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

Introduction to ISO Standards for Non-Sewered Sanitation (NSS)

12th September 2023

16:30 to 18:30 (IST)

Webinar 1
Introduction to ISO standards across the Non-Sewered Sanitation (NSS) chain
September 12th, 2023 | 16:30 – 18:30 (IST)

Time	Topic	Key Speakers
16:30-16:40 (IST)	Welcome address	CWAS, GSCOE and BMGF
16:40– 16:55 (IST)	Briefing about ISO standards and available ISO standards for sanitation services	Ms. Leslie Mc Dermott Senior Director-International Development American National Standards Institute (ANSI)
16:55-17:10 (IST)	Setting the context of non-sewered sanitation and need for ISO standards	Mr. Sun Kim ISO PC 305 Chair Non Sewered Sanitation (NSS) Standards and Compliance
17:10 – 17:25 (IST)	Experience and learnings of ISO 24521 and 30500 adoption process in Nepal	Ms. Jyoti Joshi Bhatta Deputy Director General Nepal Bureau of Standards and Metrology (NBSM)
17:25 – 17:55 (IST)	Discussing sanitation ISO standards briefly	Ms. Mei Yee Senior Programme Manager TÜV SÜD
17:55 – 18:15 (IST)	Q&A	CWAS / GSCOE
18:15 – 18:30 (IST)	Closing remarks	CWAS, GSCOE and BMGF

Session Moderator

Dr. Dinesh Mehta

Center Head
Center for Water and Sanitation (CWAS),
CRDF, CEPT University

Key Speakers

Mr. Sun Kim

ISO PC 305 Chair
Non-Sewered Sanitation (NSS)
Standards and Compliance

Ms. Leslie Mc Dermott

Senior Director
International Development
American National Standards
Institute (ANSI)

Ms. Jyoti Joshi Bhatta

Deputy Director General Nepal
Bureau of Standards and
Metrology (NBSM)

Ms. Mei Yee

Senior Programme Manager
TÜV SÜD

Introduction to ISO Standards for Non-Sewered Sanitation (NSS)

Session-1
About ISO standards for sanitation services

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ISO STANDARDS FOR
NON-SEWERED SANITATION (NSS)

About ISO standards for sanitation services

Leslie McDermott
Senior Director, International Development
American National Standards Institute (ANSI)

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Introduction: About ANSI

- The American National Standards Institute leads standards, conformity assessment, and related activities in the United States of America.

- Founded in 1918, ANSI is a private, non-profit organization.

- ANSI is not a government agency or a standards developer.

- U.S. member to ISO and, via the U.S. National Committee, to the IEC

Why a standard?

A tool for policymakers working toward more sustainable sanitation systems:

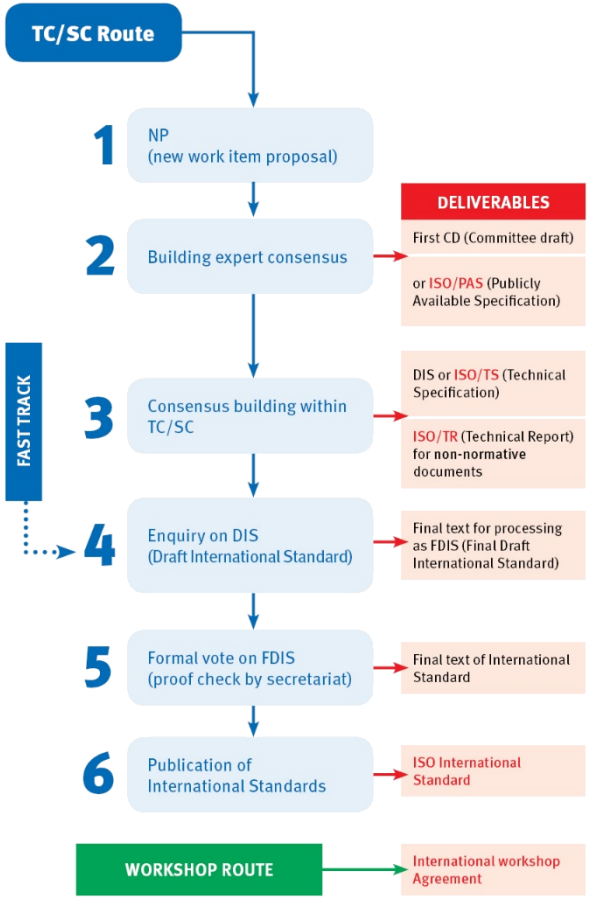
- **facilitate** innovation
- **break down** trade barriers to international markets
- **conserve** precious water
- **achieve** the SDGs
- **spur** economic empowerment

Why standards matter

International standards enable our communities to streamline sanitation services to protect health and promote sustainable community development (and ultimately economic growth).

