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ANALYTICAL REPORT

Monitoring Safely Managed On-Site Sanitation (SMOSS) in Indonesia

December 2024

UNICEF Indonesia

ABBREVIATIONS AND ACRONYMS

Bappenas	*Badan Perencanaan Pembangunan Nasional* (Ministry of National Development Planning)
BPS	*Badan Pusat Statistik* (Central Bureau of Statistics)
HAKLI	*Himpunan Ahli Kesehatan Lingkungan Indonesia* (association of expert on environment health)
IPLT	*Instalasi Pengolahan Lumpur Tinja* (Fecal Sludge Treatment Plant)
MOH	Ministry of Health
MOPWH	Ministry of Public Works and Housing
ODF	Open Defecation Free
SKAM RT	*Survey Kualitas Air Minum Rumah Tangga* (water quality survey at household level)
SDGs	Sustainable Development Goals
SMS	safely managed sanitation
SMOSS	safely managed on-site sanitation
SNI	*Standard Nasional Indonesia* (Indonesian National Standard)
SPALD	*Sistem Pengolahan Air Limbah Domestic* (Domestic Wastewater Treatment Plant)
STBM	*Sanitasi Total Berbasis Masyarakat* (community-based sanitation and hygiene programme)
Susenas	*Survey Sosial Ekonomi Nasional* (national socio-economic survey)
UI	*Universitas Indonesia* (University of Indonesia)
UNICEF	United Nations Children's Fund
WASH	water, sanitation and hygiene

CONTENT

I. BACKGROUND

Indonesia has made extensive progress in reducing the prevalence of open defecation (Odagiri et al., 2020). A substantial decrease in the diarrhea mortality rate from 1990 to 2017 is largely explained by increased coverage of sanitation (GBD 2017 et al., 2019). According to JMP (2023), most households (83%) rely on on-site sanitation systems, as they provide low-cost wastewater treatment, which explains why it is widely used in Indonesia. Based on the draft Indonesia SDG 6 roadmap, it agreed that Indonesia's target for 2030 is 30%, divided into 25% safely managed on-site sanitation and 5% off-site sanitation. Therefore, the on-site sanitation system is likely to play a significant role in Indonesia's ambition to achieve the SDG[1] target for sanitation.

Among various on-site sanitation options, a septic tank (sealed or unsealed), a leach pit latrine, and lined pit latrines have been widely used by households (Mills et al., 2013, Mitchell et al., 2016, Scott et al., 2016). However, it is known that most household on-site systems called 'septic tanks' are, in reality, open pits leaching into the ground and polluting groundwater and the environment. At the same time, people need to be aware of the potential adverse impacts of unsafe onsite sanitation management on health due to a lack of rigorous evidence. Consequently, water resources, surface and groundwater, and soil are frequently reported to be contaminated and polluted by failing or unmanaged on-site sanitation.

Despite high reliance on onsite sanitation and wide use of bottomless tanks (i.e., low rate of emptying), and the presence of national standards for septic tanks, there is currently very scarce data as to how efficient the installed onsite sanitation since the existing data collection mechanisms cannot differentiate between compliant and non-compliant septic tanks. Related to SDG monitoring, there are critical data gaps relating to the quality and functionality of on-site sanitation facilities in Indonesia in treating incoming wastewater and preventing contamination to humans and the environment. The matrix below shows that despite the presence of three main data collection mechanisms led by the Central Bureau of Statistics (known as BPS in Indonesia), the Ministry of Health and the Ministry of Public Works and Public Housing, there are still data gaps and quality challenges at all stages of the sanitation service chain and how initiatives are supported to fill gaps.

Table 1 - Mapping Data Availability Across the Sanitation Service Chain

Monitoring mechanism	Responsible institution	Data collection along the sanitation service chain						Data collector
		Toilet	Containment	Emptying	Transport	Treatment	Reuse	
A national socio-economic survey (Susenas)	National Bureau of Statistics	√[a]	√[b]	√[c]				Local BPS enumerators
National sanitation programme mobile monitoring (STBM-SMS)	Ministry of Health	√[d]	**SMOSS initiative**[e]					Sanitarians (environmental health staff)
Domestic infrastructure database	Ministry of Public Works and Housing					√[f]		Local government
Regular desludging programme	District/municipalities governments implementing a regular desludging programme[7]	√[g]	√[g]	√[g]	√[g]	√[g]		Local government

[1] *The Government of Indonesia has developed its own safely managed sanitation definition for SDG 6 monitoring, which is "households with access to a toilet connected to sewerage system or households with access to a septic tank having emptied over the last three years".*

[a]: Types of toilets include pour-flush toilets and pit latrines.

[b]: Types of containment include connection to a sewage system (IPAL), a septic tank, a pit and discharge into the open environment (e.g., river, open drainage, rice field, etc.). However,

[c]: Self-reported septic tank emptying practice over the last five years is collected, while households using a pit latrine are not asked.

[d]: Permanent and semi-permanent hygienic toilets according to MoH standard

[e]: Inclusion of access to septic tanks is underway, but adequate knowledge and tools to identify "septic tank" remains challenges among sanitarians due to their limited technical capacities.

[f]: The infrastructure covers wastewater and sludge treatment plants built with support from the Ministry of Public Works and Housing. The information includes facility conditions, capacity and current use in percentage, etc. No information on the population served or coverage is in the database. Often, there are no regular updates on the data.

[g]: Several districts and municipalities, such as Jakarta, implement a regular desludging programme. These local governments have comprehensive information to operationalize the programme. There is, however, yet to be a standard information system; hence systems and collected information vary depending on districts/municipalities and support from development partners.

II. OBJECTIVE

The initiative of monitoring Safely Managed On-Site Sanitation (SMOSS) has three main objectives:

a. Develop tools to assess the nature and scale of the challenges associated with SMOSS. The tools were expected to support the governments in providing the following:
   - Basic information in the form of type and performance of fecal containment in each household; and
   - Additional information in the form of containment compliance to national standard[2] about septic tank infrastructure and its advanced treatment and accessibility of emptying holes.

b. Pilot implementation of the tools in the selected districts/cities. The initiative was aimed not only at testing the sanitation inspection tools but also at supporting the selected districts/cities in improving their sanitation monitoring capacity. A trial to include questions on monitoring SMOOS in the national drinking water supply at the household level (SKAM-RT – *Survey Kualitas Air Minum Rumah Tangga*) was jointly conducted by the Ministry of Health.

c. Make recommendations for routine monitoring of SMOSS in the future. The findings from using these inspection tools can support a more sound and appropriate design, operation and maintenance policy and regulation. As the tools may also assess the risk of the on-site sanitation systems to human health, contamination, and sustainability, it was expected that the initiative could provide recommendations for scale and continuous monitoring of SMOSS at the national and sub-national levels.

During the stakeholders' meeting, it was agreed that the tool was aimed to complement the current monitoring systems to assess the existing on-site sanitation facility. Furthermore, the tool can validate cities/districts reporting a high percentage of safely managed sanitation but a very low emptying rate. More broadly, the tool completed with technical training can be a stepping-stone to educating sanitarians and households about the infrastructure and maintenance of septic tanks.

III. METHOD AND TOOLS FOR MONITORING SMOSS

Tools for monitoring SMOSS were jointly prepared by UNICEF and the University of Indonesia (UI) in consultation with relevant ministries, particularly Bappenas, the Ministry of Health and the Ministry of

[2] Indonesian National Standard (*SNI) No. 2398, Year 2017, a national standard and procedure for planning a septic tank with advanced treatment*

Public Works. During the tool development, at least two national consultation workshops[3] have been conducted, starting with discussions to ensure a common understanding of the need to strengthen monitoring SMOSS and pre-trial learning to improve the tool.

Definitions, standards and indicators were discussed thoroughly to be agreed upon and thus provide a clear result based on the data collected. The following are concepts, definitions, indicators and existing tools that this inspection tool referred to.

a. Definition and indicators of safely managed sanitation

The inspection tool refers to both the global and national definitions of safely managed sanitation. The national definition stated by the National Planning Agency (Bappenas) was derived from the global definition but developed to align with Indonesia's stricter national targets for safely managed sanitation. The national definition specifically requires the containment for onsite sanitation in the form of septic tanks and has a specific period for desludging. Onsite sanitation effluent discharge is safe only if treated through a septic tank with advanced treatment. In situ disposal is not considered safe by the national standard.

