

November 11, 2024

Value chain and components of decentralized wastewater management

Dr. Yoshitaka Ebie

Prime Senior Researcher

Material Cycles Division,

National Institute for Environmental Studies



Decentralized wastewater treatment systems

5 things we need to consider for dissemination of appropriate wastewater treatment technologies



10th World Water
Forum in Bali, Indonesia

1. Effluent **standards**
2. Structure **standards** and/or **standardized** performance evaluation
3. **Standardized** O&M and monitoring
4. **Standardized** sludge collection, treatment and disposal
5. **Standardized** license for technicians and/or service providers

Sanitation Value Chain

Non-sewered sanitation systems (ISO 30500)



User
interface

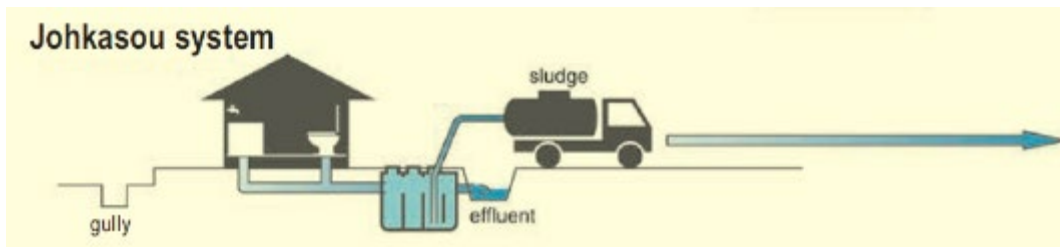
Storage
and
treatment

Desludging

Sludge
treatment
and
disposal

Reuse/rec
ycling of
sludge

Johkasou and night soil treatment systems in Japan (MOEJ)



Sanitation Value Chain

Components

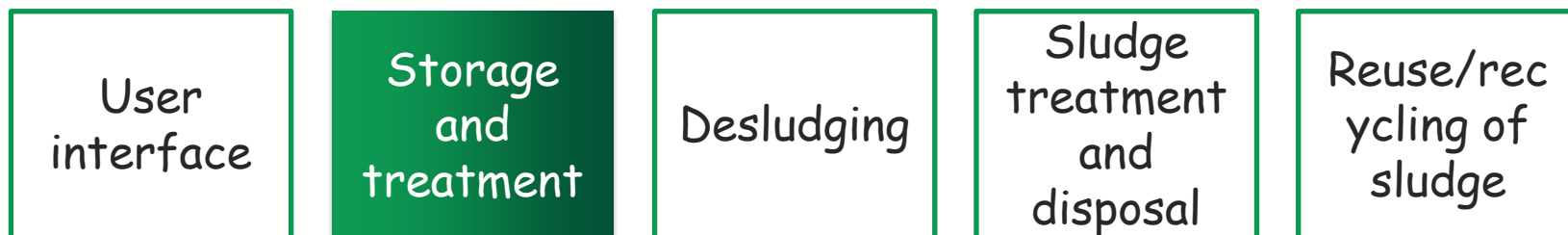


- Wet area
 - Pour flush toilet
 - Bath/shower
 - Kitchen
 - Basin



Sanitation Value Chain

Components



- Select appropriate facilities

- Initial cost
- Running cost
- Treatment performance

Effluent standards

Structure standards and/or standardized performance evaluation

- Installation

- Operation

Standardized O&M and monitoring

Sanitation Value Chain

Components

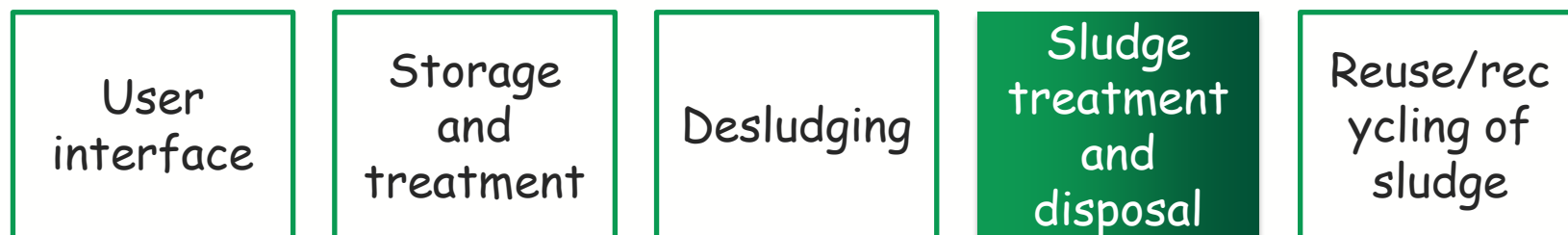


- Sludge removal
 - Periodically or appropriate timing
 - Desludging techniques
 - Business models