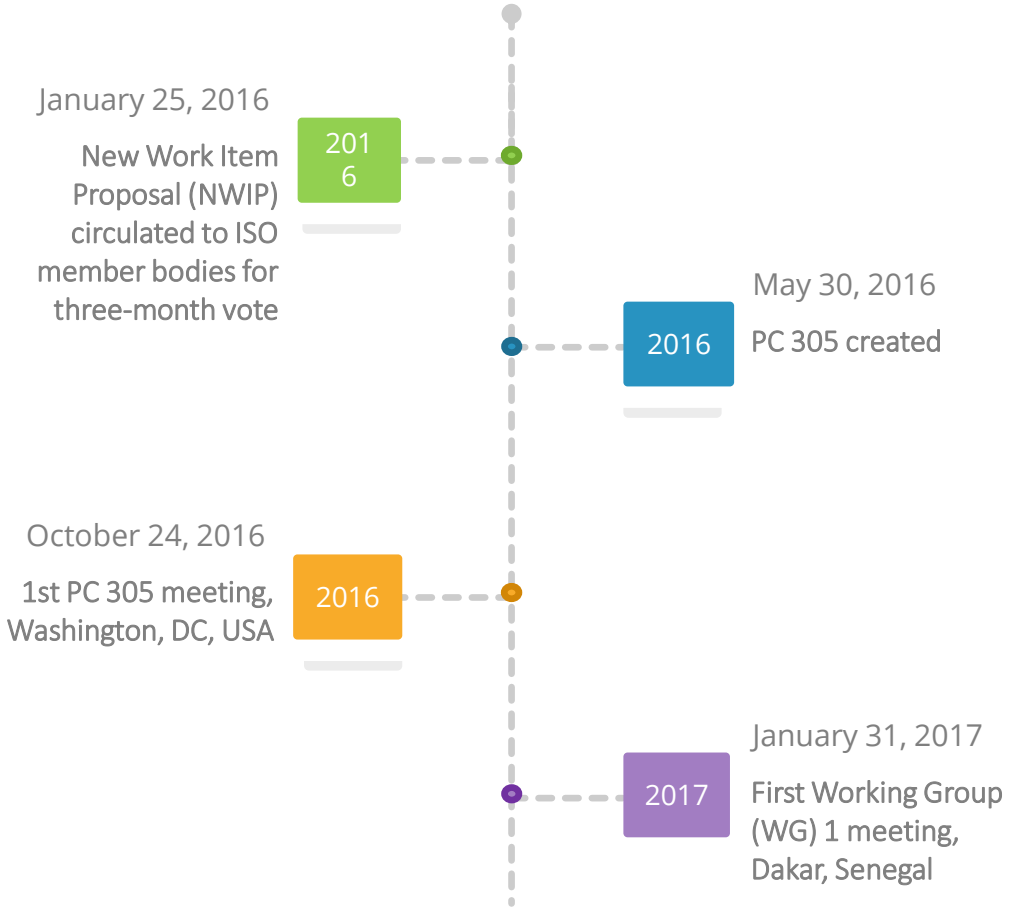
ISO: A Network of National Standards Bodies

ISO Standard Development Process



ISO Project Committee (PC) 305

ISO PC 305 developed what would become ISO 30500



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ISO Project Committee (PC) 305

ISO PC 305 developed what would become ISO 30500

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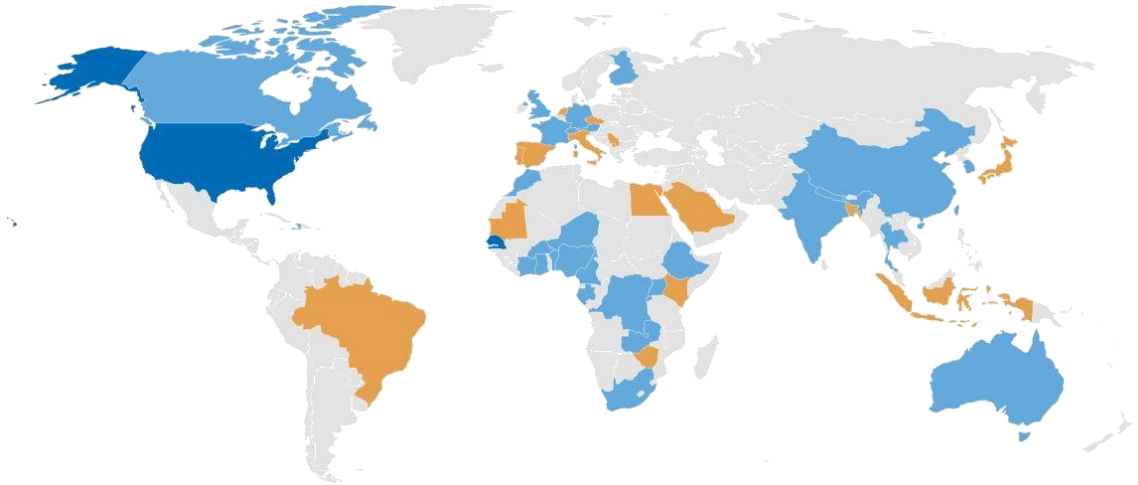
Standards Development:
PC 305: Representing a Global Community

+ ISO 30500 was published in 2018
+ Standards are reviewed every 5 years
+ ISO 30500 is undergoing revision



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ISO standards: technical solutions

- **ISO 30500** is a technical document containing specifications for **a new, technology-neutral household toilet** product
- **ISO 24521** is a technical document containing specifications to **optimize and improve management of existing on-site domestic wastewater services** and their component parts
- **ISO 31800** is a product standard that contains criteria for the functionality, usability, reliability, maintainability, and safety of **fæcal sludge treatment units**

