

**Center for Water and Sanitation (CWAS), CRDF, CEPT University
in partnership with
Global Sanitation Centre of Excellence (GSCOE), TECHIN, IIT
Palakkad, and Bill & Melinda Gates Foundation**

Details of ISO 24521

Guidelines for the management of basic on-site domestic wastewater services

February 20th, 2024, | 18:00 – 19:30 (IST)

ISO STANDARDS FOR NON-SEWERED SANITATION (NSS)

Introduction to ISO 24521

Frederick Cate

Professional Engineer, Managing Director
GWCC – INTERVAL ZT GmbH
Vienna, Austria

CWAS CENTER
FOR WATER
AND SANITATION
CRDF CEPT
UNIVERSITY

**BILL & MELINDA
GATES** foundation

IIT PALAKKAD **TECHN**
UNIVERSITY



ISO 24521:2016 Rationale (1st Proposal Sept. 2010)

Justification

- **Dignity and social development, environment.**
- **Re-use** of composted waste
- **Protection of water** sources
- 2.4 billion and counting people have no **access to adequate hygienic sanitation facilities**

Scope

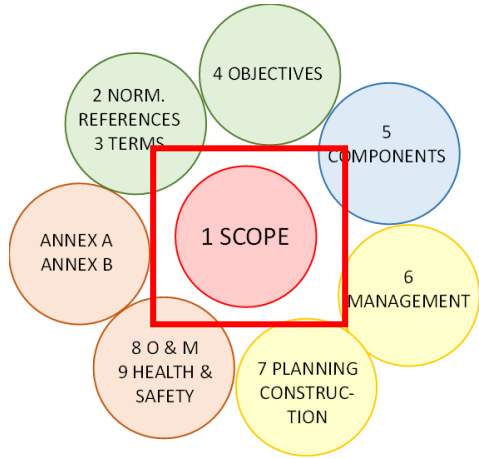
- amenities for **safe disposal** eg dry toilets, eco-sanitation facilities
- **environmentally sound transportation and reuse** of the human waste
- **appropriate technological methods** of treatment of the waste, and sanitation during emergency situations eg flood, wars

ISO 24521:2016 Brief history

- **First ideas:** Prof. G. Munala (Kenya) and K. Rohrhofer (Austria)
- **1st Proposed** by Kenya KEBS 10.09.2010
- **Resolution of ISO TC224** 8th plenary meeting, 20.05.2011 in Vienna, Austria
 - Resolution 2011/05: need to address the subject under ISO 224.
 - Resolution 2011/06: new WG8, write a supplement to ISO 24511
 - Convenorship: Kenya & Austria, Secretariat: KEBS (Kenya)
- **Title mutations over time:**
 - On-site domestic wastewater management system
 - On-site domestic wastewater management using low technology
 - Basic on-site domestic wastewater management
 - On-site domestic wastewater management
- **ISO 24521** published in 2016

Note: ISO 24511 Guidelines for the management of wastewater utilities and for the assessment of wastewater services

ISO 24521:2016 1 Scope



Supplements and used in conjunction with ISO 24511
Guidelines and guidance for basic ODWS:

- Management from Operator's perspective
- Management from User's perspective
- Design and Construction
- Planning, O & M, Health & Safety

Exclusions:

- Limits of acceptability for wastewater discharged into receiving water body
- Analytical methods
- Management structure
- Content of contracts

Applicable to:

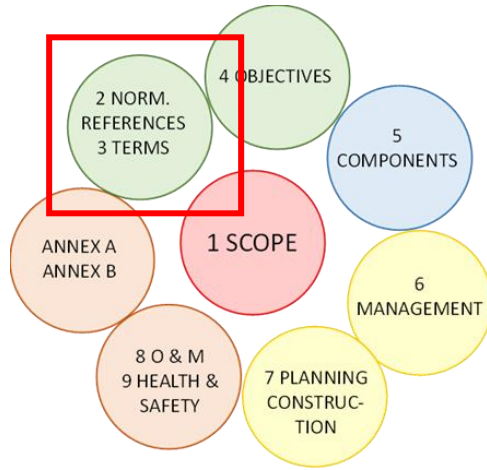
- publicly and privately operated basic ODWS
- black and grey water
- one or more dwellings

Note: ODWS = On-site Domestic Wastewater Systems

ISO 24521:2016

2 Normative references

3 Terms & definitions



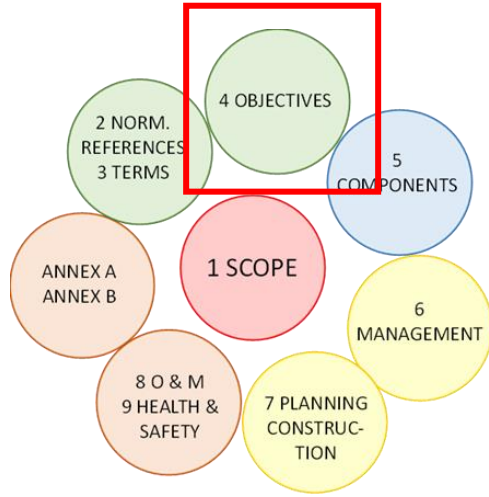
- **Normative references:** ISO 24510, ISO 24511 (after revision also ISO 24513 “Vocabulary” and ISO 24525 “Operation & Maintenance”)
- **Terms & definitions:** After revision there will be fewer definitions in ISO 24521 as most terms are now included in ISO 24513:2019 “Vocabulary”

Note:

ISO 24510 Guidelines for the assessment and for the improvement of the service to users

ISO 24511 Guidelines for the management of wastewater utilities and for the assessment of wastewater services

ISO 24521:2016 4 Objectives



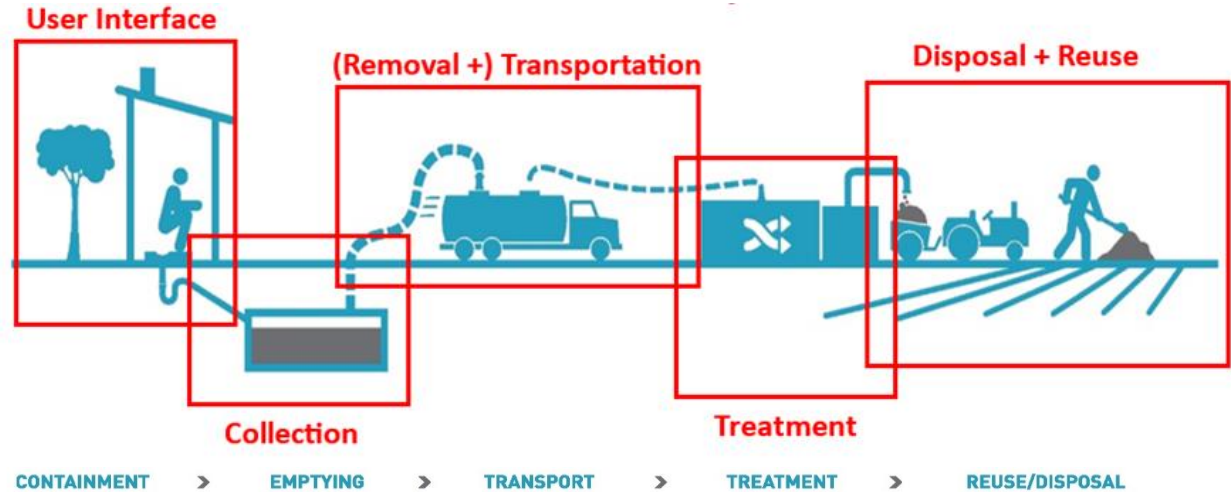
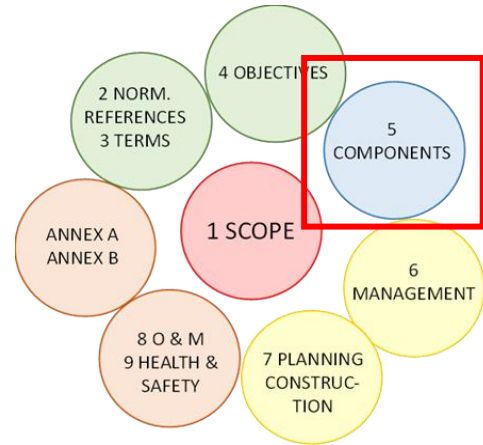
Four main objectives:

- protection of public health and safety
- occupational health and safety
- environmental protection
- sustainable development

Further considerations for ODWS:

- effective disease barrier
- prevention of environmental pollution
- environmental requirements
- optimized use of resources
- simplicity (construction, use, O & M)
- adherence to hygienic safety standards
- affordability and willingness to pay;
- existing institutional support;
- existing best practice
- development of ownership;
- cultural sensitivity

ISO 24521:2016 5 ODWS Components

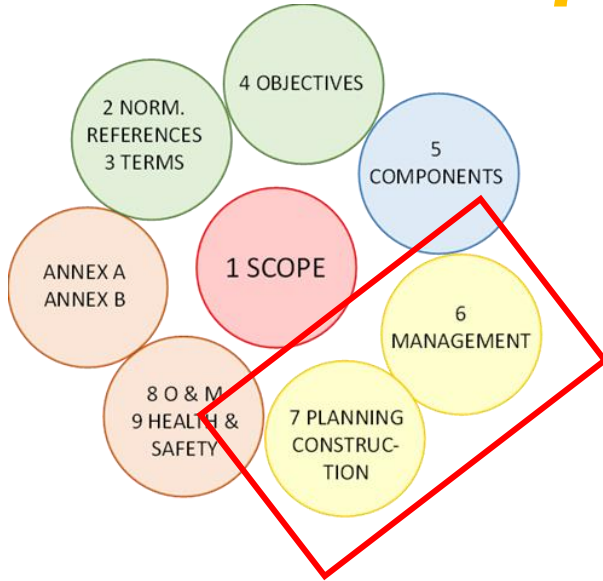


Note: ODWS components' names in ISO 24521 differ from those in the ISO 31800:2020

Revision of ISO 24521 “Removal” added to “Transportation” for consistency with ISO 24525:2022

ODWS components in detail in the following presentation by Mr. Ron Swinko.

ISO 24521:2016 6 Management 7 Planning + Construction



These clauses will be discussed in detail in **Mr. Ron Swinko's presentation.**

ISO 24521:2016 8 Operation & Maintenance 9 Health & Safety



8 Operation and Maintenance

Developing plans and instructions for

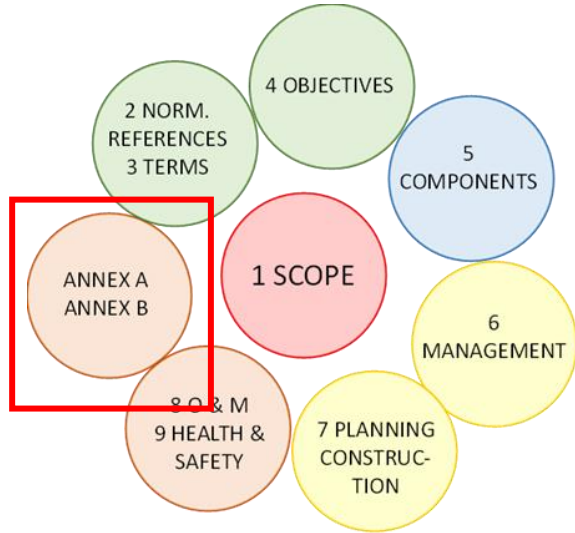
- Operation
- Maintenance
- Collection
- Removal and transportation

9 Health and Safety

- Measures and Training
- Public health programmes

Note: ISO 24525 gives more detailed guidance on operation & maintenance and on related health & safety aspects.

ISO 24521:2016 Annexes A + B



Annex A: Terms in:

- English
- French
- Spanish

Note: In accordance with ISO rules, deleted in revision of ISO 24521

Annex B: Schematics of basic ODWS

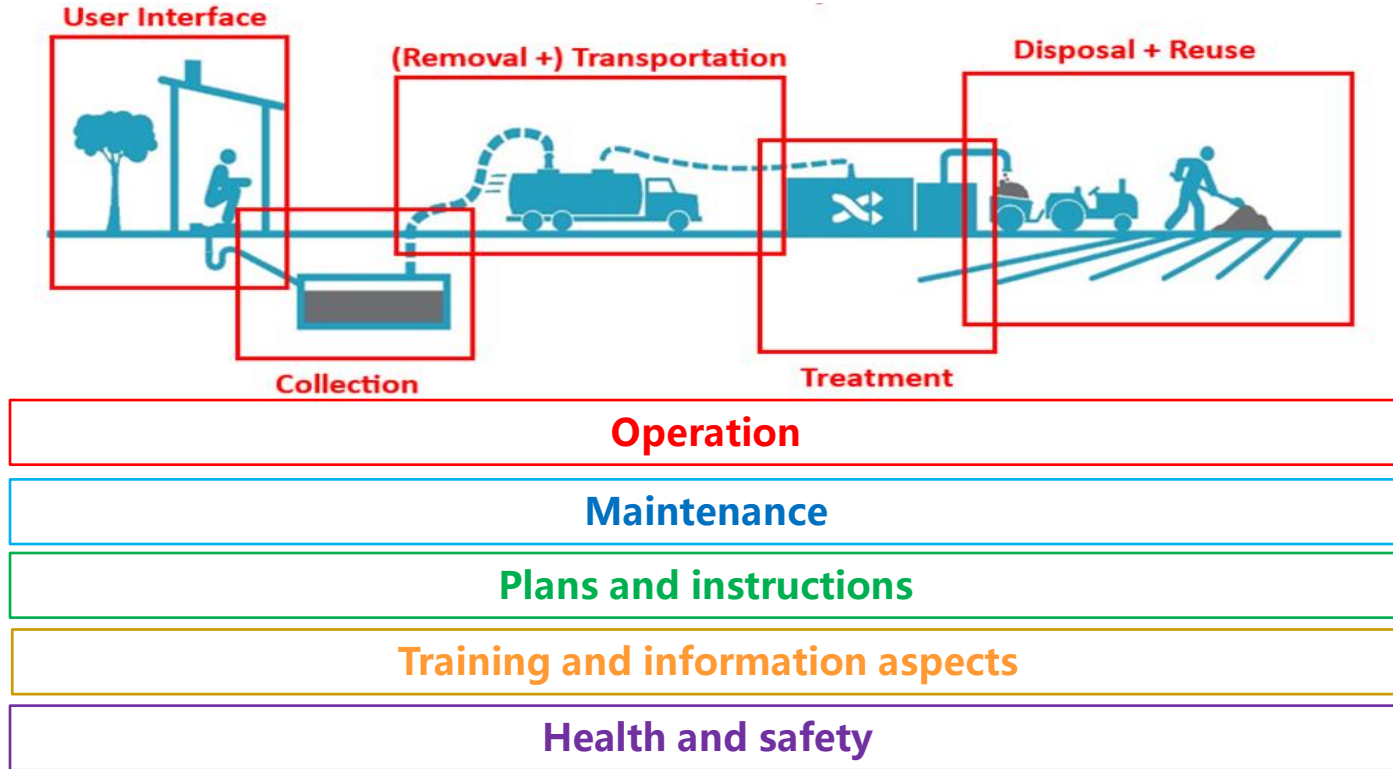
- General characteristics
- Types of ODWS
- Details of components, descriptions

Note: Replaced in revision by Annex A “Examples of ODWS and components”

ISO 24525:2022 Operation and maintenance of on-site domestic wastewater services - Scope

- **Supplements** and used in conjunction with **ISO 24521**
- **Main intention: Assistance** to relevant authorities, training organizations, certification bodies and other responsible entities **for development of:**
 - regulations,
 - plans and manuals
 - information and training materials
- Includes **all levels of technology** used in ODWS – not just basic technology (a major reason for revision of ISO 24521:2016)

ISO 24525:2022 Operation and maintenance of on-site domestic wastewater services - Structure



ISO 24521:2016 Revision – Main changes 1

- **Term “basic” deleted;** ISO 24521(revised) + ISO 24525 “O&M” contain basic and more advanced systems
- **Harmonization with ISO 24525:**
 - title
 - normative reference
 - clause names
 - clause contents
- **New Title: ISO 24521 Drinking water, wastewater and stormwater systems and services — Guidelines for the management of on-site domestic wastewater services** (matching titles of ISO TC224 and ISO 24525 “O&M”)

Note: ODWS = On-site Domestic Wastewater Systems

ISO 24521:2016 Revision – Main changes 2

- **Terms and definitions:** Fewer definitions as most terms are in ISO 24513:2019 “Vocabulary
- **Additional objectives** added:
 - meeting the needs and expectations of users
 - provisions of services under normal and emergency situations
 - promotion of sustainable development of the community
- **Annex A** ISO 24521:2016: **deleted**
- **Annex B** ISO 24521:2016: **replaced by Annex A “Examples of ODWS and components”** containing basic and more advanced systems