Standardized sludge collection

Sanitation Value Chain

Components

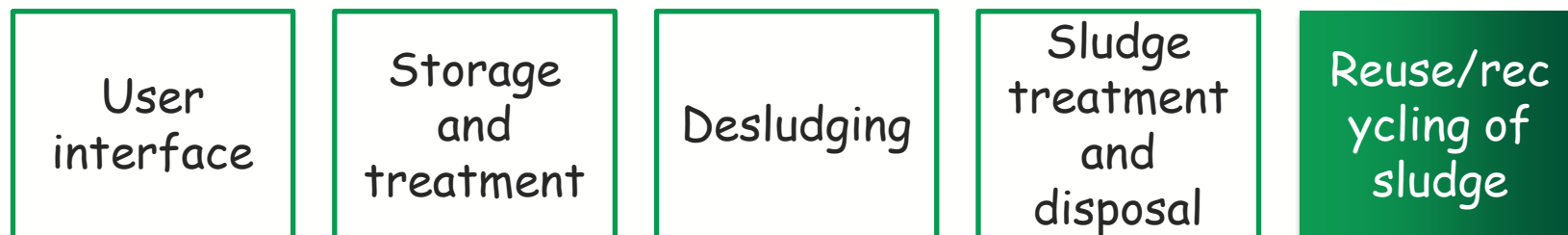


- Sludge treatment & disposal
 - Treatment processes
 - Biogas generation
 - Landfilling

Standardized sludge treatment and disposal

Sanitation Value Chain

Components



- Reuse/recycling of sludge
 - Co-composting
 - Biochar
 - Construction materials

Standardized quality control

Components

Technological aspects

- Septic tank
- DEWATS
- CWs
- Johkasou
-
- Anaerobic digestion
- Ponds
- Drying beds
- Landfilling

Management aspects

- Effluent standards
- Certificate of the facilities/technologies
- Construction, O&M, inspection, and desludging technicians
- Business models for desludging

Standardized license
and training

An example of standardization

Compliance to the regulation?



Septic tank



Biofil



Johkasou

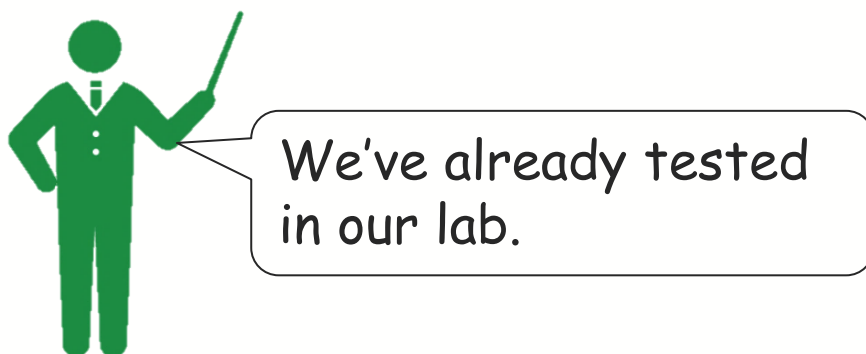


septic tank?