YouTube

Sanitation Standards Explained in 2 Minutes

English

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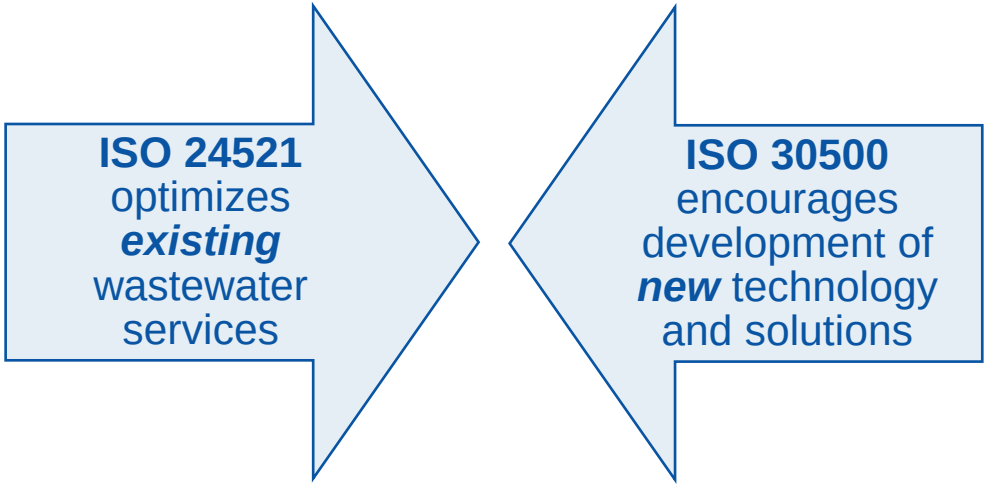
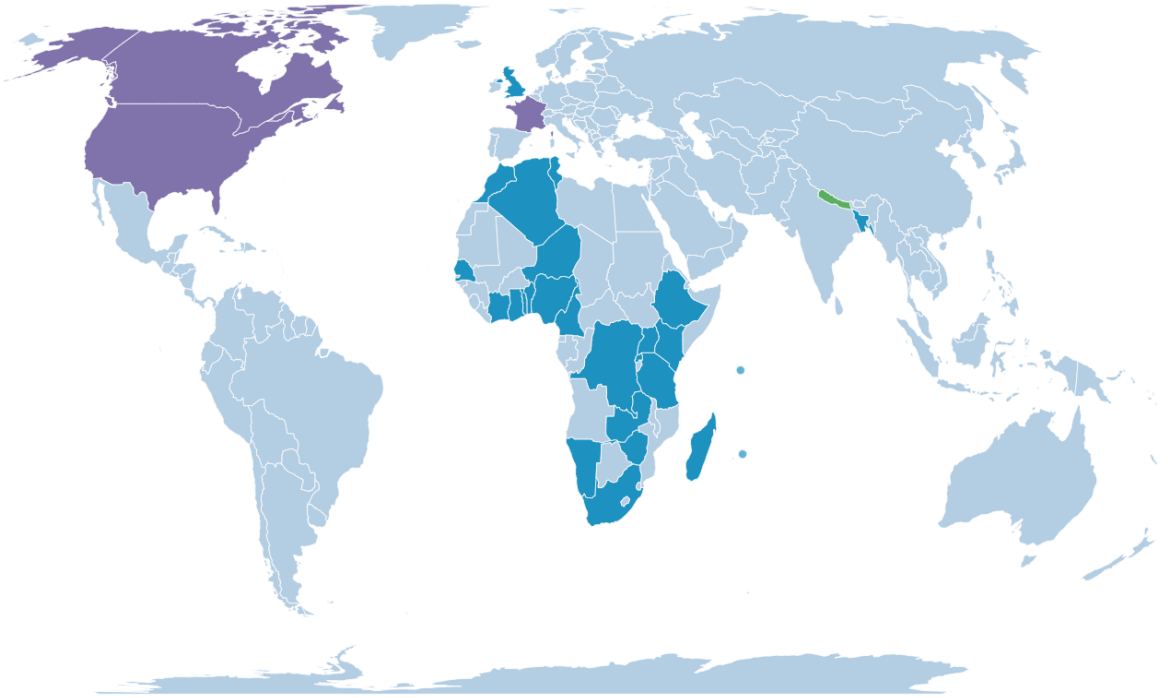
Together: revolutionizing WASH

Simultaneous adoption and use of ISO 24521 and ISO 30500 has the potential to **revolutionize the sanitation sector**