Table 2 – Definition of safely managed sanitation

Global Definition (JMP)	National Definition (Bappenas)
Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite.	Safe Access is if a household does not share their sanitation facilities (with other households), where the upper building is equipped with a gooseneck toilet, connected to a septic tank that is desludged at least once in every five years and (the sludge is) processed in a fecal sludge treatment plant (IPLT), or connected to a decentralized domestic wastewater treatment system (SPALD-T).

The definition of safely managed sanitation was then broken down into indicators for the inspection tool. The indicators of this inspection tool are listed in Table 3 along with safely managed sanitation indicators for existing monitoring tools: SUSENAS BPS and SKAM RT, for comparison.

SUSENAS BPS is a national survey that presents the development progress of Indonesia. The survey is conducted routinely and accurately to achieve the trust of the people. The SUSENAS data is collected every year with the random sampling method to obtain data related to the SDGs global indicator including data on sanitation.

On the other hand, the SKAM RT, conducted in 2020, is the first national research on water, sanitation and hygiene conducted at the household level in Indonesia. The implementation of data collection involved sanitarians from several health centers in each district/city. For the water quality testing, there were two water sampling points in each house, namely at the source of the household's drinking water and at the point of consumption (drinking glasses). The test was not carried out in an accredited

[3] *3 July 2020 and 29 September 2020*

laboratory, but in a field laboratory using a sanitarian kit distributed by the Ministry of Health to health centers.

The questions contained in the SKAM RT questionnaire were developed based on international indicators, namely the Core Question on Water, Sanitation and Hygiene for Household Surveys: 2018 Update published by WHO and UNICEF. In addition, the SKAM RT data collection only covers 25,000 household samples so it can only represent drinking water, sanitation and hygiene achievements at the regional level and cannot represent the provincial level.

The respondent criteria for the BPS Survey are households that are part of the normal census block (*Blok Sensus Biasa*). On the other hand, since the onsite sanitation inspection tool is planned to be part of the STBM tool (see Table 1), the respondent criteria for the onsite sanitation inspection are households registered in the STBM programme and have their own sanitation facility (prioritized for households who have containments).

Table 3 – Safely Managed Sanitation Indicators in Different Tools

<table>
<tr><th colspan="2">SUSENAS BPS</th><th colspan="2">SKAM RT</th><th colspan="2">Inspection Tool</th></tr>
<tr><th>Indicator</th><th>Response</th><th>Indicator</th><th>Response</th><th>Indicator</th><th>Response</th></tr>
<tr><td rowspan="3">Type of facility</td><td rowspan="3">1. Available, used only by household members themselves
2. Available, shared with certain household members
3. Available, use public facilities or anyone can use the facility
4. Available, but household members don't use it
5. Not available</td><td>Does the household have a toilet?</td><td>1. The household has a toilet.
2. The household does not have a toilet</td><td rowspan="4" colspan="2">Conclusion Part IA – Type of Containment:
1.a. Septic tank
1.b. Most a likely septic tank
1.c. Somewhat likely a septic tank
1.d. Functioning septic tank
1.e. Most likely a functioning septic tank
1.f. Somewhat likely a functioning septic tank
1.g. Leaking or non-functioning septic tank
1.h. Most likely a leaking or non-functioning septic tank
1.i. Somewhat likely a leaking or non-functioning septic tank

2.a. Pit latrine hygienically separated
2.b. Most likely pit latrine hygienically separated
2.c. Somewhat pit latrine hygienically separated

3.a. Pit latrine not hygienically separated</td></tr>
<tr><td>Does the member of the household use the toilet?</td><td>1. Yes, all household members use the toilet.
2. Yes, some household members use the toilet
3. No</td></tr>
<tr><td>Who uses the toilet?</td><td>1. Only members of the household
2. Shared with other households under the same roof.
3. Public/anyone can use the toilet</td></tr>
<tr><td>Type of latrine/toilet used by the household</td><td>1. Gooseneck
2. Hole with lid
3. Hole without lid
4. Pit latrine</td><td colspan="2">Similar indicator</td></tr>
<tr><td>Final disposal site</td><td>1. Septic tank
2. Wastewater treatment plant
3. Pond/field/river/ lake/ sea
4. Ground pit</td><td colspan="2">Similar indicator</td></tr>
</table>

SUSENAS BPS		SKAM RT		Inspection Tool	
Indicator	**Response**	**Indicator**	**Response**	**Indicator**	**Response**
	5. Beach/field/ garden 6. Other			3.b. Most likely pit latrine not hygienically separated 3.c. Somewhat pit latrine not hygienically separated	
Frequency of emptying in the last five years	1. Once in five years 2. Never	Has the containment been emptied?	1. Yes 2. No 3. Unknown	When was the containment last emptied?	1. < 5 years 2. > 5 years 3. Never 4. Unknown
		When was it last emptied?	1. 1 year ago 2. 2-3 years ago 3. unknown		

Based on the indicators in Table 3, referring to the national standard, the onsite sanitation inspection tool considers a household having access to safely managed sanitation if the type of containment is a septic tank (1.a.-1.c.) or a functioning septic tank (1.d.-1.f.) and has emptied the containment within five years.

b. The National Standard for Septic Tank with Advance Treatment (SNI 2398:2017)

Indonesia has established a standard for septic tanks through the Indonesian National Standard Code (SNI) 2398-2017 for Planning Septic Tanks with Advance Treatment. This standard code stipulated the design standard for septic tanks based on the number of users. The general requirements for the construction of a septic tank are the availability of land and the septic tank effluent can be channeled through four further advanced treatment technology options: (1) filtration system with up-flow filter, (2) sanitary garden, (3) infiltration wells and (4) infiltration field. It also regulates the minimum distance of advanced treatments to buildings such as houses, clean water wells, and rainwater infiltration wells. The selection of advanced treatment technology can be distinguished based on the level of the groundwater table and the number of people using the septic tank (see Figure 1).

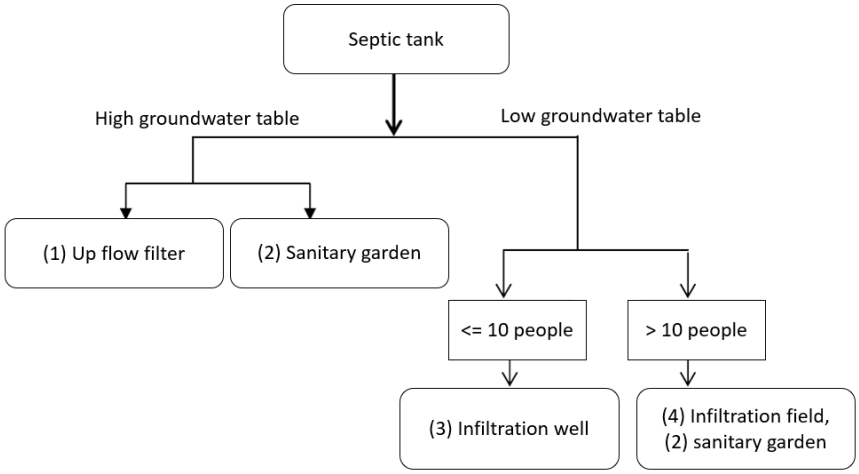

Figure 1. Advance treatment options for septic tank effluent
Source: SNI 2398: 2017

According to this standard, materials of the bottom and wall of the septic tank must be sturdy, impermeable to acid, and made of brick, stone, concrete, polyvinyl chloride, ceramic, cast iron, or iron. It also sets the specific dimensions and volume of the tank based on the number of users.

To determine whether a containment complies with the SNI/National standard, the inspection tool assessed the containment based on indicators as shown in Table 4.

Table 4 – Indicators for Compliance to SNI2398:2017

Question	Response
SECTION III: CONTAINMENT TYPE DETERMINATION	
(Interview) Q4: What is the material used for the containment wall?	1. Concrete/plastered 2. Unplastered brick/stone 3. Plastic 4. Soil 5. Do not know
(Interview) Q5: What is the material used for the containment bottom/base?	1. Concrete/plastered 2. Unplastered brick/stone 3. Plastic 4. Soil 5. Do not know
(Observation) Q6: Can you tell me if the containment has the following access equipment/infrastructure or not?	Ventilation: Yes/no Control hole: Yes/no Lid/manhole: Yes/no 6.
(Observation & Interview) Q15: What is the dimension of the containment? The enumerators can measure directly if the containment's surface is above ground.	(*Filled based on measurement*)
SECTION IV: CONTAINMENT OBSERVATION	
(Observation) Q7: Can the septic checker touch the bottom? (optional)	1. Yes, the real depth of containment and sludge is confirmed. 2. The depth of sludge is estimated by measuring the difference between depth and sludge in the septic checker.