Status of revision: CD enquiry completed, DIS expected in summer 2024



THANK YOU



ISO STANDARDS FOR NON-SEWERED SANITATION (NSS)

Management Guidelines of ISO 24521:2016

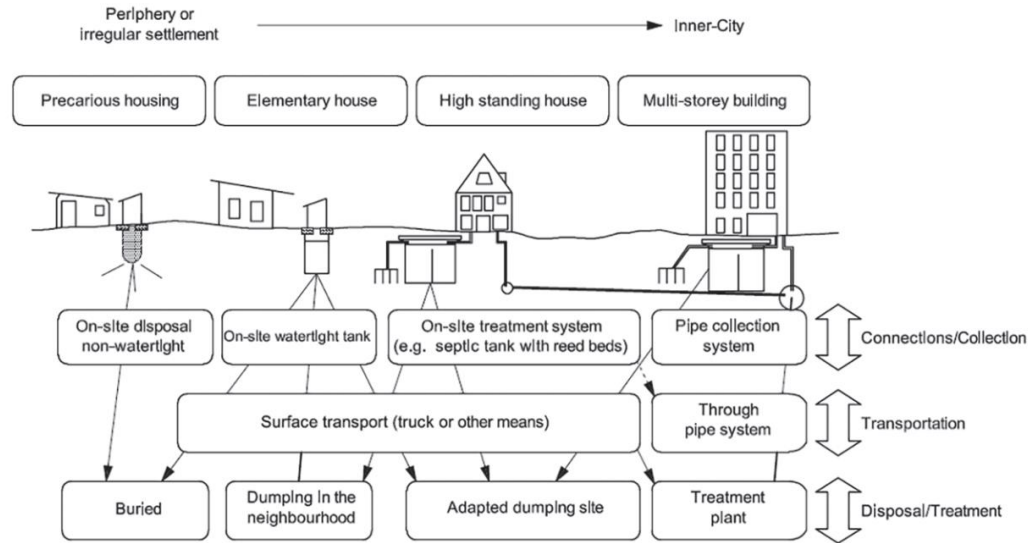
Ron Swinko
Executive Director
EcoThrive Initiatives, Inc.



Management of Basic On-site Domestic Wastewater Systems (ODWS)

- The ISO 24521:2016 Standard includes:
 - Management guidelines:
 - Basic management activities
 - Stakeholder relations
 - Environmental management
 - Risk management
 - Planning and construction
 - Criteria for selecting appropriate technology
 - Operations and maintenance
 - Developing plans and instructions
 - Health and safety issues
 - Health and safety measures and training
 - Public health programs
 - Informative annex
 - Annex B- Schematics of basic ODWS

Types of Domestic Wastewater Systems



NOTE Figure source: ISO 24511:2007, Figure B.2.

Figure B.1 — Types of wastewater systems

Basic Management Activities

- Developing objectives and establishing action plans
 - Information for the system function and stakeholder communications process
 - Financial stability of the system
 - Sustainability of the assets
 - Customer communication

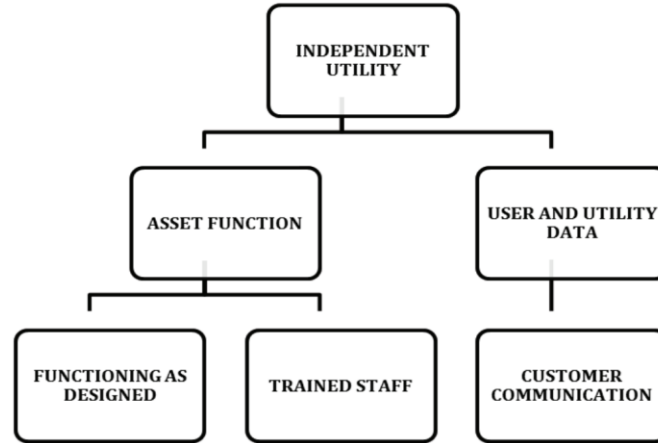


Figure 2 — Developing information for the system function and stakeholder communication process

Stakeholder Relations

- Developing plans for stakeholders
 - Identify stakeholder communication and support
 - Includes public or private entities, end users, individuals, and the community



Figure 3 — Identifying stakeholder requirements and support

Environmental and Risk Management

- Environmental management
 - Promote the sustainability policy objectives for wastewater projects
 - Protect and preserve water quality and water resources
 - Preventative actions to reduce risk to crops and human health
 - Develop an environmental check list for on-site domestic wastewater collection, treatment, and disposal
- Risk management
 - Systemic approach to identifying, describing, and assessing the risk
 - Implement a plan to eliminate or minimize risk to public health and safety, environmental degradation, and negative socio-economic impacts
 - Begins with planning and construction

Planning and Construction

- Guidelines
 - Sanitation planning should include individual systems and neighbourhoods
 - Requires stakeholder involvement
 - Raise awareness of the planning to ensure community participation

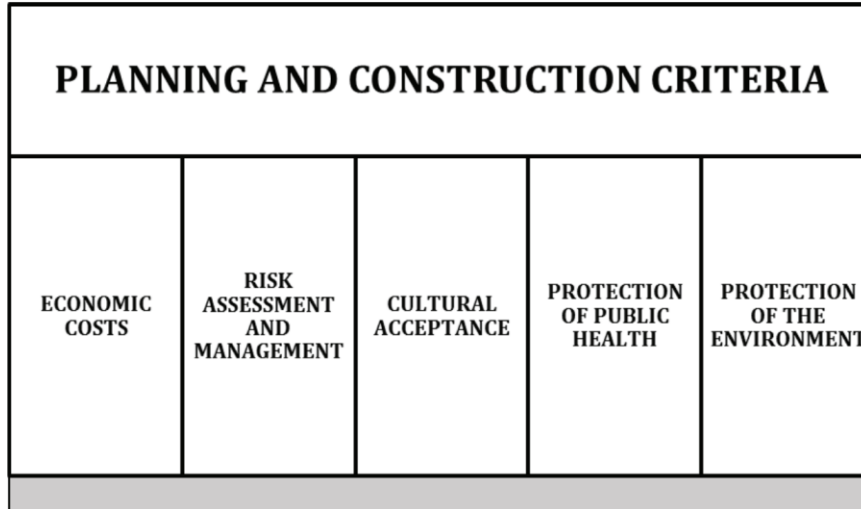


Figure 4 — Considerations for the planning and construction of basic on-site domestic wastewater systems

Criteria for Selecting ODWS Technologies

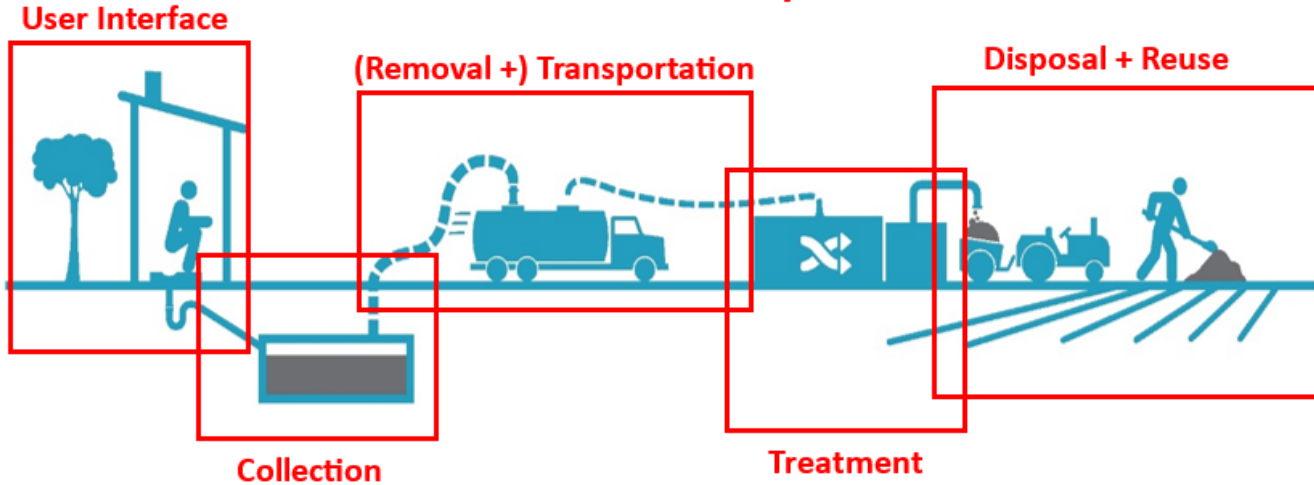
- Identifying appropriate technology
 - Financial resources for construction
 - Technical and management skills for proper operation and maintenance
 - Acceptance by households and local sanitation officials
 - Lifespan of the infrastructure
 - Efficient technology
 - Accessibility
 - Operational and maintenance cost