National Adoption of ISO 30500 & ISO 24521

National Adoption Map current as of July 2023



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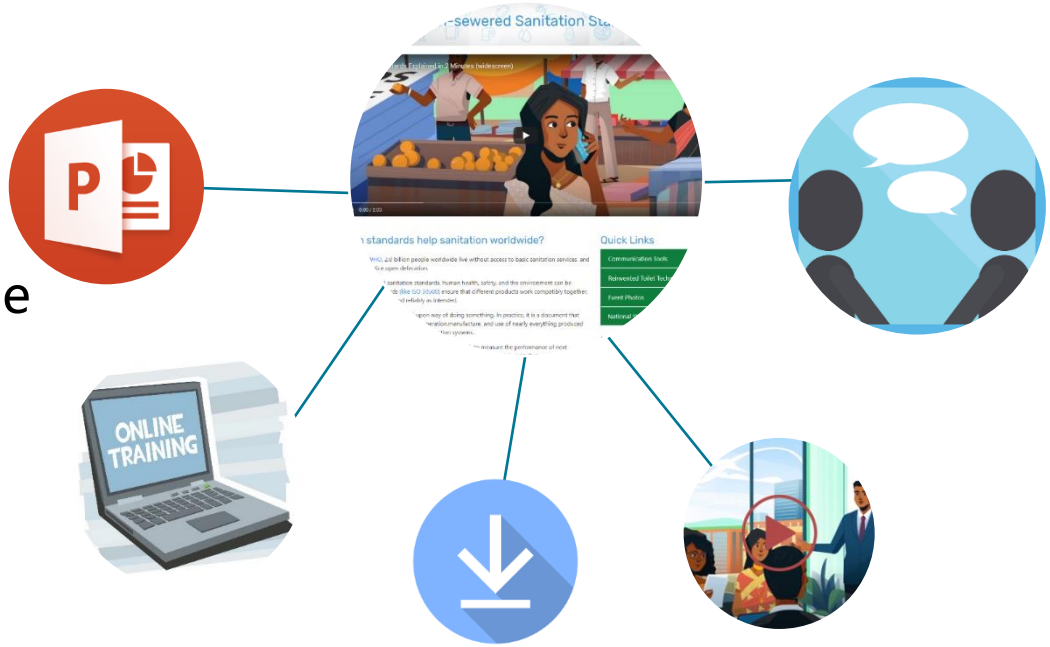
Visit sanitation.ansi.org to learn more...

Learn how to navigate the website and use tools available to share information on ISO non-sewered sanitation standards



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Introduction to ISO Standards for Non-Sewered Sanitation (NSS)

Session-2
NSS and the role of international standards

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ISO STANDARDS FOR
NON-SEWERED SANITATION (NSS)

NSS and the role of international standards

Sun Kim
ISO PC 305 Chair
SGK Consulting
12 September 2023

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The Gold Standard

$$$

Non-Sewered Sanitation Today

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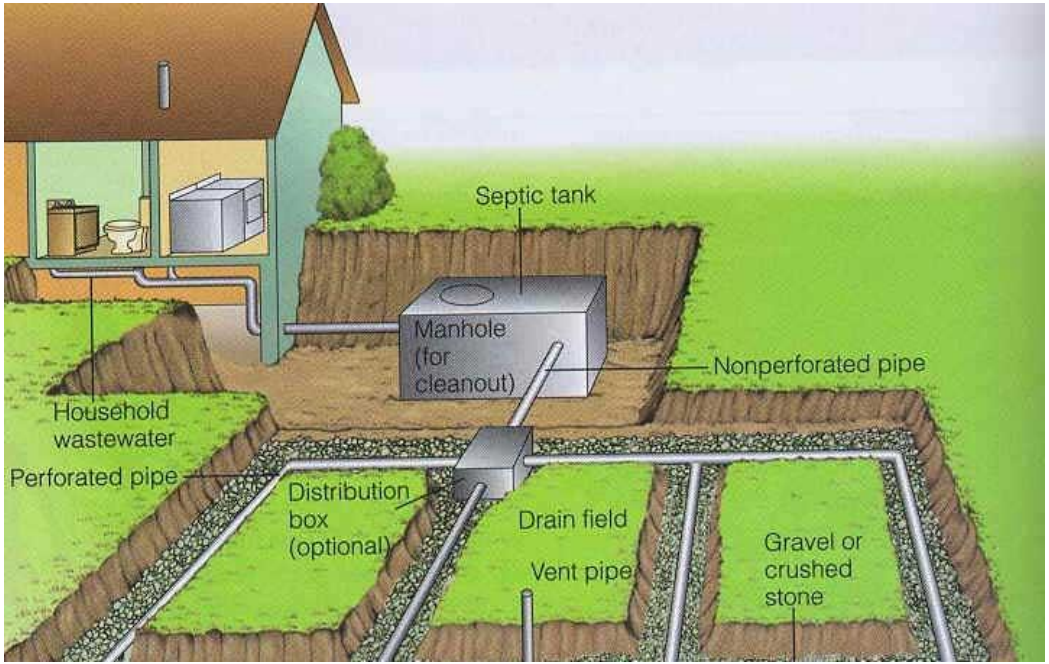
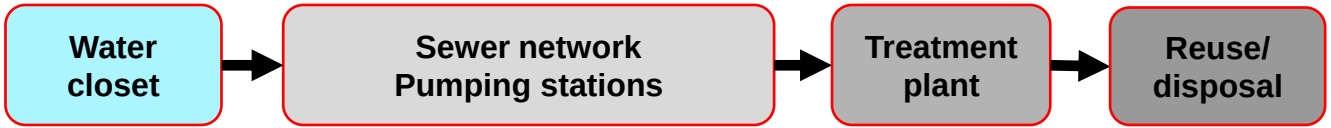
OD



