Masons
6. Design Training of Faecal Sludge Treatment Plant
7. Occupational Health & Safety
8. Gender and Social Inclusion in Sanitation

With government endorsement, these packages comply with official standards and are formally recognized for use by government institutions, local bodies, and partner organizations. They can be incorporated into capacity-building programs, official training plans, and policy documents, enhancing both credibility and adoption. As part of NWSSRICDC's annual training schedule, the packages support a national-level roll out, reaching a wider audience.



*Training Packages Officially Endorsed by NWSSRICDC*



## Mentor Cities

The project developed two mentor municipalities to showcase practical, scalable sanitation models. By demonstrating effective reforms, service delivery, and infrastructure improvements, these cities serve as examples for wider replication, promoting improved sanitation outcomes nationally.

During the project, Waling and Mahalaxmi Municipalities were designated as mentor cities. Cross-learning exchanges were facilitated nationally and internationally, with delegations visiting Nepalese mentor cities and Nepalese teams visiting mentor cities in Bangladesh to observe and share sanitation innovations and practical solutions.



*National Team Exploring Waling's FSTP*



*International Team Exploring Mahalaxmi's FSTP*

# Support for Sanitation Enhancement

## Infrastructure Enhancement

01

Revitalization of the Lubhu FSTP & Waling FSTP



Revitalization of the Lubhu FSTP

## System Strengthening

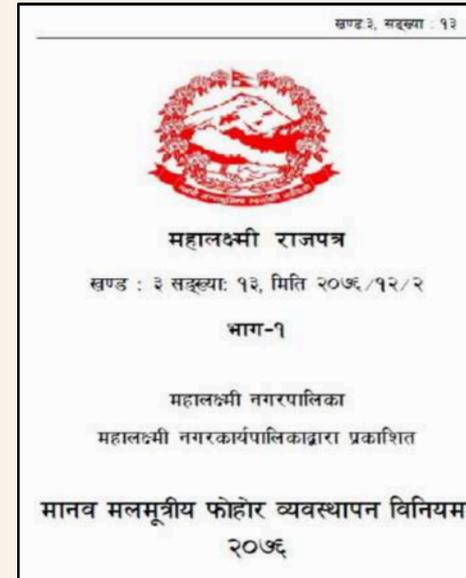
02

Support in the formulation of FSM by-laws

## Technical Support

03

IMIS establishment in Waling Municipality

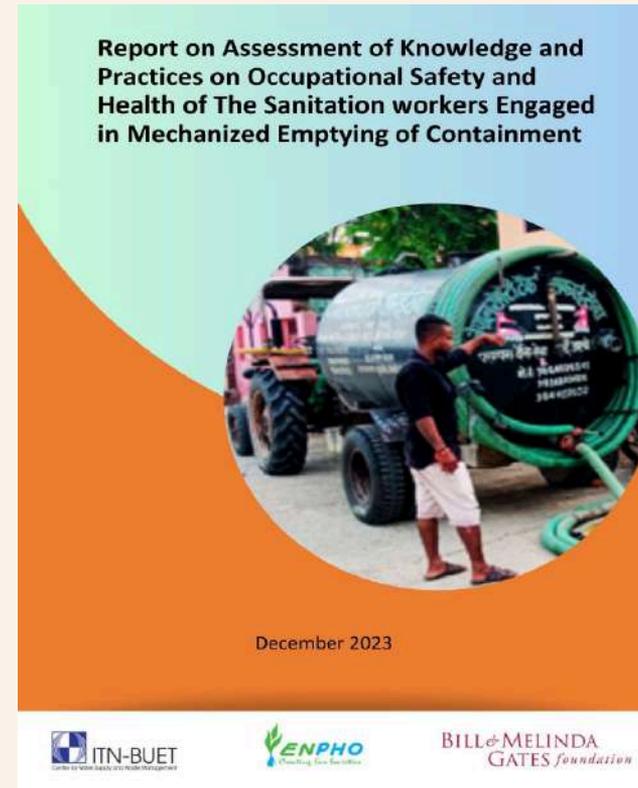


FSM By-laws of Mahalaxmi Municipality

## Action Research

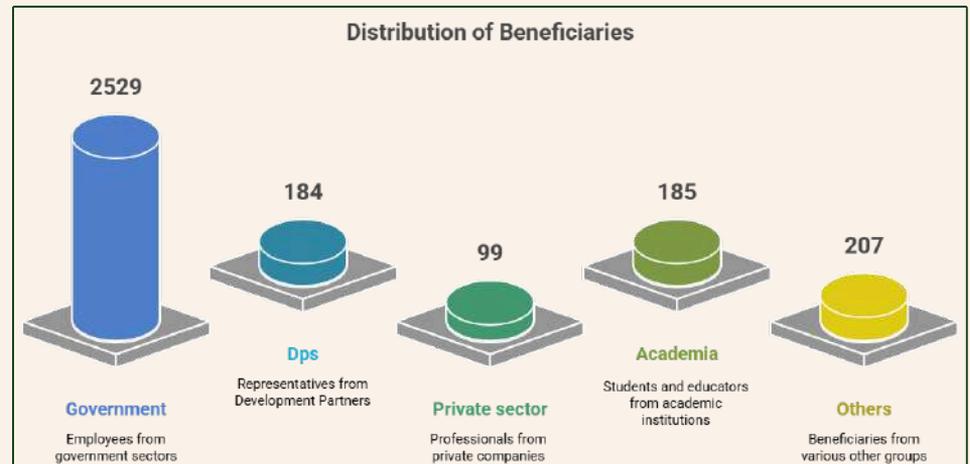
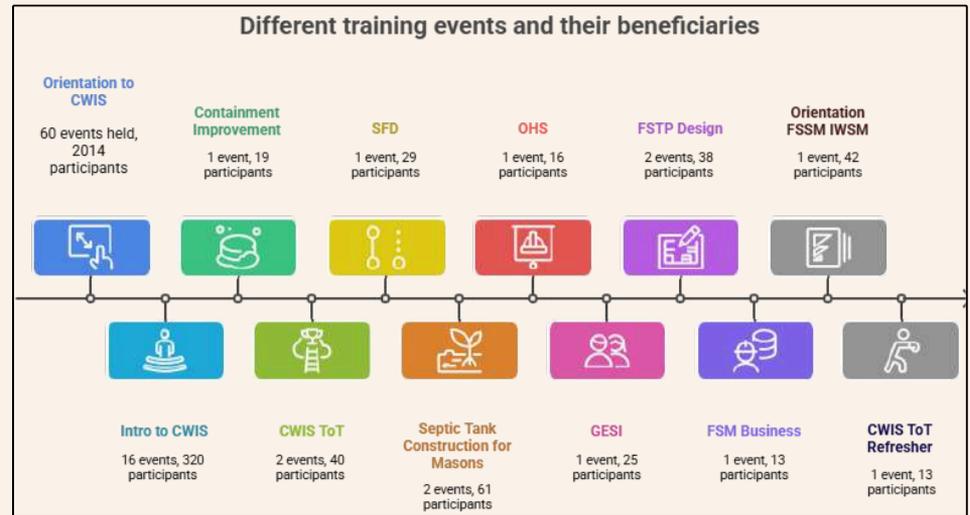
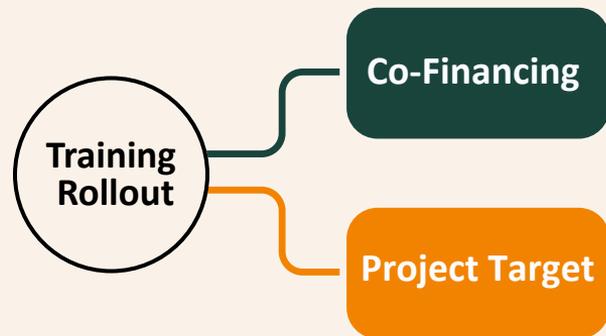
A study conducted in the Kathmandu Valley and Janakpurdham assessed the occupational health and safety of sanitation workers engaged in mechanized desludging. The findings revealed that workers are exposed to significant physical, chemical, and biological hazards, often exacerbated by inadequate equipment, limited personal protective equipment (PPE), and insufficient training, despite basic awareness of safety practices. Gaps in hygiene behavior, handwashing, and first aid knowledge further heightened their health risks.