On-site Domestic Wastewater Systems

- Basic on-site domestic wastewater: water containing human body waste and human liquid waste (can contain grey water from washing)
 - No industrial or commercial waste
- Use of ODWS
 - Individual homes or small villages
 - Ensure the ODWS meet the needs and objectives of the users and communities
 - Designed to collect, store, treat, use and/ or transport wastewater and/ or residues
 - Identification of economic and cultural factors to meet objectives for as many users as possible
 - Protect the public health and environment
- Guidelines can be adapted to include additional National requirements
 - Apply to various combinations of components utilized in ODWS
 - Not all ODWS contain each component of the process
 - Dependent on the development of wastewater management
 - Treatment may not be present except for screening

On-site Domestic Wastewater System Components

ISO 24521 ODWS Components



Adapted from ISO 31800:2020, Figure 1

Component Definitions

Table 1 — Chains of successive components of basic on-site domestic wastewater technologies

Component	Definition	Objective
User interface	Technologies with which the user comes into contact and access the sanitation system.	To improve the sanitary conditions in people's homes.
Collection	Technologies which enable wastewater to be collected, temporarily stored and, if appropriate, to be partially treated.	To improve the sanitary conditions in people's homes.
Transportation	Technologies that transport wastewater away from the user's home to temporary disposal, treatment or discharge sites.	To ensure the health and hygiene of the neighbourhood.
Treatment	Technologies used to treat wastewater and residues in order to reduce the pollution load by means of physico-chemical and/or biological processes.	To reduce pollution and ensure the health of the community.
Disposal/reuse	Technologies or methods by which residues are ultimately disposed of in the environment or reused as useful resources.	To allow a safe and adequate disposal of treated residues (disposal) or the utilization of treated residues (reuse).

Components and Utilization- User Interface, Collection, and Transport

- User interface
 - Toilets and washing facilities
- Collection
 - Tanks- above ground; below ground
 - Emptying- human powered; motorized
 - Transfer station- underground holding tank
- Transportation
 - Carts; human-powered multiple wheeled vehicles; trucks; vacuum tankers

User Interface, Collection, and Transport

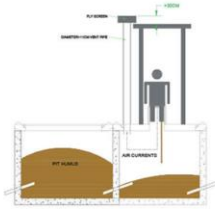


Figure sources: pS-Eaul^[6] and Compendium of Sanitation Systems and Technologies^[9].

Figure B.3 — Ventilated improved pit latrine/fossa alterna



Figure source: Rieck et al^[10].

Figure B.4 — Sitting and squatting types of urine diverting dry toilets (UDDT)

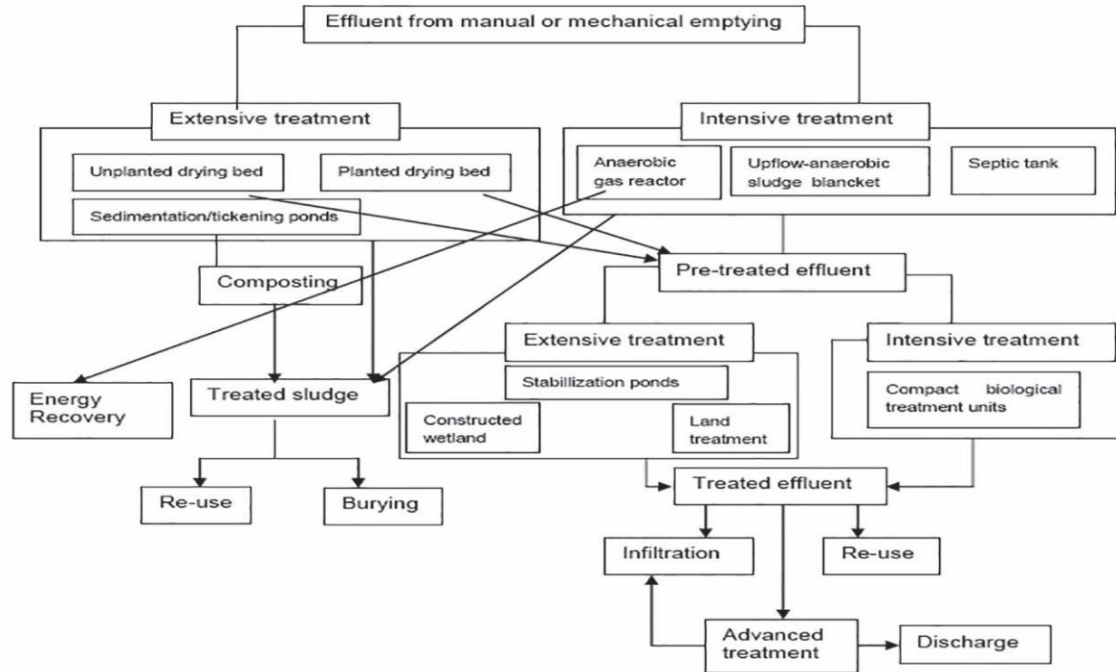


Manual emptying



Vacuum tanker

Typical Technologies- Treatment and Disposal



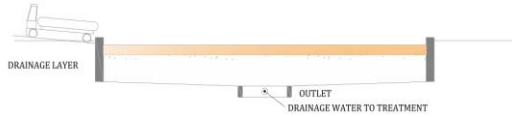
NOTE Figure source: Adapted from pS-Eaul[6].

Figure 1 — Examples of typical available technologies for on-site treatment/disposal

Components and Utilization- Treatment

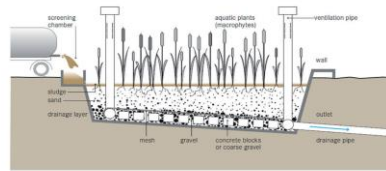
- Treatment
 - Technologies
 - Primarily used for treating wastewater
 - Land treatment
 - Ponds and wetlands
 - Septic tanks without discharge
 - Septic tanks with discharge and adequate filtration
 - Compact biological treatment units
 - Technologies
 - Primarily used for treating sludge
 - Ponds
 - Drying beds (planted or unplanted)
 - Co-composting
 - Anaerobic biogas reactor

Wastewater and Sludge Treatment



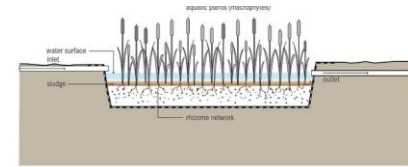
NOTE Figure source: Compendium of Sanitation Systems and Technologies[9].

Figure B.17 — Schematic of an unplanted drying bed



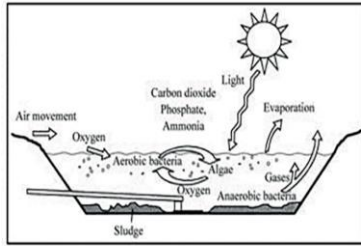
NOTE Figure source: Compendium of Sanitation Systems and Technologies[9].

Figure B.18 — Examples of planted drying beds



NOTE Figure source: Compendium of Sanitation Systems and Technologies[9].

Figure B.12 — Example of a constructed wetland

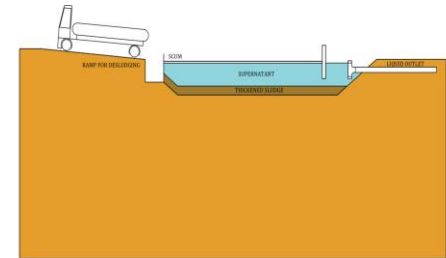


NOTE Figure source: Hygnstrom et al[14].

Figure B.11 — Example of a wastewater pond



Sludge drying



NOTE Figure source: Compendium of Sanitation Systems and Technologies[9].