Sanitation Service Chain

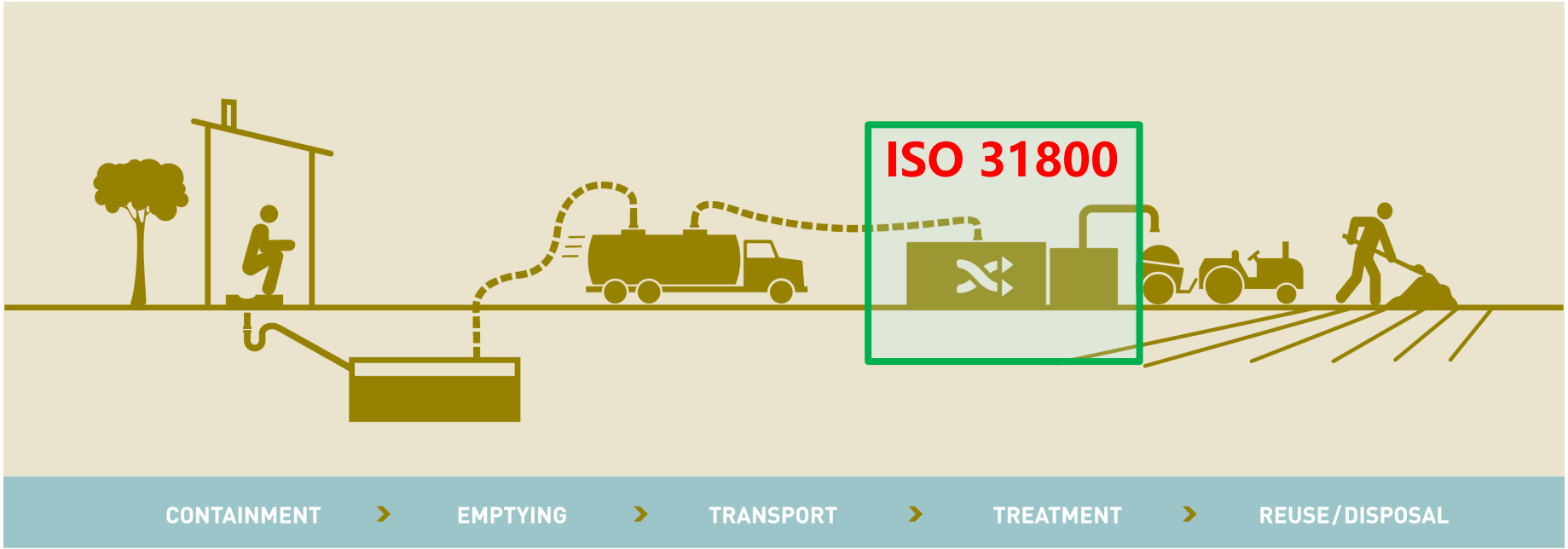
Sewerage



Fecal Sludge Management for non-sewered systems

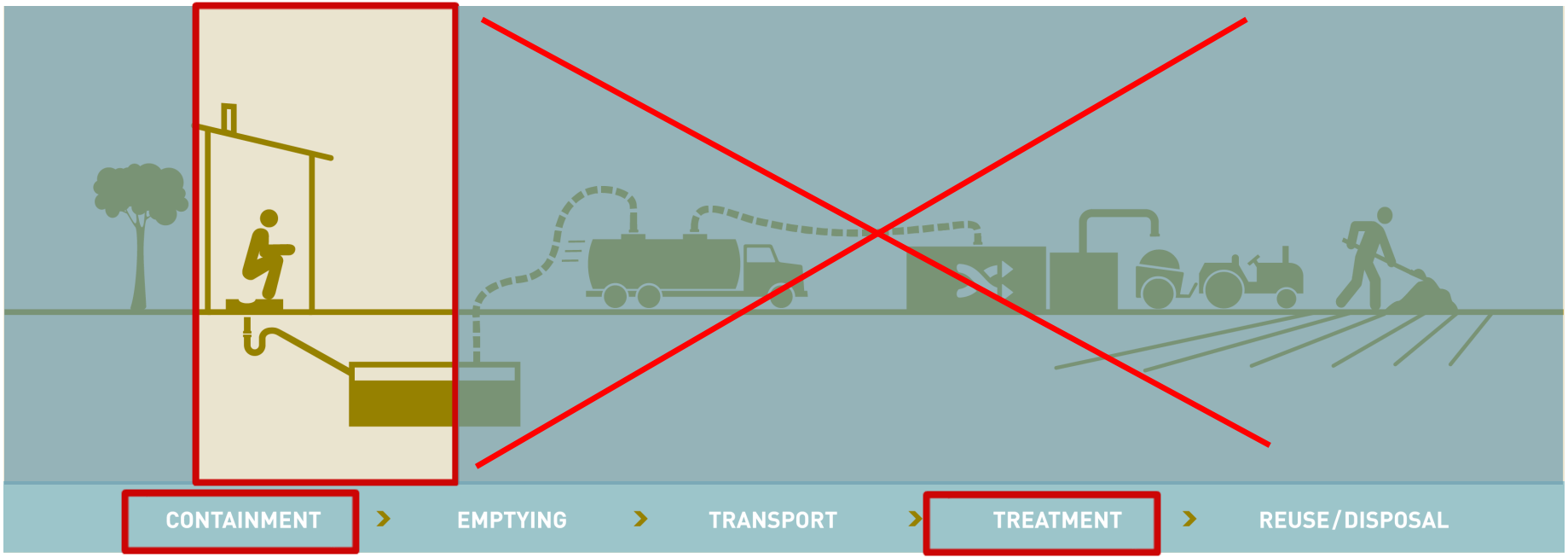
ISO Standards – FSM Overlay

ISO 24521



ISO Standards – FSM Overlay

ISO 30500



ISO 30500 Key Aspects

- On-site toilets & integrated treatment units
  - Design, performance, & test requirements
  - Technology-neutral
  - Limit odor & noise, easy to clean, non-visibility of prior use
  - For prefabricated household or community scale toilets
  - With integrated treatment for human health and safety
    - pathogens, pollutants, emissions, usability, etc…
  - Not connected to a network sewer nor drainage system
  - Compliant products are expected to address most if not all local and national requirements