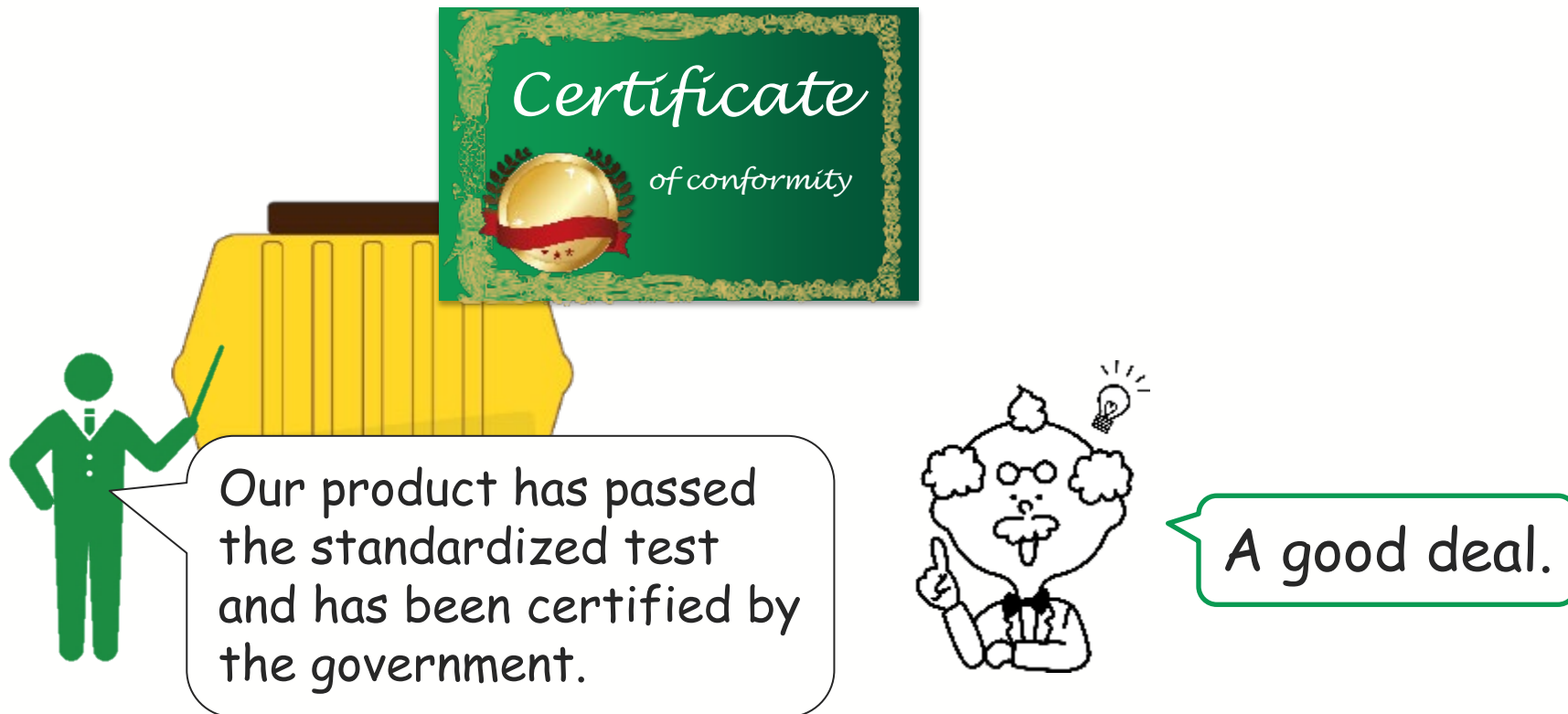
Are they all
reliable?

If I am a sales guy...



Is that reliable?

If there is a standardized testing method...



Major standards in the world

European Standard (EN)

EN12566-3: Small wastewater treatment systems for up to 50 PE



The United States

NSF/ANSI Standard 40: Residential Wastewater Treatment Systems

Australia

AS/NZS 1546 Part 3: Aerated wastewater treatment systems

Japan

Performance testing method for Johkasou

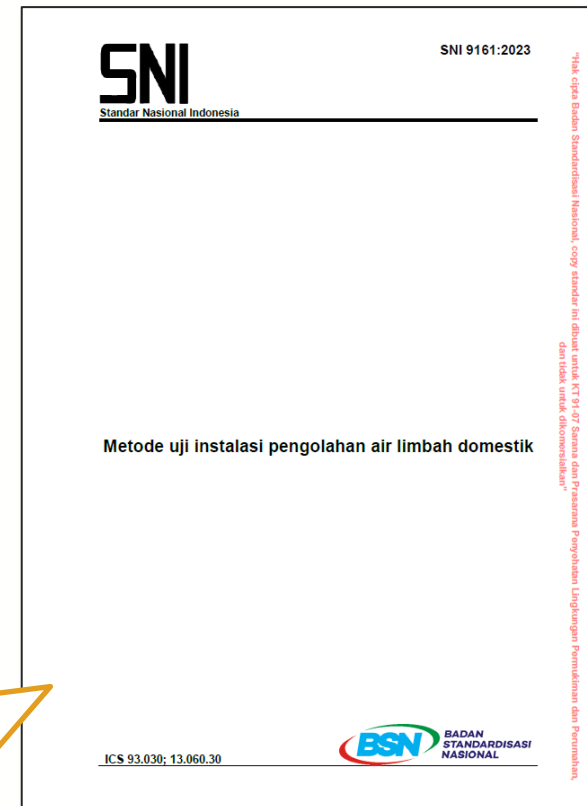
Platform for the standardization

Industry-academia-government collaboration



Stakeholders Meetings
in Indonesia

SNI 9161:2023
Standardized testing method of
domestic wastewater treatment plant
in Indonesia



Standardization for not only products
but also technicians/service providers

Licenses in Japan



Construction

National vocational qualification
(Registration to the prefecture)



Operation



Desludging

Private qualification
(Approval from the municipality)

Reliable decentralized systems

Sanitation Value Chain

Non-sewered sanitation systems (ISO 30500)



User
interface

Storage
and
treatment

Desludging

Sludge
treatment
and
disposal

Reuse/rec
ycling of
sludge

Please keep these components in mind during the workshop for our fruitful discussion.

Thank you for your kind attention.



Your valuable comments and suggestions
would be highly appreciated.