The study recommends enhancing desludging equipment, ensuring the provision of adequate PPE, and strengthening training on hand hygiene, first aid, and infection prevention. It also emphasizes the mandatory inclusion of first aid kits in desludging vehicles to improve overall worker safety.



# Capacity Building

Capacity-building activities were delivered through two complementary modules. The first followed the project's core mandate, with all technical and financial resources fully supported by the project. The second adopted a co-financing model, involving either technical assistance, financial contributions, or shared training implementation costs in terms of both technical and financial support. All developed training packages were rolled out through one of these two modalities, ensuring flexibility, ownership, and wider reach.



## Training Outcomes

- **Scaling CWIS through Trained Experts**

Built a skilled human resource pool of 40 trainers through CWIS ToT, who are actively cascading CWIS training across sectors and municipalities, strengthening capacity and promoting citywide inclusive sanitation at scale.

- **Institutionalizing CWIS Learning**

Government-endorsed CWIS training packages have been integrated into NWSSRICDC's annual training calendar and rolled out nationwide. Additionally, other government training institutions, including LDTA, have incorporated these sessions into their programs, expanding reach and impact.

- **Strengthening Municipal Governance for Sanitation**

CWIS sensitization supported municipalities in preparing Shit Flow Diagrams (SFDs) and revitalizing inactive sanitation infrastructure, enhancing local planning and service delivery. It also encouraged local governments to prioritize sanitation through dedicated budget allocations, policy reforms, and strengthened decision-making processes.