New Non-Sewered Sanitation Industry

Enabling environment

Enhanced demand for affordable aspirational sanitation

Implementation of quality standards

Marketplace readiness

Supportive regulatory environment

Access to financing

Readily available competitive products

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Introduction to ISO Standards for Non-Sewered Sanitation (NSS)

Session-3
Experience and learning of ISO 24521 and 30500 adoption process in Nepal

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ISO STANDARDS FOR
NON-SEWERED SANITATION (NSS)

Experience and learning of ISO 24521 and 30500 adoption process in Nepal

Jyoti Joshi
Deputy Director General
Nepal Bureau of standards and Metrology

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Development of National Standards at NBSM

Proposal Stage

- Need is identified by a request sent by a stakeholder or by NBSM itself
- Evaluation of the proposal by concerned section of NBSM
- Formation of technical Committee (TC) by DG

Preparatory Stage

- Discussion in the TC
- Formation of sub-committee to development of working draft
- Availability of the working draft

Committee Stage

- Discussion in the Technical committee
- Committee draft preparation and approval

Inquiry Stage

- Publication of Committee draft for Public comment
- Review of the comments and incorporation into the draft
- Discussion in TC before approval in case of any comment

Approval Stage

- Approval by National Standard Council formulated as per Nepal Standards (Certification Mark) Act, 1980 if no public comment

Publication Stage

- Publication through electronic media
- Dissemination

Note: In each stage if there is any reasonable comment for the forwarded document, it is sent back to previous committee for discussion and finalization. E.g., if any comment is raised by the National Standard Council, it is sent back to the TC.

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.


INTERNATIONAL STANDARD ISO 24521

Activities relating to drinking water and wastewater services — Guidelines for the management of basic on-site domestic wastewater services

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

Experience and Learning from ISO 30500

- NBSM participated actively in the preparation of this standard with logistic support from Bill and Melinda Gates Foundation
- The third plenary meeting of the project was held in Nepal at Kathmandu in 2018
- Though Nepal had participated in preparation of standard the need for evaluation of this standard was felt by the stakeholders for a discussion in a wider group which would also serve the purpose of sensitization and awareness on this very important subject of sanitation related to majority of population
- A series of discussion was held in the TC and STC on technical and other details of the standard
- Finally , the TC has consented for an identical adoption of the standard and is in process of approval by NCS

Experience and Learning from ISO 30500

- NBSM participated actively in the preparation of this standard with logistic support from Bill and Melinda Gates Foundation
- The third plenary meeting of the project was held in Nepal at Kathmandu in 2018
- Though Nepal had participated in preparation of standard the need for evaluation of this standard was felt by the stakeholders for a discussion in a wider group which would also serve the purpose of sensitization and awareness on this very important subject of sanitation related to majority of population
- A series of discussion was held in the TC and STC on technical and other details of the standard
- Finally , the TC has consented for an identical adoption of the standard and is in process of approval by NCS

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.

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Introduction to ISO Standards for Non-Sewered Sanitation (NSS)

Session-4
ISO Standards in Focus:
ISO 30500
ISO 31800

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ISO STANDARDS FOR
NON-SEWERED SANITATION (NSS)