Based on the indicators in Table 4, a containment complies with the national standards (SNI) if the wall and base of the containment are made from concrete, brick or plastic, the dimensions of the containment are adequate for the number of household members, and it has complimentary infrastructure (ventilation, control hole and manhole). Further measurement with a septic checker will confirm the depth of the sludge.

c. Type of containments

In the final version of the inspection tool, the type of containments was categorized into three main groups with functioning degrees:

1. Septic tank	a. Septic tank
	b. Most likely a septic tank

	c. Somewhat likely a septic tank
	d. Functioning septic tank
	e. Most likely a functioning septic tank
	f. Somewhat likely a functioning septic tank
	g. Leaking or non-functioning septic tank
	h. Most likely a leaking or non-functioning septic tank
	i. Somewhat likely a leaking or non-functioning septic tank
2. Pit latrine hygienically separated	a. Pit latrine hygienically separated
	b. Most likely pit latrine hygienically separated
	c. Somewhat likely pit latrine hygienically separated
3. Pit latrine not hygienically separated (i.e. unimproved)	a. Pit latrine not hygienically separated
	b. Most likely pit latrine not hygienically separated
	c. Somewhat likely pit latrine not hygienically separated

To determine the type of containment and its condition, indicators in Table 5 were assessed. A containment is categorized as a septic tank if it is prefabricated/self-constructed, has a sealed bottom and wall, has a component to separate human contact to excreta, has complementary infrastructure, effluent flows to an advanced treatment and the theoretical maximum accumulation rate is lower than capacity.

Table 5 – Indicators to Determine Type of Containment

Question	Response
SECTION III: CONTAINMENT TYPE DETERMINATION	
(Interview) Q2: How do you construct the containment?	1. Prefabricated 2. Self-constructed 3. Do not know
(AUTOMATIC) Does the containment have a sealed/plastered bottom and wall?	1. Yes 2. No 3. Do not know
(Observation & Interview) Q3: Observe the items of water-trap, slab, lid, or pipe functioning to separate human contact from excreta in the containment	1. There is at least one functioning component to separate human contact from excreta 2. There is no component to separate human contact from excreta
(Observation) Q6: Does the containment have access equipment/infrastructure or not (in terms of ventilation, control hole, lid or manhole)?	1. One or more complimentary infrastructure is available 2. No complimentary infrastructure is found
(Observation & Interview) Q7: Where does the wastewater discharge from this containment? Ask and observe the effluent discharge*	1. Drainage or open canal 2. Pond/field/river/lake/ocean 3. Leaching into the ground 4. Unknown 5. No effluent 6. Coast/open space/farm

Question	Response
SECTION III: CONTAINMENT TYPE DETERMINATION	
	7. Advanced treatment and then discharge to the drainage, surface water, or soil
Calculation of maximum sludge accumulation:	A. theoretical maximum accumulation rate is higher than capacity. B. theoretical maximum accumulation rate is lower than capacity C. sludge accumulation rate cannot be calculated

* In this inspection, the answer number (3) leaching to the ground means that the septage in the containment leaches to the ground through the base/walls. Answer number (5) no effluent means that there is no pipe connection between the toilet and containment. Therefore, no effluent is found coming out from the containment. What is meant by answer number (7) advanced treatment, is as per SNI 2398:2017 which are; filtration systems with up-flow filters, infiltration fields, infiltration wells and sanitary gardens.

Table 6 – Analysis of global indicators from sanitary inspection data

Indicator	Global definition[1]	Data used from sanitation inspections
Improved	Improved sanitation facilities are those designed to hygienically separate human excreta from human contact. These include wet sanitation technologies such as flush and pour flush toilets connected to sewers, septic tanks or pit latrines, and dry sanitation technologies such as dry pit latrines with slabs and composting toilets.	Q1. Type of containment: All septic tanks and hygienically separated pit latrine are considered improved.
Basic	Use of improved facilities that are not shared with other households	No data collected on sharing, therefore any estimates of basic access or safely managed sanitation are without consideration of sharing.
Contained	Contained on-site sanitation facilities have containments that do not overflow or discharge excreta directly to the surface environment. *(Note: Many containments discharge liquid to the soil/ground through infiltration from the impermeable walls or base of the containment. For the purposes of SDG monitoring these are considered as 'contained', as long as the effluent does not contaminate the surface environment.)*	The following options are considered contained: Q7. Wastewater (effluent) discharge: 3. Leaching into the ground 4. Unknown 5. No effluent 7. Advanced treatment and then discharge to the drainage, surface water, or soil
Emptied	Emptied: improved on-site sanitation storage facilities with containments (septic tanks or latrines) which have ever been emptied.	Never emptied includes the following responses • Never • Unknown Previous emptied includes: • < 5 years • > 5 years

Contained not emptied	All improved on-site systems that are contained but have never been emptied (see emptying definition above) are considered safely managed through treatment and disposed in-situ.	Safely stored in-situ[2]= Improved x % contained x % not emptied
Contained and emptied	Contained and emptied on-site systems can be classified into the following depending on transport, delivery and treatment - Contained, emptied, buried in-situ: All improved on-site systems that are contained, emptied and disposed of in-situ. This includes buried in a covered pit at or near the household - Emptied and treated off-site: Improved on-site systems that are contained, emptied and delivered to a treatment plant, that is designed to treat both solid and liquid phases, and is treated.	Cannot calculate safely managed sanitation without information on transport, delivery and treatment of emptied faecal sludge. Also missing data on sharing. Emptied[2] = improved x % contained x % emptied

Note 1. Detailed definitions from Guidance for monitoring SMOSS: Annex A- Global indicators for monitoring SMOSS (August 2022) Table A3. Available at: https://washdata.org/report/jmp-2022-smoss-monitoring-guidance-annex-indicators-august-2022

2. To be considered safely managed sanitation services also requires that toilets are not shared with other households. This data was not collected through the inspections but should be included for a complete assessment of SMOSS.

The tools are divided into three main parts: (a) a paper-based inspection form, (b) a Microsoft excel file to input inspection results with automatic conclusions, and (c) guidance for the tool implementation and a set of show cards.

a. **Paper-based inspection form**. The inspection process includes observation, interviews and a combination of observation and interviews to obtain more accurate data.
   - Household sanitary inspection. The inspection tool was divided into three components, which are (1) toilet observation; (2) containment observation; and (3) containment type determination. Observation of toilets and containment would focus on confirming the type of infrastructure, accessibility, functionality, outlet and water flow, construction and material, hygiene and cleanliness. Observation is mostly done visually, which can be elaborated using several tools such as a camera, tape measure and septic checker to obtain specific information on dimension and sludge depth.
   - Household surveys. The inspection tool prioritizes observation by the enumerator. But interviews/questionnaires were also served for unobservable conditions. The survey was conducted to allow the enumerators to access general household information -such as details of address, house ownership, number of family members living in the house, the total number of toilets, and other details information on hygiene practices, access to groundwater as well as specific questions for cost, perception, institutional arrangements and disaster-related questions.