Figure B.16 — Sedimentation/thickening pond

Components and Utilization- Reuse and Recovery

- Disposal and reuse of treated wastewater and sludge
 - Recovery of resources for economic use should always be considered when designing ODWS
 - Potential reuse for properly treated effluent
 - Discharge to the natural environment
 - Irrigation
 - Potential reuse of treated sludge
 - Land application- fertilizer, soil conditioner
 - Energy recovery (e.g. biogas)

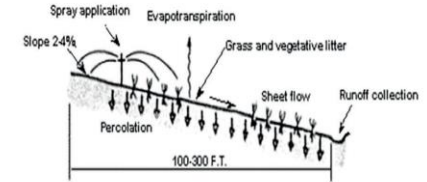
Reuse and Recovery



Anaerobic digester- biogas recovery
Umande Trust- Kibera Settlement
Nairobi, Kenya



Black soldier fly
sludge digestion- South
Africa- animal feed



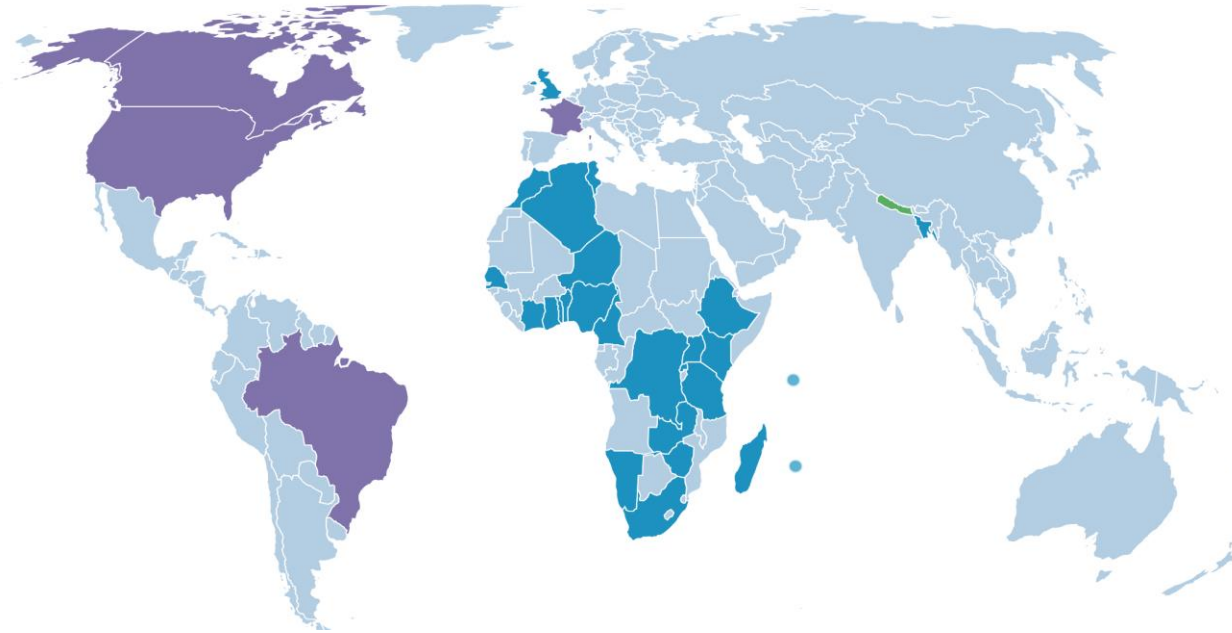
NOTE Figure source: United Nations Environment Programme[15].

Figure B.13 — Example of overland flow land application

Faecal sludge treatment and reuse as fertilizer- Lubhu Lalitpur, Nepal

ISO 24521:2016 National Adoption

Legend: ISO 30500 Adopted ISO 24521 Adopted ISO 30500 and ISO 24521 Adopted



[Home Page - ANSI Sanitation](#)

Current as of July 2023



THANK YOU



ISO STANDARDS FOR NON-SEWERED SANITATION (NSS)

ISO adoption process in Nepal

-

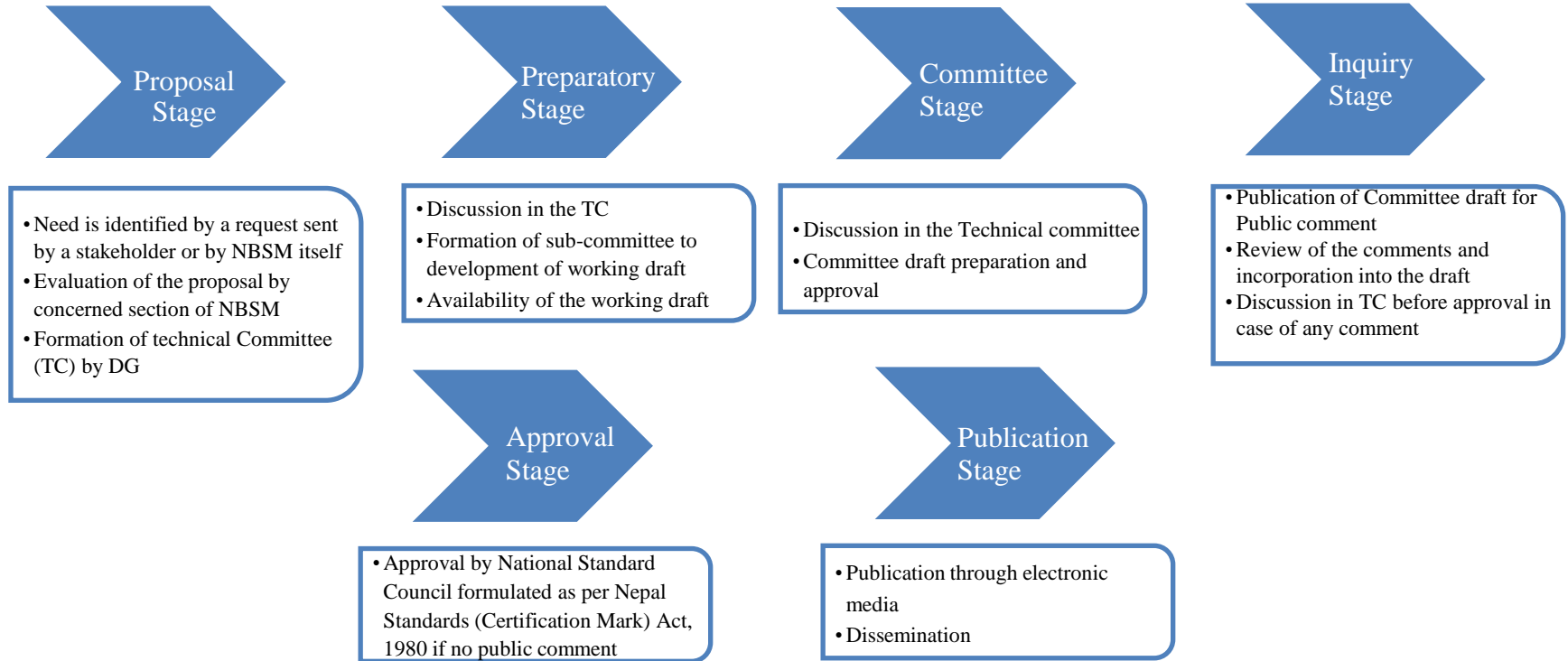
An overview

Alok Mishra

Nepal Bureau of standards and Metrology



Development of National Standards at NBSM



Types of Standardization Projects for National Adoption of ISO Standards

Type 1- Identical adoption of an ISO Standard

ISO 24521: 2016, *Activities relating to drinking water and wastewater services Guidelines for management of basic on- site domestic wastewater services* was adopted through this type of project

Type 2 – Evaluation of an ISO standard with the intention of its adoption

ISO 30500:2018, *Non- sewered sanitation systems – Prefabricated integrated treatment units- General safety and performance requirements for design and testing* is in the process of approval through this type of project

National Adoption of ISO 24521 and ISO 30500

With support from the Bill and Melinda Gates Foundation (BMGF) and in coordination with Environment and Public Health Organization (ENPHO), Nepal Bureau of Standards and Metrology (NBSM) has worked and working on national adoption of ISO 24521 and ISO 30500 respectively.

Key Achievements

- National adoption of **ISO 24521** guidelines (**Accomplished**).
- National adoption of **ISO 30500** (**Ongoing**).
- Implementation of ISO 24521 guidelines in Mahalaxmi Municipality as a pilot initiative and, based on lessons learnt, it is being replicated in additional two Municipalities (**Ongoing**).
 - This has been undertaken by ENPHO under 'Pilot Implementation of FSM Standard in Nepal Project'

Key Process of National Adoption of ISO 24521 and ISO 30500

Formation of Technical Committee at NBSM

- Briefed participants on ISO 24521 and ISO 30500;
- Technical Committee formed and introduced;
- Decision for review of the ISO standards by the Technical Sub-Committee and submit the recommendations to the Technical Committee.