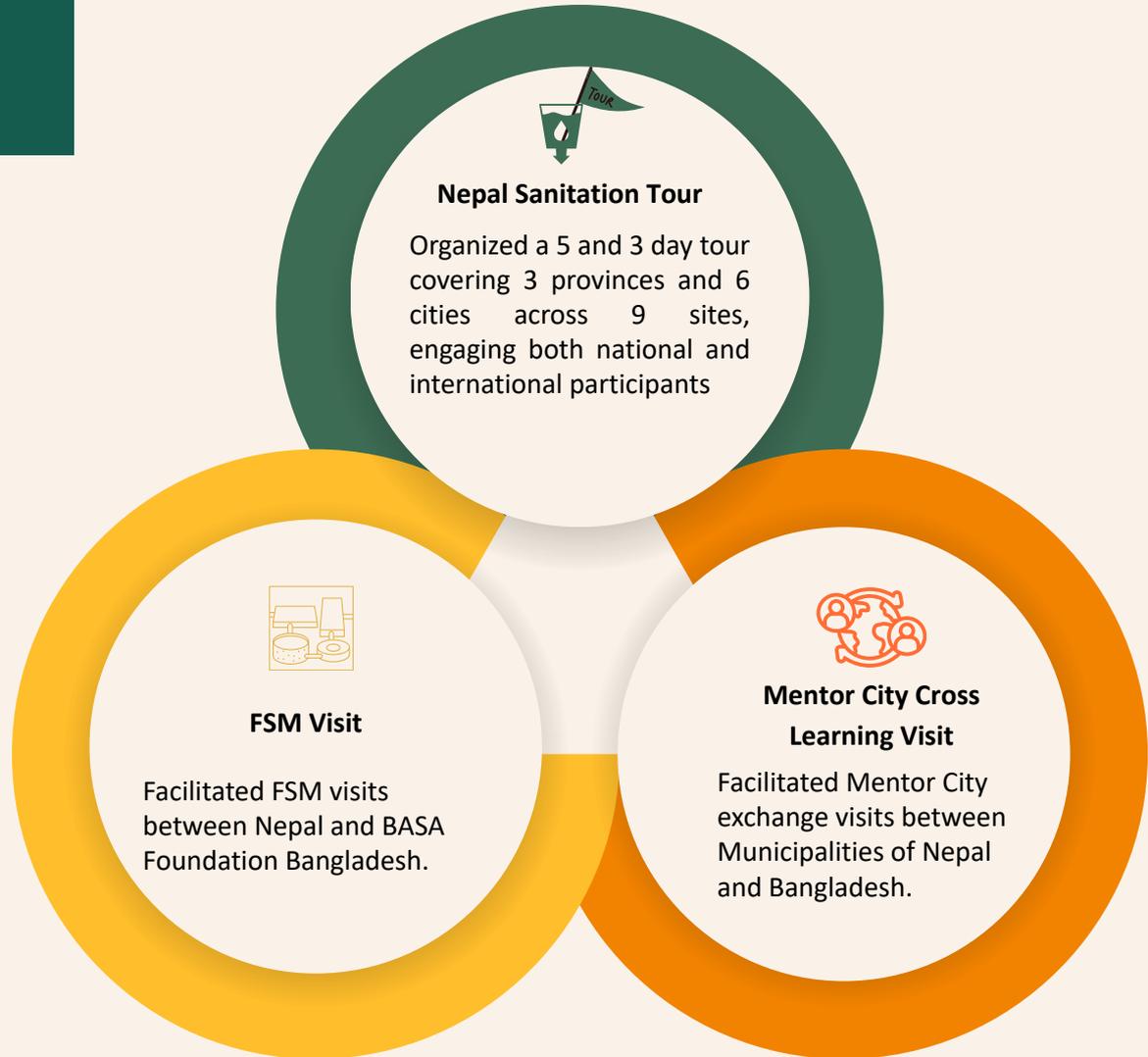


**Er. Sanju Lamichhane**  
DWSSM- SDE

*After completing ENPHO's 8-day CWIS Training of Trainers program, I have conducted training for over four batches of newly recruited engineers and government staff, including representatives from local and provincial governments, on CWIS concepts, planning, and implementation strategies. Through these sessions, I have built capacity within our teams, promoted inclusive sanitation practices, strengthened operational understanding, and supported the effective rollout of CWIS initiatives across my division.*

# Experiential Learning

In addition to in-person and virtual trainings, the project emphasized experiential learning—‘learning by doing’—to strengthen participants’ practical knowledge. Field-based activities such as the Nepal Sanitation Tour, Mentor City Cross-Learning Visits, and FSM Visits allowed participants to observe sanitation infrastructure, interact with practitioners, and learn from real-world challenges and solutions. This hands-on approach significantly enhanced their ability to apply sanitation concepts effectively in their own contexts.



# Nepal Sanitation Tour

The **Nepal Sanitation Tour** is a strategic initiative designed to showcase sanitation actions across cities in Nepal. It promotes experiential learning for sector stakeholders by providing first-hand exposure to effective practices and innovative approaches, encouraging the replication and scaling of successful sanitation models nationally and beyond.