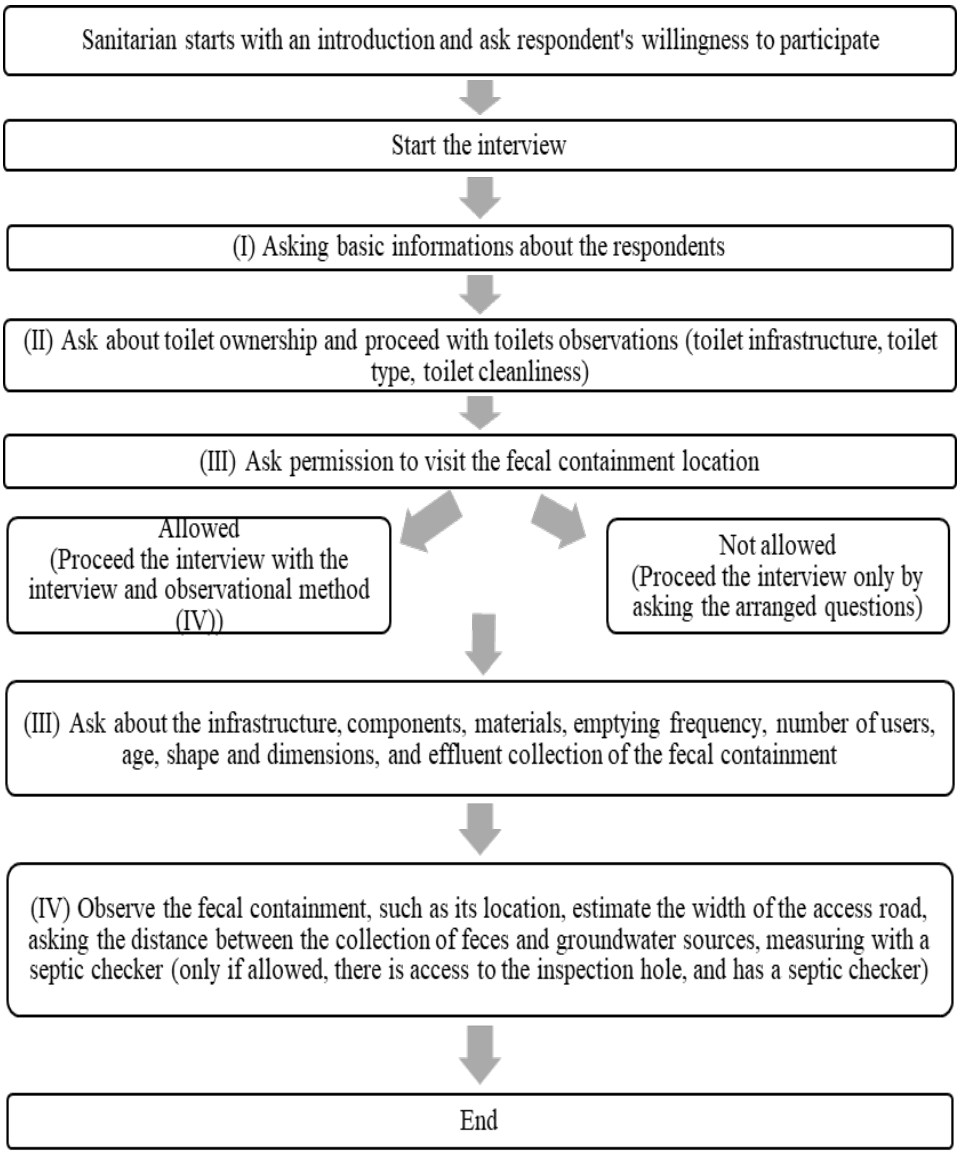

Figure 2 - Flowchart of the On-Site Sanitation Inspection Form

Both parts are included in the paper-based on-site sanitation inspection forms, divided into five sections, as shown in Table 2. These sections have several technical and specific questions regarding the on-site sanitation system under review. In part IV, some questions require measurements using a GPS or a septic checker (as an optional measurement). The inspection time is based on the length of the interview session and how detailed the questions asked and observed are. Nevertheless, based on the number of questions in each section, it is estimated that the observation and interview could take 8-15 minutes per visit to each household without using a septic checker and up to 30 minutes with the septic checker.

Table 7 – Component of Sanitation Inspection Questions

Section		Type of Questions	Estimated Duration
I	Basic Information	Basic information, such as demographic information of the respondents (interview)	1-3 minutes
II	Toilet Observation	Toilet observation centered on the availability of toilets and their wastewater disposal sites (interview)	1 minute
III	Containment Type Determination	Technical matters regarding fecal containment, such as materials, infrastructure, number of users, emptying practice, disposal of effluent from containment, shape, and dimensions (interview + observation)	4-7 minutes
IV	Containment Observation	Components of a fecal containment following the national standard, such as the containment's location, the access road width, and the distance between the containment and the groundwater well (interview + observation). This section has optional questions and an option to take measurements with a septic checker.	4-20 minutes
V	Notes	In the notes section, enumerators can fill in notes if the respondent has any exceptional circumstances.	

b. **Microsoft Excel file** to input inspection results with automatic conclusions. After inspection using the paper-based form, the enumerators need to input the collected data into Microsoft excel to automatically obtain the conclusion and visualize the results. The conclusion of containment type is automatically obtained and derived based on the inspection response using an algorithm embedded in the Microsoft Excel file. Besides containment type, the sanitation inspection tool also concludes the location of effluent discharge. A complimentary section in the inspection tool also aids in concluding compliance with the Indonesian National Standard on Septic Tank.

c. **Guidance for the tool implementation and set of show-card**. In addition to the on-site sanitation inspection tool, a manual to conduct the inspection and a set of show cards were also prepared to provide clear guidance and instruction for enumerators to use the tool to collect and document data. The manual includes frequently asked questions (FAQ) and clear visuals with pictures and specifications so the inspection can be conducted even by those with limited engineering knowledge. For example, to ensure understanding of the advanced treatment, the showcards elaborate on the components and structure of each advanced treatment. Therefore, enumerators can easily identify different types of advanced treatment in the field.

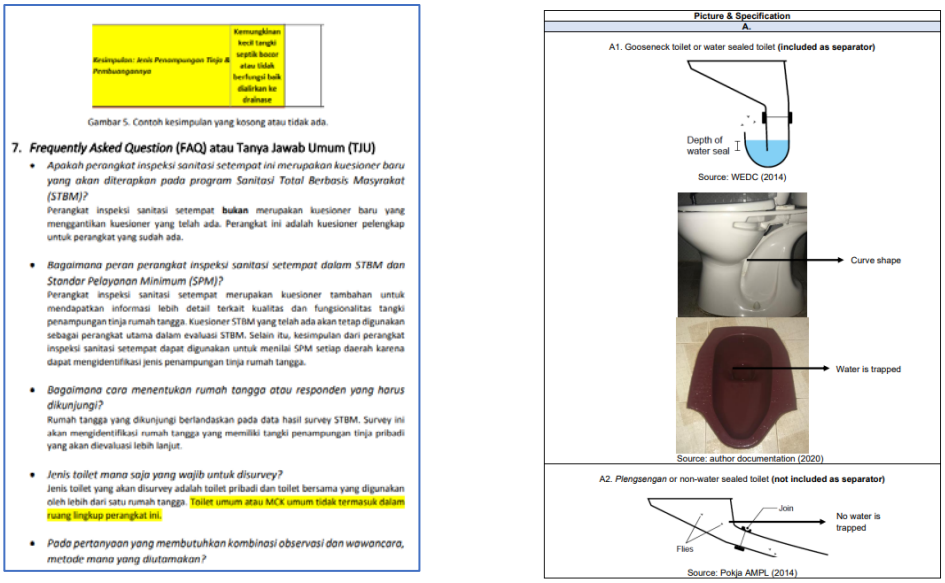

Figure 3 – FAQ and Show Card in the On-Site Sanitation Inspection Tool Manual

IV. PILOT IMPLEMENTATION

Monitoring SMOSS was piloted in six cities/districts, namely Kupang, Mataram, West Sumbawa Regency, Banda Aceh, Pinrang Regency, and Lumajang, which were selected in consultation with local governments.

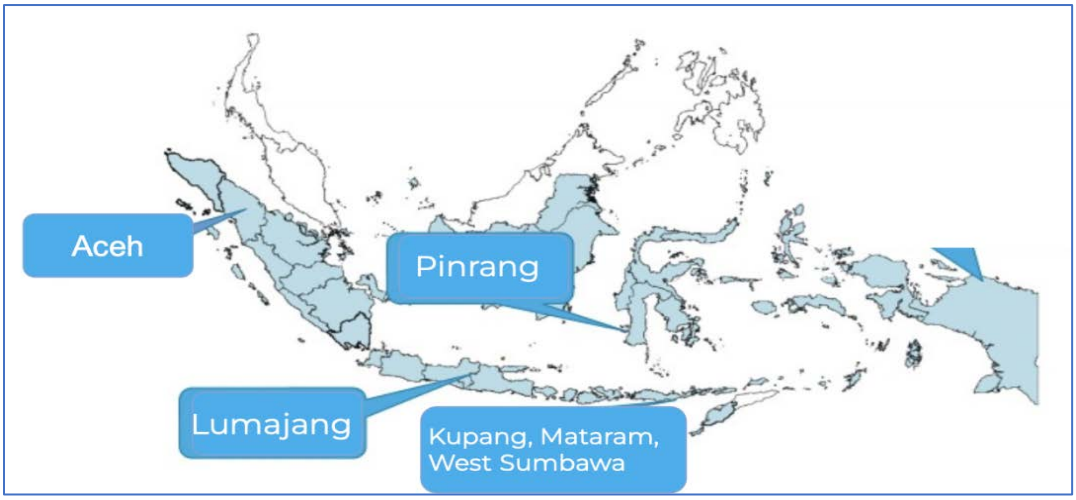

Figure 4 - Locations for Pilot Implementation of Monitoring SMOSS initiative

a. **Selection of enumerators.** Selecting the enumerators for monitoring SMOSS was very critical to ensure the initiative's sustainability. As the tools were intended to complement the existing monitoring mechanism, particularly at the household level, it was agreed to assign sanitarians (local environment health officers at the village level) to conduct the inspection. Until now, sanitarians have

been the front guards in implementing various national surveys. Furthermore, since the inspection involved data collection and its conclusion of septic tank performance, which led to further policies and strategies, the inspection should be conducted by legit and credible enumerators from government officials, such as sanitarians. In addition, in line with UNICEF's goal of increasing youth engagement, students from local universities were involved in the sanitation inspection. Youth engagement in the onsite sanitation inspection training aims to increase their knowledge and experience, particularly in safely managed on-site sanitation.