Presentation and Discussion in Technical Sub-Committee at NBSM

- Formation of Technical Sub-Committee.
- Thorough review of the standards and discussion in Sub-Committee.
- Standard recommended by the Sub-Committee to the Technical Committee for adoption process.



Key Process of National Adoption of ISO 24521 and ISO 30500

Final recommendation by Technical Committee

- Recommendation for public comments.

ISO 24521 Guideline Adopted by NBSM as National Standard- 17 January 2020

- 102nd Assembly of Nepal Standard Council formally announced the approval of the guideline.
- The standard is available as NS/ISO 24521



ISO 30500 in final approval process from NBSM Council

Experience and Learning from ISO 24521

- Proposal for the adoption of this standard was made by NBSM
- NBSM was a participating member in the TC 224
- During the proposal stage a stakeholder meeting was held with the relevant government bodies (both central and local), academia, research organization, water testing laboratory and organizations delivering water and wastewater related services
- Positive responses were received from all parties citing its relevance to SDG 6 and 3 in general and 6.2 in particular
- A meeting of national mirror committee which was earlier formulated for the participation in TC 224 was held to discuss the national adoption and decision for identical adoption was taken
- The meeting was attended by few other stakeholders like consumer organizations, government departments and ministries
- The standard was approved by NCS as a National Standard in the year 2020

IMPLEMENTATION OF ISO 24521

- Mahalaxmi Municipality is the first Municipality in Nepal to endorse and implement FSM By-Laws and regulatory framework for safely managed sanitation.
- It is also the first Municipality in Nepal to establish and implement Integrated Municipal Information System (IMIS) which facilitates the Municipality in planning, management and monitoring and evaluation.





THANK YOU

CWAS CENTER FOR WATER AND SANITATION
CRDF CEPT UNIVERSITY

BILL & MELINDA GATES foundation



**ISO STANDARDS FOR
NON-SEWERED SANITATION (NSS)**

Pilot Implementation of ISO 24521 in Mahalaxmi Municipality of Nepal

Ms. Rosy Singh

Project Manager

Environment and Public Health Organization (ENPHO)

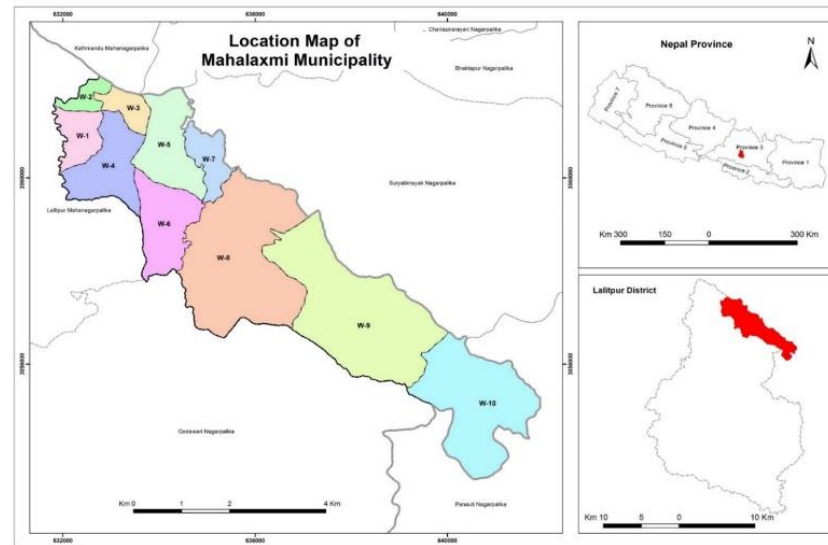


Background

- With the declaration of 293 Municipalities by Nepal Government in 2017, **urban sanitation has been one of the challenging issues** for all the cities to deal with proper and safely managed sanitation services.
- The **non-sewered sanitation systems** in cities, small and emerging towns are **poor and unregulated** with unsafe disposal of fecal sludge into the water bodies and environment and posing threat of many water-borne diseases to public health.
- Proper and safe fecal sludge management is crucial to **protect both the environment and public health.**
- In this context, Environment and Public Health Organization (ENPHO), with funding support from Bill and Melinda Gates Foundation (BMGF) implemented '**Pilot Implementation of FSM Standard in Nepal**' Project as **pilot implementation of the ISO 24521 guidelines** for the management of basic on-site domestic wastewater services in **Mahalaxmi Municipality** of Nepal.

Brief Profile of Mahalaxmi Municipality, Lalitpur

- One of the 18 Municipalities of Kathmandu Valley in Bagmati Province of Nepal.
- Households of wards 1 to 3 are served by sewered sanitation, wards 4 and 5 are gradually moving towards sewered sanitation system, and **wards 6 to 10** completely rely on non-sewered sanitation system.
- **67 percent** of the households rely on non-sewered sanitation system



123,116 Population

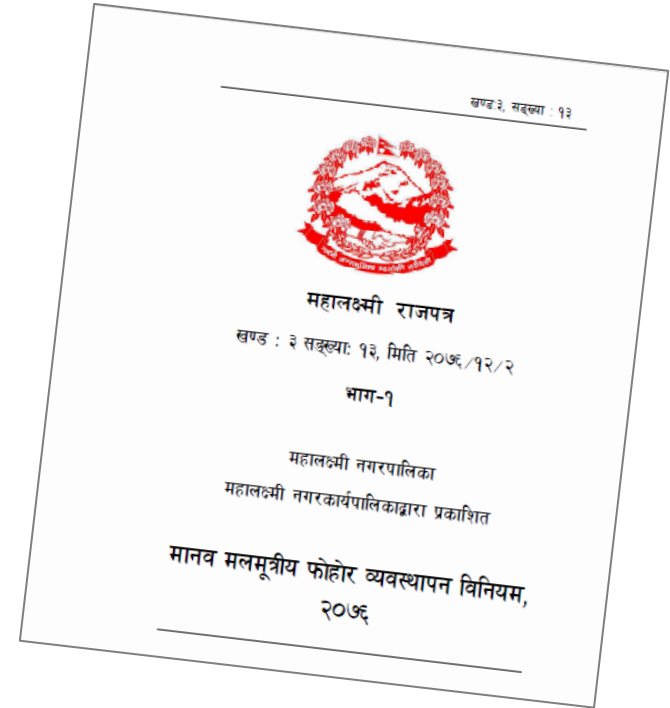


32,106 Households

Development of Regulatory Tool – FSM By-Laws

As the first and foremost requirement, Mahalaxmi Municipality developed its **FSM By-Laws** (endorsed through the Municipal Council Meet on 11 March 2020) and is the **first ever on-site sanitation legal instrument in Nepal** – “Rajpatra” Publication.

Non-sewered sanitation services are operationalized and regulated in Mahalaxmi Municipality as per this By-laws for the safe management of on-site domestic sanitary wastewater reducing risk to public health and environment



Safe containment- Construction of Standard Septic Tanks

1. Institutionalization of Standard Septic Tank in Building Design Permit

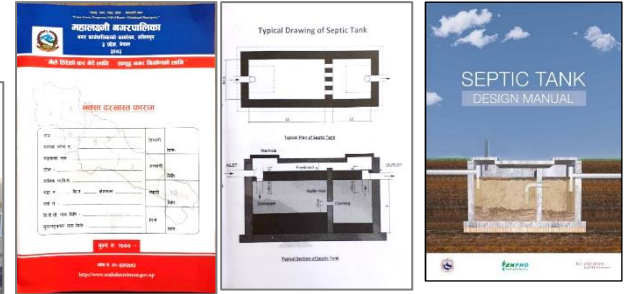
2. Developed and established institutional and monitoring mechanism for the construction of SST

3. 'Design Compliance Check' and 'Field Compliance Check'

4. Monitoring of septic tank constructed in field.

5. Building completion certificates are provided only to those households which have constructed SST

Safe containment- Construction of Standard Septic Tanks



Containment Improvement- Innovative Technologies



Ready-to-Install Septic Tanks



Sintex Package – RTI Septic Tanks

Occupational Health and Safety

Capacity building and ensuring occupational health and safety of sanitation workers while providing fecal sludge desludging and transportation services