ISO Standards in Focus: ISO 30500 ISO 31800

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Senior Programme Manager
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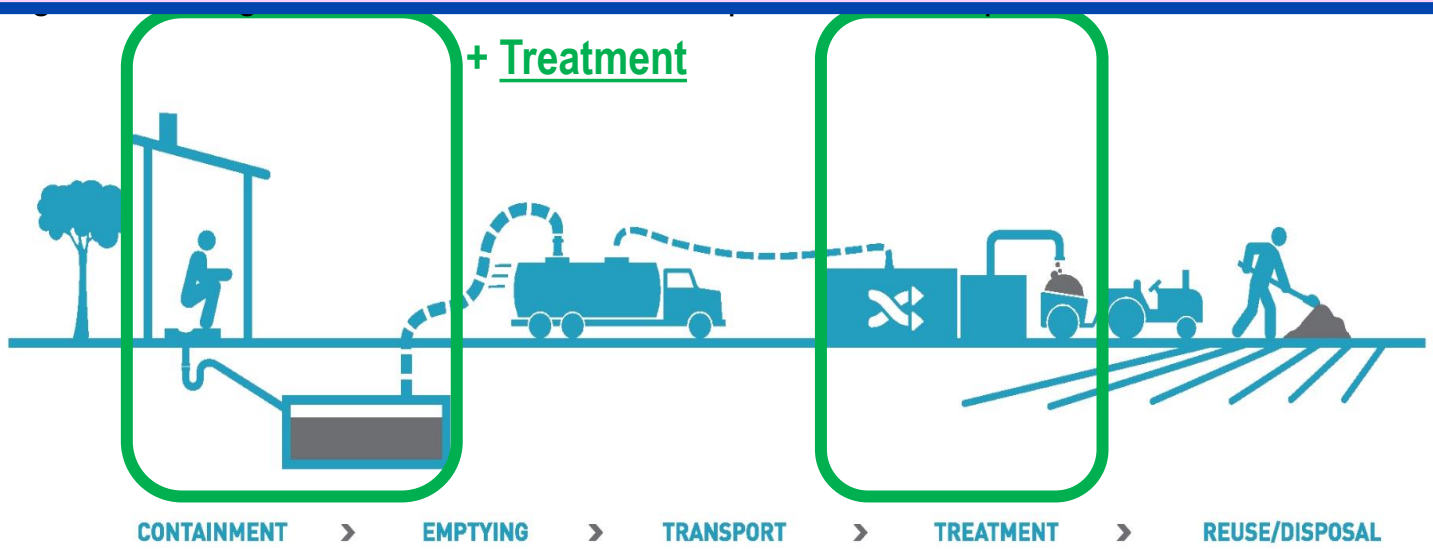
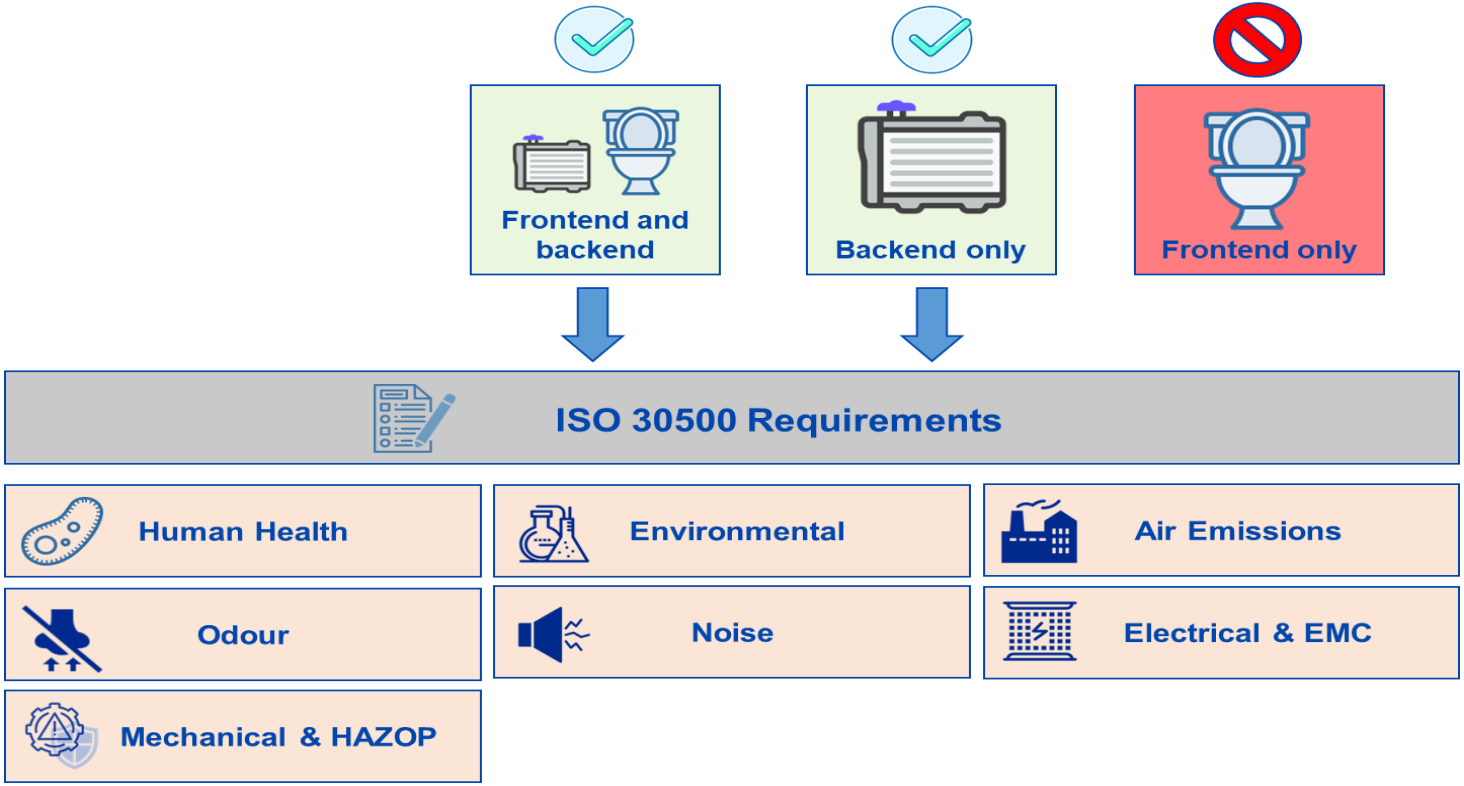
ISO 30500 and ISO 31800 – Forward Looking Standard

> *"International Standards are key to the progression of new sanitation technology and developing an industry that saves lives"*
>
> - ISO Secretary-General Sergio Mujica



Credits: Bill & Melinda Gates Foundation

ISO 30500 Overview



An Overview of ISO 30500

YouTube

English

What is a Faecal Sludge Treatment Unit?