b. **Development of training module.** Based on feedback received during the pilot data collection in ten households (Balikpapan, Jambi, Depok, & Bekasi) and the stakeholder consultations, a training module was deemed essential for enumerators conducting the inspection. As the tool consists of technical aspects and algorithms, sanitarians needed support regarding the excel operational, troubleshooting, and explanation of each question in detail. Other than that, to ensure a solid national implementation and accurate data, sanitarians/enumerators must understand the questionnaires and have general knowledge of on-site sanitation standards and regulations. Therefore, additional materials on onsite sanitation were provided. More broadly, the training module can be a stepping-stone to educating enumerators and households about the infrastructure and maintenance of septic tanks. At the end of the inspection, sanitarians can briefly inform the critical infrastructure to maintain septic tank functionality, such as impermeable septic tanks, emptying frequency, and emptying access. The training materials were also prepared in video format and presentation slides so enumerators could learn independently.

Figure 5 - Training Materials on Monitoring SMOSS for Enumerators

c. **Training for enumerators.** After completing the training module, online and direct face-to-face training for enumerators was conducted to increase their knowledge and improve the quality of inspection results. The training was aimed at providing knowledge about the safely managed sanitation and sanitation inspection instrument as well as developing the enumerators' ability to use them. Henceforth, enumerators can use sanitation inspection instruments and carry out comprehensive sanitation inspections after attending the training. Furthermore, to develop and integrate this tool into existing national surveys, training for sanitarians was also conducted to assess the inspection tool's effectiveness and to improve the tools for integration into other surveys. The training was provided for 0.5-1 day, which was directly followed by simulation or field practice to get a sense of how to use the tools and provide input for improvement and integration. Once data from

the field practice was collected, sanitarians were encouraged to analyze the data together with the trainer. The trainers were the consultant and the WASH Specialist from UNICEF.

Figure 6 - Training for Enumerators

The on-site sanitation inspection tool training was carried out in six cities/districts. The target locations were a combination of rural and urban districts. The differentiation between rural and urban was not presented because the inspection algorithm automatically accounted for the rural and urban conditions to conclude the results. The training in Kupang and West Sumbawa was conducted online due to COVID-19 restrictions, while in other locations, the training was conducted offline.

Table 8 - List of Training and Numbers of Sanitarian Trained

City/District	Training Implementation Date	# Sanitarians Trained
Kupang	26 Oct 2021	24 persons
Mataram	23 Nov 2021	11 persons
Sumbawa Barat	26 Oct 2021	10 persons
Banda Aceh	15-16 June 2022	14 persons
Pinrang	27-28 June 2022	17 persons
Lumajang	30 June 2022	25 persons
TOTAL		**101 persons**

Besides sanitarians, representatives from local offices (the Public Health Office, the Public Works Office, and Bappeda) and youth also joined the training. Twenty students and youth from Banda Aceh, Pinrang and Lumajang participated in the training and inspection.

Figure 7 - Interview and Observation during Sanitation Inspection

d. **Tools implementation.** The pilot implementation of the on-site sanitation inspection in 1,371 households was divided into two groups. Kupang, Mataram, and West Sumbawa Regency were the first three cities tested in 2021. Meanwhile, inspections in Banda Aceh, Pinrang, and Lumajang were carried out the following year using an updated assessment format, so there were slight differences in the data analysis of the two groups.

Table 9 - Numbers of Households Inspected

Cities/districts	Implementation Date	#Households Inspected
Kupang	27-29 October 2021	235
Mataram	24-25 November 2021	203
Sumbawa Barat	24-25 November 2021	200
Banda Aceh	15-16 June 2022	56
Pinrang	27-28 June 2022	253
Lumajang	30 June 2022	424
TOTAL		**1,371**

In addition, questions about monitoring SMOSS have been included in the national water quality survey conducted by the Ministry of Health. The survey was conducted in more than 20,000 households, along with a survey on access to water access and hygiene.

e. **Consolidated data.** The piloting of the on-site sanitation inspection tool generally has two main conclusions: Part I and Part II. Part I consists of three conclusions:
   - Part IA - Fecal Containment (type and functionality of fecal collection),
   - Part IB - Sanitation Facilities and

- Part IC - Effluent Discharge where wastewater flows).

Part II concludes the septic tank infrastructure's compliance with the Indonesian National Standard (SNI 2398-2017). Unless there was a data error, each conclusion was derived from each household/respondent, no matter the type of containment/condition. The algorithm of the inspection tool automatically categorizes/concludes the output.

In conclusion Part IA - Fecal Containment, the result in six cities varied (see Figure 8). The average ownership of septic tanks in six cities was 50%, although with various degrees of function. Many households use pit latrines that are hygienically separated (43%). West Sumbawa Regency had the highest number of households with septic tanks (73%). On the other hand, only 27% of households in Kupang had septic tanks. The average proportion of improved sanitation, that excludes unhygienic pit latrines, was 91%, ranging from 84% in Kupang to 99% in West Sumbawa.

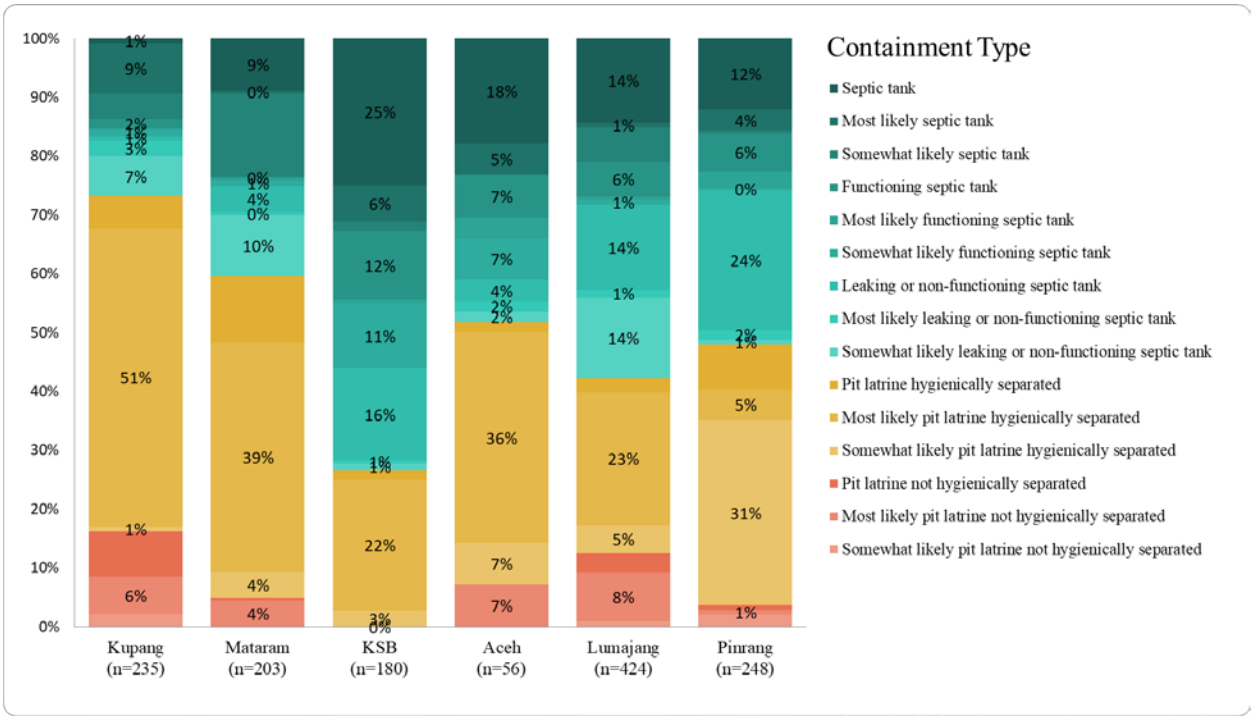

Figure 8. Containment type in six cities
(green gradient = septic tank, yellow gradient = pit latrine hygienically separated, orange gradient = pit latrine not hygienically separated)