OHS Training to Sanitation Workers



Public awareness



Fecal Sludge Deslugder

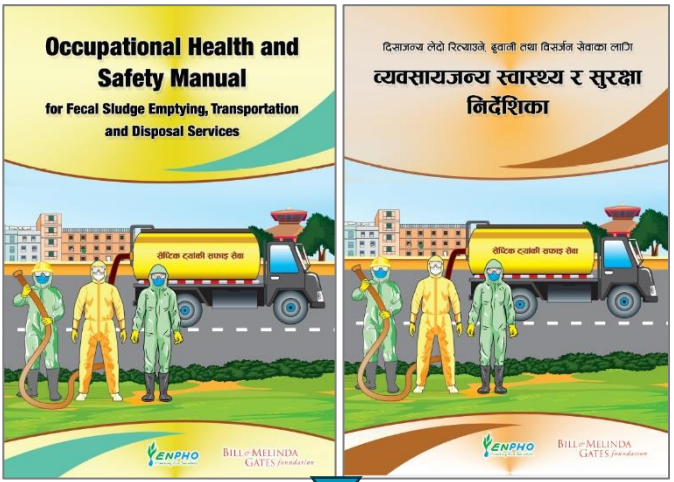


FSTP Operator

Occupational Health and Safety



Posters



OHS Manuals



OHS Awareness Video
<https://www.youtube.com/watch?v=1bqjUAO--1Y>

Capacity Building



Training for Masons on Construction of Standard Septic Tanks



Training for Engineers and Designers on Design of Standard Septic Tanks



Training for municipal officials on IMIS and Sanitation Apps

Lubhu Fecal Sludge Treatment Plant



- Lubhu FSTP in operation for treatment of fecal sludge
- Pre-fabricated FSTP at Lubhu, Mahalaxmi Municipality has the design capacity of 6m^3 per week (2 trucks/week)

Lubhu FSTP – FS Safe Disposal and Reuse

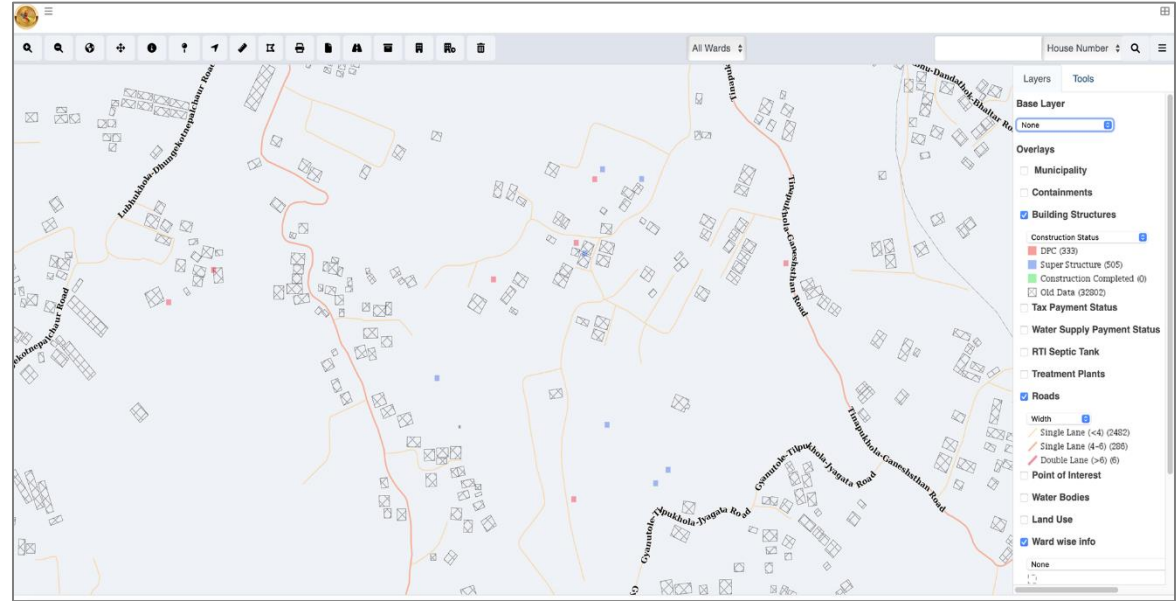


- The biogas produced is used by the FSTP Operator
- The compost and treated wastewater used for agriculture purpose
- The produce from the farming is sufficient to feed 40 orphans in the orphanage (run by Help for Children Beilngries) for almost 10 months.



IMIS- For Strengthening Data and Monitoring System

Integrated Municipal Information System (IMIS) established and implemented in Mahalaxmi Municipality for efficient planning, management and monitoring of sanitation systems and services.



Map view of IMIS

Responsibility and Sustainability

- Establishment of 'Sanitation Cell' in Mahalaxmi Municipality to oversee all sanitation related activities.
 - Institutional and Monitoring Mechanism developed by the municipality for ensuring construction of standard septic tanks in all new buildings.
 - Developed 'Sanitation Service Delivery Model' for Lubhu FSTP.
 - Operational Model of the treatment plant:
 - Mahalaxmi Municipality: To monitor its operation and support with maintenance budget,
 - Help for Children Beilngries: Overall management and operation of the FSTP
 - ENPHO: Technical support and capacity building
- Developed Occupational Health and Safety Manual and Standard Operating Procedure of the treatment plant.
- Application Programming Interface (API) has been developed and implemented to integrate IMIS with eBPS, so that when a new building is constructed, the building as well as containment information in IMIS will be updated in real-time.



THANK YOU

CWAS CENTER FOR WATER AND SANITATION
CRDF CEPT UNIVERSITY

BILL & MELINDA GATES foundation

IIT PALAKKAD GLOBAL INSTITUTE OF ENERGY
TECHIN INSTITUTE OF TECHNOLOGY

ISO STANDARDS FOR NON-SEWERED SANITATION (NSS)

ISO 24521- Licensing process

Bhawana Sharma
Executive Director



Policy and government resolution

- Establish and Capacitate authorities for the regulation of WASH services as provisioned in the Water Supply and Sanitation Act.
- Sector Development Plan to formulate -align with the newly enacted National WASH Policy and Water Supply & Sanitation Act and approve it for operationalization
- Undertake actions for Mapping, Facilitating, Licensing, Regulating, and Standardizing Sanitation Services across the sanitation value chain for both onsite and offsite sanitation services.
- Urban Sanitation service providers (all municipalities) are mapped/mapping report produced at national level
- Sanitation services are licensed ,regulated ,standardized by dedicated regulator
- Clear organogram of regulating authorities is placed in all 3 tiers of governments

By laws

- The Municipality shall construct and operate a faecal sludge treatment plant of accepted standard, which shall be in accordance with NS-ISO 24521 guidelines and MoWS issued FSM Institutional and Regulatory Framework
- Faecal sludge treatment plant operator shall ensure that operations and effluent comply with national wastewater standards
- The unauthorized disposal of Faecal sludge on unapproved sites shall be indicted for punishment based on regulation enacted by the Municipality.
- The transport vehicle for the faecal sludge shall be of standard quality with visible logo stating the purpose and fitted with tracking system
- Only license holder duly authorized by the Municipality, or an appropriate authority shall be allowed to provide desludging and transportation services.

Contd.

- Provision for Service Tax:
 - sanitation tax from the residential structures,
 - commercial and business establishments
 - industrial establishments
 - government and institutional structures, public toilets and other building
- The Municipality shall develop and operationalize a sustainable business model determining the fees payable for services and fees collection modality.
- The Municipality may establish a separate fund for the effective management of Faecal sludge management, promotion and sustenance of sanitation service chain

Contd.

Provision for Penalties:

- The following acts are prohibited:
- Failure to desludge septic tanks as required by this By-laws;
- Failure to desludge overflowed full septic tanks causing environment pollution and bad smell
- Dumping fecal sludge/septage into the unauthorized environment
- Desludging and transportation of septage without the necessary permits from the authorized permitting agencies
- In the event of a repeated offense, there will be an increase in penalties.

Requirements for CWIS Driven Service Delivery Model

- Strong willingness and commitment from the municipality for adoption and institutionalization of Licensing Mechanism. (*MOU between KVWSMB & Municipality*)
- Provide an enabling environment through - successful adoption of the Licensing Mechanism for safe, equitable and inclusive sanitation to all (eg. Bye-laws), (*MOU between KVWSMB & Municipality*)
- All sanitation service providers must register in the municipality and service providers must agree to maintain information about their human resources (gender, salary scale, skill, insurance, health facility, etc) and emptying infrastructures. (License Agreement)

- All registered sanitation service providers must adhere to a sanitation business process adopted by the municipality. (License Agreement)
- Enforce all registered service providers to dispose collected sludge in a designated place or a treatment plant and municipality should proactively monitor performance of all service providers along the service chain (set KPI). (*MOU between KVWSMB & Municipality*)
- Service providers are obliged to continuously update service delivery status through the municipality's recommended system in real time (*License Agreement*)
- Service providers must meet a minimum performance standard which will be closely monitored by various KPIs set by the municipality (*License Agreement*), (*KVWSMB & Municipality*)

Contd.