The tour targets local government officials, development partner representatives, sanitation engineers, researchers, academia, and sanitation service providers. Participants gain the opportunity to explore key topics, including **Local Government Regulatory Efforts to Strengthen Sanitation Governance, Public-Private Partnerships for Sustainable Sanitation Services, Centralized and Decentralized Wastewater and Faecal Sludge Treatment Systems, Recycling and Resource Recovery from Faecal Sludge, and the Viability of Private Sector in Sanitation Business Ventures.**

## Sanitour Journey



*Each site visit offered valuable learning opportunities, from engaging with the Mahalaxmi Executive Board on urban sanitation governance to exploring innovative practices at the Lubhu and Waling FSTPs. The Aerosan Public Toilet showcased inclusive, gender-sensitive solutions, while the Guheswori Wastewater Treatment Plant highlighted large-scale wastewater management, and the Waterfront DEWATS in Pokhara demonstrated effective decentralized treatment. These experiences provided practical insights and inspiration for advancing sustainable sanitation practices.*



**Deputy Project Director  
DPHE-Bangladesh**

# Strategic Advocacy Initiatives

01 Produced and disseminated Sanitation Bulletins & Op-eds.



02 Implemented media advocacy.



03 Developed advocacy videos, impact stories.

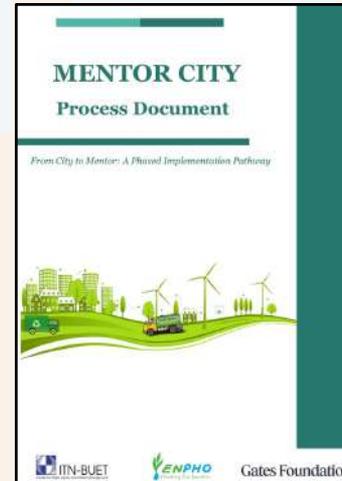


04 Designed promotional flyers, posters, info sheets, and documents.



05

Created digital content including reels, infographics, and photo stories.



## MENTOR CITY CROSS LEARNING VISITS: INSPIRING REPLICATION OF BEST SANITATION PRACTICES

Under the Mentor City approach, two cities in Nepal (Waling and Mahalaxmi) and five in Bangladesh were designated to guide other municipalities in improving sanitation systems. In June 2024, Bangladeshi municipal representatives visited Nepalese mentor cities, followed by Nepali teams visiting Bangladesh in September 2025, facilitating cross-border knowledge exchange.

These visits allowed firsthand observation of practical solutions—Mahalaxmi’s Integrated Municipal Information System (IMIS) inspired Bangladeshi municipalities, while Nepali teams gained insights to enhance Faecal Sludge Treatment Plants (FSTPs). The exchange demonstrated that experiential learning and peer-to-peer collaboration accelerate knowledge transfer and support the adoption of effective, scalable sanitation practices.



*Bangladeshi Delegates Visiting Nepal’s Mentor City*



**Mr. Parimal Kumar Dev**  
CEO, Municipal Association of Bangladesh

*Visiting mentor cities of Nepal has been an invaluable learning experience. We observed remarkable sanitation practices that we are committed to adapting and implementing in Bangladeshi municipalities. I am deeply grateful to ENPHO for facilitating this knowledge exchange and look forward to welcoming Municipal teams from Nepal to visit our municipalities in Bangladesh.*

## NEPAL SANITATION TOUR: OBSERVE, EXPERIENCE AND LEARN

The Nepal Sanitation Tour was initiated by ENPHO in December 2024 to showcase diverse sanitation initiatives through hands-on learning, field visits, live demonstrations, and direct engagement with local governments, private actors, and development partners. The tour has engaged municipal representatives and development partners both nationally and internationally, including delegations from Bangladesh, fostering South-South knowledge exchange.

Participants visit major learning sites such as Faecal Sludge Treatment Plants in Waling and Mahalaxmi, Aerosan Public Toilet in Patan, Guheswori Wastewater Treatment Plant in Kathmandu, and community-led sanitation initiatives in Rupandehi. Spanning three to five days, the tours allow firsthand observation of inclusive and sustainable sanitation practices, inspiring replication of faecal sludge management and innovative service models. Over four editions, the Nepal Sanitation Tour has strengthened municipal capacities, encouraged national collaboration, and established itself as a model platform for experiential learning and practical knowledge sharing in urban sanitation.