According to Mara (1976), septic tank effluent, from a public health point of view, is as dangerous as fresh wastewater and requires further treatment before being disposed of. Therefore, advanced treatment is an essential component of a septic tank because it improves the quality of the effluent before touching the ground. Although the SNI stipulates advance treatment for septic tanks, the question was asked to all households whatever their type of containment. Unfortunately, based on the data collected, the conclusion of Part IC - Effluent Discharge was that only 15% of all households in six cities/districts had advanced treatment. West Sumbawa had the highest percentage of households with advanced treatment (52%). Most households' effluent leach from the containment's base/wall or is directly disposed of to the surface environment (drainage/open canal,

pond/field/river/lake/ocean, coast/open space/farm). Note that this is a national assessment of containment and differs from the assessment of containment for global monitoring, which considers that contained systems include those with no outlet, that leach to soil or are disposed to a soak pit, while discharge to the surface environment is considered uncontained. The average proportion of contained facilities based on global indicators was 72% ranging from 20% in Pinrang to over 90% in Kupang, Mataram and West Sumbawa.

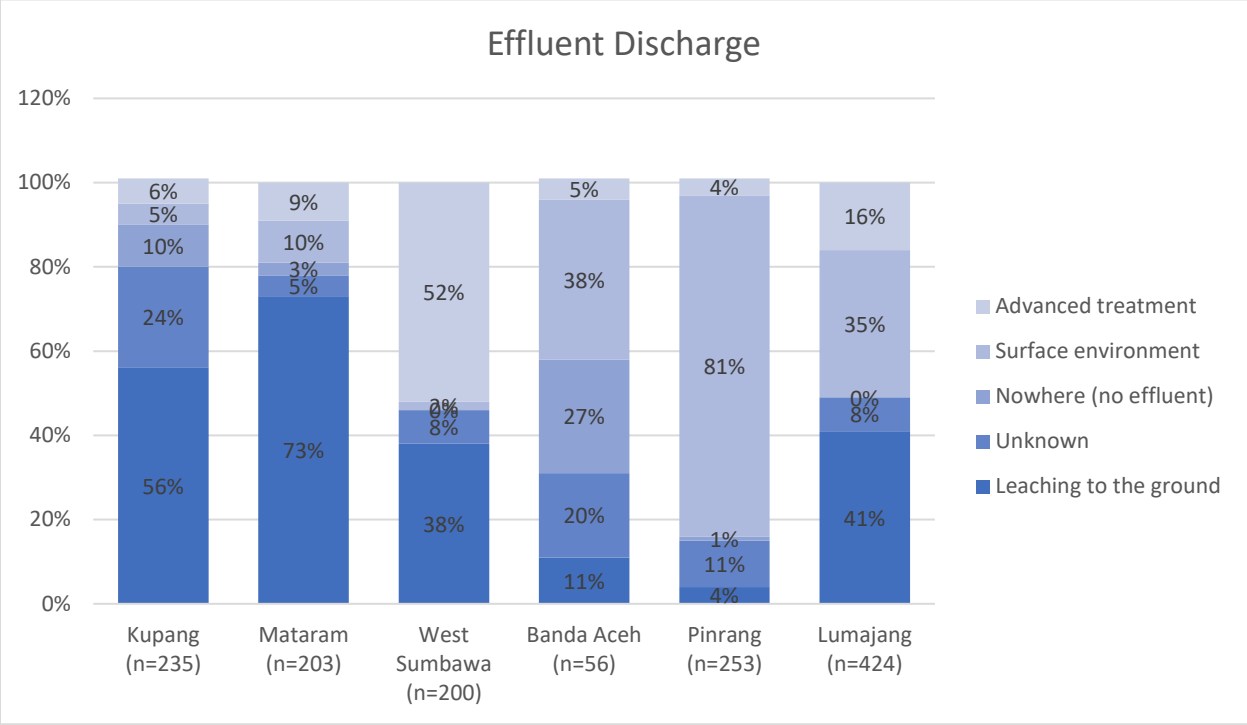

Figure 9 – Effluent Discharge

In conclusion Part II: Compliance, the inspection from six cities found that only 9% of households have septic tanks that comply with the SNI. As mentioned, in this tool, indicators that determine the compliance of containment with the national standard are (1) the material of the containment wall and (2) base, (3) the availability of complementing infrastructure: ventilation, control hole and manhole, (4) the dimension of the containment and (5) the sludge measurement. Mataram had the lowest compliance (0%), and West Sumbawa had the highest (35%).

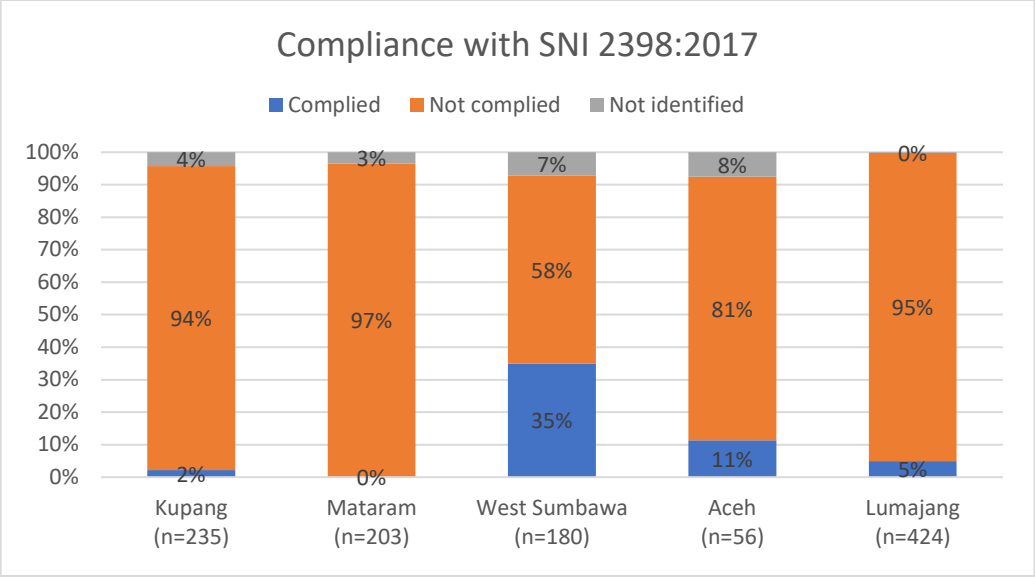

Figure 10 – Compliance with SNI 2398: 2017

As mentioned earlier, the SNI requires septic tanks constructed with impermeable materials such as concrete, non-plastered or concreted bricks, plastic, or fiber. On the other hand, materials such as permeable soil will allow domestic wastewater in containment tanks to leach into the surrounding environment. Based on the inspection in Banda Aceh, Pinrang and Lumajang, most containments were made from concrete or concreted bricks (walls with 93% and base with 74%).