- Customers receiving emptying service must provide feedback after emptying the containment. *(License Agreement) & (MOU between*
- Municipality must take the sole responsibility of establishing (database of containments) uninterrupted update mechanism for identification of buildings and corresponding containments. *(MOU between KVWSMB & Municipality)*
- Municipality must integrate containment monitoring mechanism with the building permit approval system to ensure that the newly constructed septic are as per the standard design. *(MOU between KVWSMB & Municipality)*

IMIS DRIVEN SANITATION SERVICE DELIVERY USER'S ROLES

Citizen



- Lodge Emptying Request
- Provide service fee
- Provide feedback after emptying
- Lodge Grievances

Help Desk



- Register Emptying Request
- Collect Service feedback
- Register & manage Grievances
- Answers any query from citizen

SSP



- Schedule and Provide emptying service
- Containment assessment
- Maintain HR, salary
- Maintain infrastructure information, O & M cost
- Collect Service Fee
- Submission of Reports to Sanitation Cell

FSTP Operator



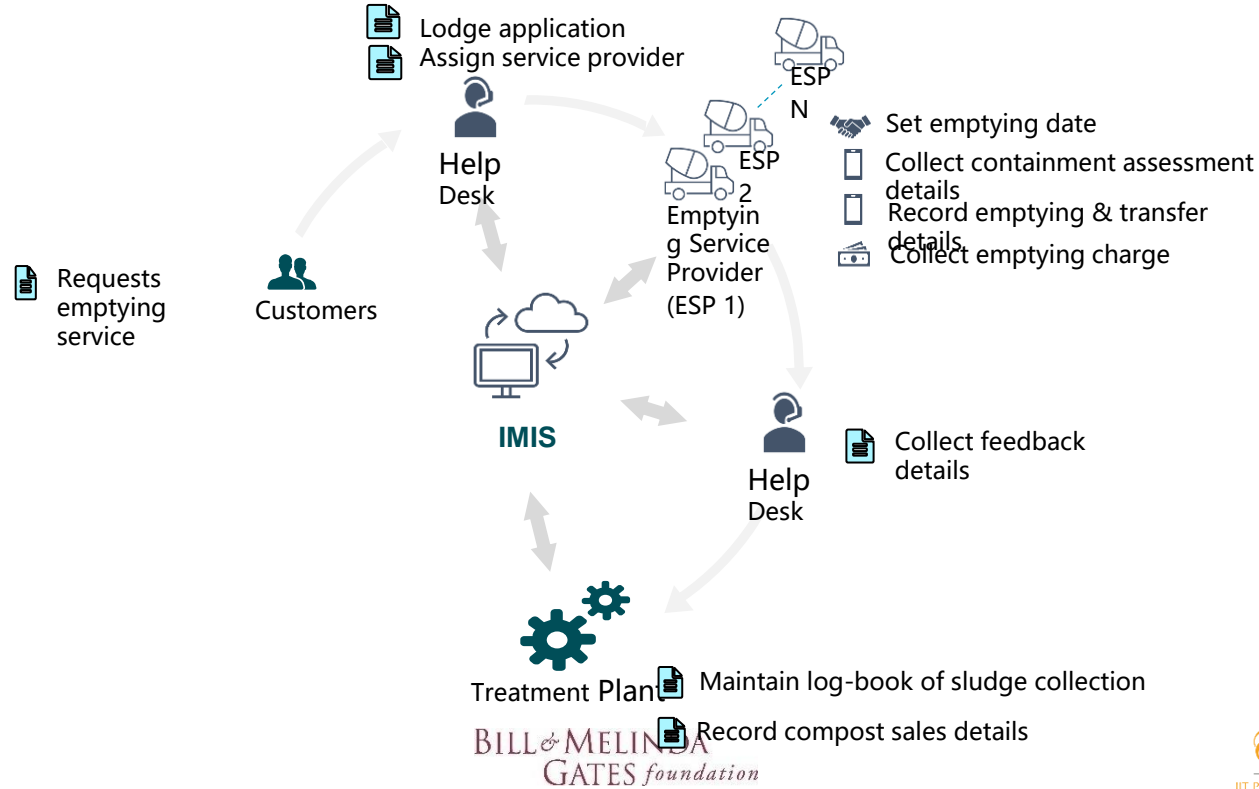
- Record daily sludge collection details
- Maintain volume of waste recycled/ sold information
- Maintain laboratory testing data
- Maintain HR inventory
- Submission of Reports to Sanitation Cell

Municipality - Sanitation Cell



- Maintain different sanitation related entities (SSP, FSTP, Help Desk)
- Credentials Management for Sanitation users
- Monitoring & Evaluation KPIs
- Report checking
- Maintain project performance indicators information
- PT/CT information (user log, operation cost, fee collection etc.)

IMIS DRIVEN SERVICE DELIVERY MODEL FOR FSM



On-line FSM Licencing System

- Provides on-line system for operators to apply for FSM Licence from the Authority
- Authority checks all required documents and set time with the operator for physical verification setups and infrastructure of applicant operator.
- Authority produces Licence and provide it to the operator and inform municipalities
- Authority monitors the performance on-line through its dashboard
- Authority moniotors the licence validity and inform operator to renew the licence
- Renew the licence and update it to municipalities

..... Municipality

Bagmati Province

License to operate Desludging, Collection, Transport and Disposal of Fecal Sludge

License No.

Operator's Name: Individual/ Organization / Company

Address:

Phone:

Email:

Fax:

Pan/ VAT No.

Priporitor's/ Chariperson's Name:

Citizenship No:

Address:

Vehicles for Transport

Sr	Type	Registration	Sr	Type	Registration
1			4		
2			5		
3			6		

License period From...MM/YYYY..... toMM/YYYY.....

Services covered :

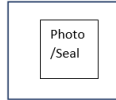
Service Area :

Designated Disposal Area (s)

Others:

Conditions

1. This license is issued for service by designated vehicles and for disposal in the designated disposal areas
2. The operator shall abide by the rules/conditions laid out by agencies of the national, provincial and local governments, applicable regulatory agencies and traffic management office
3. The operator shall comply to the guidelines on handling, collection, transport and discharge issued by the relevant authority (name/name)
4. The operator shall provide professional services to the satisfaction of the client by deploying skilled and competent staff for the services



5. The operator shall charge only the approved fee for his services and shall issue a receipt against services rendered with clear mention of charged fee.
6. The operator shall give priority to work assigned/instructed by the relevant authority
7. The operator shall promptly attend to the client's request within means and capacity of the operator. The client must be informed of the tentative date and time of service
8. The operator shall properly maintain the vehicles, equipment, gears for compliance to safety, cleanliness, environmental and aesthetic requirements
9. The operator shall participate and make its staff available to participate in capacity building and other related programs organized by the relevant authority
10. The operator shall provide services with due care to OHS of staff and other related person



Renewal Table

Sr	Renewed to date	Conditions if any	Signature	Designation
1				
2				
3				
4				



Annexure 2

Record of Information of Services Provided
(to be filled by operator – submitted annually)

Name of Service Provider License No.

Name of the house owner:
Address/House No: Phone No. Email:

Request made by : Agency name/ person: Request date:

Previous service date: /dd/ mm/ yyyy Type of service:

Type of Toilet: private/ shared/ commercial/ apartment/ public/ office/ hospital or health institute/ school or college, etc.....

Approximate daily users:.....nos. Volume de sludged Cum..... trip

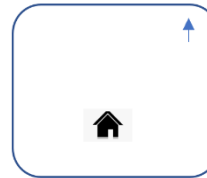
Features of Septic/Containment tank:

Shape : Rectangular/ Circular / others
Material: Earthen/ brick lined/ brick wall/ stone/ RCC/Plastic
Overflowing Yes/ No Foul smell..... Yes/ No
Cover: present / missing / present but broken/ others Vent
Yes/ No
Chambers : 1/2/3/
Floor Sealed/ unsealed..... Sidewalls sealed/ unsealed
Overall Condition : Good / Fair / Poor.....

Desludging start time..... Desludging end time
.....

Disposal place Any other info

Please indicate the location of septic tank
with respect to house



Client Name	Supervisor's Name
Signature	Signature
	Id No.
Date DD.... MM.... YYYY	



THANK YOU