*Bangladesh Delegates Visiting Nepal Sanitation Tour Sites*



*National Delegates Visiting Nepal Sanitation Tour Sites*

# Learnings

Rolling out capacity-building events through a co-financing mechanism has proven effective, as it aligns partners with shared interests, objectives, and target audiences.

Engaging private actors, entrepreneurs, and local communities enhances service delivery, occupational safety, and inclusivity in sanitation systems.

Using tools like SFDs and integrating CWIS principles in municipal planning ensures more effective, evidence-based sanitation interventions.

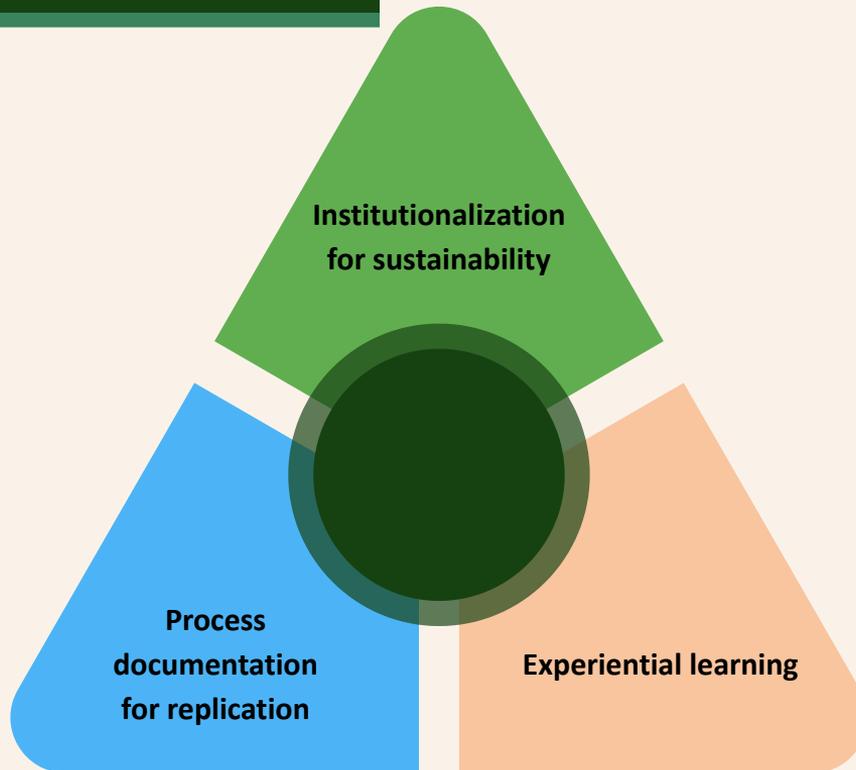
Officially endorsed training packages integrated into national calendars increased credibility, adoption, and alignment with sanitation priorities.

Recognizing the limitations of in-person training, the digital learning platform has enabled broader access and engagement, allowing participants worldwide to benefit from self-paced, flexible learning.

Investments in systems like IMIS strengthened local government decision-making and service delivery.

Experiential learning has proven effective in enhancing knowledge and facilitating the replication of practical initiatives, as demonstrated through cross-learning visits between Sanitor and Mentor Cities at both national and international levels.

## Way Ahead



- Upgrade existing digital learning platforms and integrate them into the government domain to enhance accessibility, sustainability, and national-level reach.
- Continuous technical and capacity development support to mentor and mentee cities, fostering knowledge transfer and replication of best sanitation practices.
- Co-organize capacity-building events with government training centers and development partners through co-financing model, leveraging shared resources and objectives for greater impact.
- Develop process documents for different initiatives to enable replication and adaptation of best practices wherever applicable.
- Expand strategic partnerships with government and non-governmental organizations to strengthen collaboration, and jointly implement capacity-building and training initiatives.

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