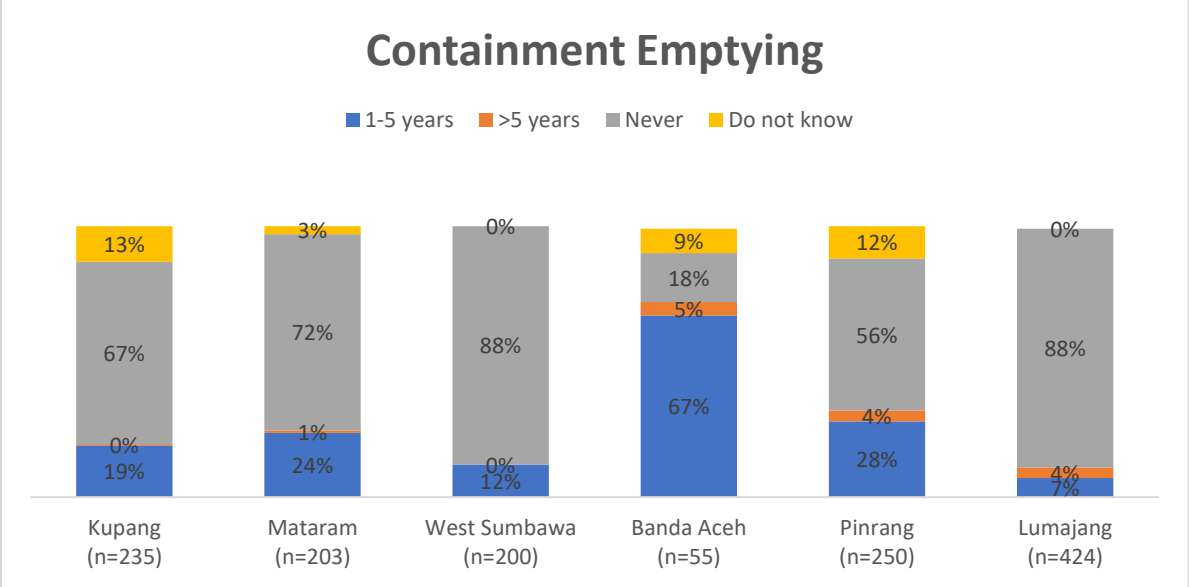

Figure 11 – Containment Emptying in Six Cities/Districts

For the national target, emptying or desludging must be done regularly once every five years (Bappenas, 2020). Unfortunately, the inspection in the six pilot cities and districts found that only 19% of households in all six cities have desludged their containments in the last five years. Banda Aceh had the highest percentage of desludging (55%). Unsurprisingly, altogether, 74% of all the households in

six cities have never emptied their containment tanks with the highest percentage in Lumajang (88%). Low emptying practices may indicate that the containment tanks are permeable and allow wastewater to leach to the ground. Global monitoring does not consider the frequency of emptying, only whether the containment was ever emptied. The average proportion of on-site systems that had previously been emptied was 29%, with a broad range from 12% in Lumajang and 13% in West Sumbawa to 73% in Aceh.
The SNI also requires a minimum of ten meters between a septic tank with the groundwater source. The inspection in three cities, Banda Aceh, Pinrang and Lumajang, found that on average only 50% of households follow this standard. Septic tanks in the remaining households are located less than ten meters from groundwater sources. This poses a greater threat of fecal matter contaminating water sources and the environment, causing health risks for household members.

Regarding the national assessment of safely managed sanitation access, it is important to note, in the Indonesia assessment of safely managed sanitation below, a household is categorized as safely managed sanitation through the indicator of emptying, with the assumption, all fecal sludge emptied ends in the IPLT/treatment plant. Currently, data on sludge treatment in the IPLT cannot be obtained through the BPS, the SKAM-RT, or the inspection tool (see Table 1). The surveys and inspection are based on households, while the information on fecal sludge entering the IPLT can be found from fecal sludge service offices/operators. The SKAM-RT is more advanced compared to the other survey and inspection with the indicator of who empties/desludges the septic tank (see Table 10). But this question is also asked to households which may provide inaccurate answers. Therefore, the results from the BPS, SKAM-RT and inspection tool on safely managed access are an approach/estimation. Further data collection from sector reports (office/operators) at the local level to the Ministry of Public Works and Housing is required.

Table 10 - SKAM-RT question on emptying provider

No	Question	Answer options
5c.	When last emptied, which institution/organization provided the service?	1. Local government 2. Local government owned company (PDAM/PDPAL) 3. Private 4. Member of household 5. Do not know 6. Others, …

The inspection found that the average percentage of households in six cities with improved sanitation was 92%, and the average percentage of safely managed sanitation according to the national definition and only considering containment and emptying was 8%. Compared to annual nationwide surveys in 2020, the National Survey (BPS SUSENAS BAPPENAS) and the Household Drinking Water Quality Study (SKAM-RT), this inspection shared similar results. Based on the 2020 National Survey (BPS SUSENAS BAPPENAS), 80.29% of households in Indonesia have access to improved sanitation facilities. However, only 7.25% of households have access to safely managed sanitation up to emptying based on the national definition. The SKAM-RT found that 74.9% of households have access to improved sanitation and 7.1% with safely managed sanitation. The limited number and variety (whether urban or rural) of households inspected during the piloting may be the reason for the slightly

different results. But with only six cities and 1,371 households inspected, the results were close. Evident from Table 11 the national definition of safely managed containment and emptying is much stricter than the global definition, with the average global estimate for these two steps across the six cities of 66% compared with 8% using the national criteria. The stricter national definition of containment that does not permit infiltration into the soil has the greatest impact on the difference between national and global estimates. The commitment to take the inspection further on a bigger scale, integrating it into existing surveys, will provide evidence that can strengthen data and monitoring of national achievements.

Table 11 - Comparison of Data Collected from Monitoring SMOSS with National Data

	National (Source: BPS 2020)	National (SKAM-RT 2020)	Kupang (n=235)	Mataram (n=203)	West Sumbawa (n=200)	Banda Aceh (n=56)	Pinrang (n=248)	Lumajang (n=424)	AVG 6 cities
Improved sanitation	80.29%	74.9%	84%	95%	100%	93%	96%	88%	92%
Indonesia definition: Safely managed sanitation*[1]	**7.25%**	**7.1%**	**1%**	**7%**	**11%**	**14%**	**12%**	**3%**	**8%**
Global definition:									
- Contained never emptied			64%	65%	85%	16%	13%	50%	49%
- Contained emptied			16%	21%	13%	42%	6%	7%	17%
Total (potentially) safely managed[2]			**80%**	**86%**	**98%**	**58%**	**19%**	**57%**	**66%**

1.Indonesian national definition of safely managed sanitation assuming all emptied systems are transported and treated off-site and does not consider sharing.

2. Based on global definition of safely managed sanitation for containment and emptying. Note this is "potentially safely managed sanitation" since it does not consider sharing with other hosueholds, transport or treatment.

In addition to providing close results, compared to the BPS survey and the SKAM RT, the inspection tool offers further value in terms of:

- The data collection combines interview and observation methods. This increases the level of accuracy. Particularly for technical questions, when a respondent may be unsure of the answer, the enumerator can observe and confirm.
- Like the SKAM-RT, the inspection was done by sanitarians, whereas the enumerators for BPS were opened to the public. Sanitarians are equipped with knowledge regarding environmental health and sanitation.
- The questions included technical requirements stipulated in the SNI2398:2017. Therefore, the results of the inspection can give a better conclusion about the onsite sanitation condition.
- Two algorithms in the inspection tool can calculate the wall and base material of the containment, the permeability of the septic tank and the sludge accumulation in the containment tank.
- The inspection tool can automatically conclude in the form of tabulations and even graphs/diagrams.

V. ANALYSIS

This section provides some reflection on the effectiveness of the sanitation inspection tool, including how the data was being utilized for better planning at the sub-national level. A strategy to institutionalize the SMOSS monitoring into the governments' existing surveys or monitoring will also be presented. Finally, the newest issue on households' data security will also be discussed to inform follow-up actions.

a. Reliability and effectiveness of sanitation inspection tool

- *The tool is relatively short and simple*. Based on inputs from enumerators/sanitarians, the tools were considered easy to use, even with a non-technical background. The tool is practical and scalable for all sanitarians with varied knowledge and competency across Indonesia. Four questions were optional but have the potential to further assess the containment (see Table 12). The questions were made optional due to the additional tools required (GPS, septic checker), calculation and respondents' permission. Therefore, it is considered not easy for some sanitarians.

Table 12 - Inspection Tool Optional Questions

Optional Questions	Responses
Q3: Take the GPS coordinates	*(as shown by the GPS tool)*
Q5: Does the respondent allow the enumerators to open the containment?	1. Yes 2. No, because ... a. There is no emptying access b. The manhole is inside the house c. Respondent does not give any reasons d. Respondent does not want any dirty work involved e. Other comments
Q7: Put the septic checker into the containment as deep as it can. Next, pull out the septic checker and observe the parts of water and sludge.	1. Respondent does not allow containment inspection 2. Septic checker or stick cannot enter the containment 3. No supernatant/liquid content in the containment 4. Supernatant/liquid content is found in the containment
Q8: Observe and estimate the depth of supernatant/liquid and sludge in the containment. If not observable or visible, leave the cells blank.	Scum ____ meters Supernatant/liquid ____ meters Sludge ____ meters Freeboard ____ meters

To ensure full understanding and simplicity, showcards were prepared. Providing pictures related to the questions, for example for the advanced treatment question, is helpful as sanitarians and households need more understanding, especially for technical-related questions. Misunderstandings may lead to wrong data input.