TREAT HUMAN EXCRETA

PRE-FABRICATED

ENERGY INDEPENDENT

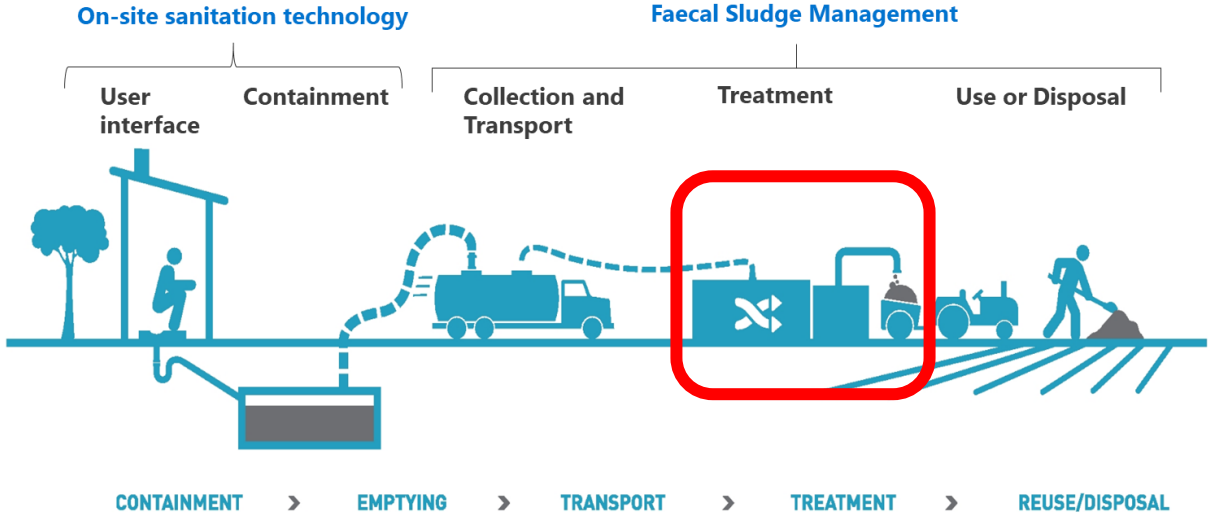
COMMUNITY SCALED

ROBUST

RESOURCE RECOVERY

NON-SEWERED

ENVIRONMENTALLY ACCEPTABLE & SAFE DISCHARGE



Credits: Bill & Melinda Gates Foundation

ISO 31800 Overview

1. Introduction to ISO 31800

- Target Audience
- Objectives

2. Technical Requirements

- Performance
- Safety
- Operability
- Maintainability

3. Product Literature

- Required Content
- Sustainability

4. Energy Independence Assessment

- Requirements
- Recommended Template

5. Performance Testing

- Human Health
- Environmental
- Air Emissions
- Odour
- Noise

1. Introduction to ISO 31800

Technology :
Faecal Sludge Treatment Units

Objectives for ISO 31800

- Energy Independence
- Pre-fabricated
- Community-scale
- Resource recovery

- Specification of requirements and recommendations
- Optimal performance and safety
- Building trust with stakeholders

2. Technical Requirements

Performance	Safety	Operability	Maintainability
✓ Maximum technical availability	HAZOP Study & Risk Assessment	Anthropometric & ergonomic design	Adjustment & maintenance requirements
Minimal downtime	Safety protocols		
	Sanitary, mechanical & electrical requirements		

3. Product Literature

Required Content

- System Information
- Safety & Maintenance
- Task Complexity

Sustainability

- Consumables
- GHG emissions
- Resource-recovered products

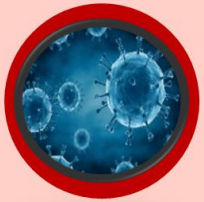
4. Energy Independence Assessment

Requirements

1. **Operate in an off-grid environment** at **steady state** without relying on external energy sources apart from **exclusively faecal sludge**

2. **Power Input ≥ Power Output**

5. Performance Testing

 Human Health Parameters	 Environmental Parameters	 Air Emissions Parameters	 Acoustics	 Odour
✓ Bacteria ✓ Protozoa ✓ Virus ✓ Helminths	✓ BOD ✓ COD ✓ pH ✓ Temperature ✓ Total nitrogen ✓ Total phosphorus ✓ TSS ✓ Trace elements	✓ CO ✓ NO_x ✓ SO_2 ✓ Total dust ✓ Dioxins & furans ✓ Arsenic ✓ Cadmium ✓ Mercury ✓ Oxygen ✓ Moisture content	✓ A-weighted equivalent sound level	✓ Olfactory assessment: includes human assessors

Innovative sanitation technology - What do they look like?

RESOURCE RECOVERY
RT– ISO 30500
Enviro Loo, Johannesburg, South Africa

RESOURCE RECOVERY
FSTU – ISO 31800
Sedron V2, Dakar Sengal

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