- *It is important to have an optional feature for more detailed data and information*. The Ministry of Health suggested including the septic checker or stick to measure the thickness of sludge produced in the tank as an optional method. Using the stick or checker is difficult, and the information produced was not very critical. As this tool is expected for long-term use, it was agreed to add the septic checker or stick measurement as an optional question so the sanitarians or local governments could use it as required. However, the training or mini workshop for sanitarians should highlight the hygiene and cleansing protocol for the septic checker or stick contaminated with excreta.
- *Improving the effectiveness of data recording through an online form*. The sanitation inspection tool was originally designed as a paper-based form to reduce the cost of data collection (only copy sheets of questionnaires and paper, rather than internet cost), reduce the risk of internet

connections, ensure the availability of proof documents and confirm easiness for enumerators to fill in during the surveys. There are several challenges using the paper-based form, such as enumerators should bring several sets of questionnaires which is not practical for them. They may need to find a photocopy service if they're running out of questionnaires and need to add more houses to visit. In addition, the enumerators would require additional time to fill in data in an Excel sheet which then impacted the availability of results. As a solution, an online form through the Kobo toolbox was used in several locations to support the enumerators in recording the data easier and faster. Nevertheless, there were also several disadvantages to using the online form. Therefore, a combination of paper-based and online forms would be preferred to solve some issues from both options.

Table 13 - Paper-based vs. Online form Questionnaire

	Paper-based	Online form
Advantages	• Cost efficient, only require copy set of questionnaires and pen • No need for an internet connection • Copy document for further checking is available	• Easy to record, time efficient • Practical for the enumerators, don't need to bring lots of papers during surveys • Flexibility in having several houses inspected • Visuals (photos of houses and sanitation facilities) can easily be recorded
Disadvantages	• Difficulties in adding more houses to visit, particularly if the enumerators don't bring a sufficient set of questionnaires • Need additional time to transfer data from the questionnaire into an excel sheet with the potential risk of errors during the data input process • Affect the fulfillment of data availabilities' deadline	• Need a smartphone and sufficient internet connection • Require assigned team member to support troubleshooting • Include information on how to use the online form during the training • Difficult for an area with limited or interrupted internet signal availability

b. Data collection process

- *The capacity of enumerators is the key*. Success factors in monitoring SMOSS depend on the tool's reliability and effectiveness and the enumerators' capacity. A correct understanding of safely managed sanitation standardized septic tank including its main components, desludging and where the sludge will be treated. Therefore, the training effectively provided a basic understanding for the enumerators.
- *Tools can be an entry point to promote safely managed sanitation to households*. Not only to the enumerators but the monitoring SMOSS can also be optimized as an opportunity to educate households about safely managed sanitation. Most households' understanding is not aligned with the national regulation, standards and health issues. E.g., (1) the containments should be permeable, and effluent should be discharged to the ground to prolong the functionality, and (2) Emptying is not urgently needed if there is no overflow, clogging, or fully contained. At the end of the inspection, sanitarians can briefly inform the key infrastructure to maintain the functionality of a septic tank (based on the SNI 2398:2017), such as an impermeable tank, emptying frequency, emptying access, etc. The post-explanation should be done after the interview to keep neutrality.

- *Quality of responses*. The conclusion from the tool inspection can only be reliable if the interviewees are homeowners, as non-homeowners are not involved in the construction, and they might not receive such information from the homeowners. The showcard provided can support the interviewees in giving more reliable responses since they can choose or see the picture of containment.
- *Households' willingness to be assessed*. The other challenging part of monitoring SMOSS is convincing the households to allow the enumerators to enter their premises and conduct the sanitation inspection. In several locations, sanitarians worked with local cadre/women volunteers/community members at the village level who were already known by the communities.

c. Promoting data use

- *The bigger, the better*. A larger number of households surveyed will provide a greater level of confidence in the quality of the data. Merging with currently available government monitoring systems will contribute to adding more numbers to analyze (it is noted that consent be required from each household for further use of data). Furthermore, providing incentives to households could also increase household participation rates in monitoring SMOSS, such as providing discounts on desludging services for those who are willing to be assessed.
- *Leverage benefits from data and information that has been collected through the monitoring SMOSS*. In addition, to improve understanding of the performance of sanitation facilities at the household level, data and information from monitoring SMOSS monitoring can be used to (a) strengthen the reliability of safely managed sanitation baselines because the data obtained can be used to verify safely managed sanitation data in cities/districts, (b) inform government planning and budgeting as monitoring SMOSS can provide standardized data and information on houses with/or without septic tanks, (c) support preparation for the implementation of governments' sanitation programme to install septic tanks standards, including providing subsidies to poor households, (d) complete a customer database for better planning of regular desludging, and (e) serving as a basis for sector monitoring.
- *Integration with spatial mapping to provide complete data and information*. Data and information from monitoring SMOSS can become part of the sanitation database for local governments, including service providers, as a basis for service improvement. Complementing the results of SMOSS monitoring with spatial data will provide precise and accurate information for effective decision-making because it can combine/overlay with other relevant information, such as flood-prone areas, areas with a high prevalence of waterborne/sanitation-borne diseases, areas with poverty rates. high, etc.
- *Data visuals for better communication and easier understanding.* Presenting the data from monitoring SMOSS in spatial mapping will help local governments to identify which houses need immediate actions for follow-up. Furthermore, presenting the results in an interesting and simple infographic visual would help for easier understanding, particularly by decision-makers
- *Promote collective actions to leverage the valuable data collected*. Nongovernmental institutions and other development partners could support the governments to safely share dan use data to capture greater value. Results from monitoring SMOSS can be utilized by NGOs or other partners to develop advocacy and promotion material for decision-makers and/or the public. This would

require governments' capacity to maintain access to data and their security and integrity over time.

d. Scale up the monitoring SMOSS across the country

- *Institutionalize the monitoring of SMOSS to strengthen ownership and ensure sustainability*. Prioritizing the incorporation of the tool into the sanitation monitoring system of the Ministry of Health, because the large-scale and sustainable survey is critical to ensure the value of the initiative. Institutionalization of monitoring SMOSS assures that the monitoring will be conducted regularly and continuously, not only as an ad-hoc type of activity.
- *Complementing the government's existing monitoring system to evaluate the sanitation service chain is challenging.* The data collection of the existing government monitoring system is conducted by interviewing households and usually households do not know the septage final disposal site after the septic tank is emptied, therefore the collected data provides information only up to the septic tank emptying component. Meanwhile, measuring safely managed sanitation indicators requires information about the transport to the treatment facility and sludge treatment which is currently not included in the existing monitoring system. Thus, a collection action involving various stakeholders within the cities/districts to collect data on the sanitation service chain would be required.
- *Depending on sanitarians is risky, as they have limitations in terms of numbers and capacities*. A limited number, usually only 1-2 sanitarians, is assigned for each village/healthcare facility. Sanitarians are tasked with various assignments related to public and environmental health, sometimes beyond their capacity. Not in terms of technical and knowledge capacity, but the capacity to complete the tasks with limited time and resources. Therefore, to help sanitarians, entities at the community level, such as women volunteers, village cadres, or community members could be involved in conducting the OSIT. Sanitarians can take the role of trainers. Clear mechanisms on how to validate results before data recording and analysis will be essential.
- *Inter-ministerial coordination on data use to allow greater relevance, ownership and use of data across ministries as well as take joint corrective actions*. A consensus has been reached by the Ministry of Health and the Ministry of Public Works to jointly collect and use the data. The consent also includes common definitions, questions, and mechanisms for collecting, analyzing, sharing, and using the data. While the Ministry of Health will use the data to monitor post-ODF status, the Ministry of Public Works will use the data as a basis for determining access to safe sanitation and for which target households are eligible to receive subsidies for installing septic tanks.

e. Data security

- *Foster trust through safeguards that protect people from the harm of data misuse*. Because the inspection also includes data collection of general demographic information, including ID numbers, there is a potential risk of cybercrime and the potential for political or commercially motivated surveillance. The latest Law No. 27 of 2022 concerning the Protection of Personal Data regulates the collection, processing, analysis, recording, updating, presentation, transfer, and deletion of personal data. It provides clear guidance for all those who manage personal data to address growing concerns regarding data misuse.

VI. CONCLUSION AND WAY FORWARD

UNICEF will continue to strengthen the monitoring of safely managed on-site sanitation as part of tracking the progress toward achieving the National Medium Development Plan 2020-2024. Furthermore, as the Government of Indonesia has just completed a roadmap for safely managed sanitation which will serve as a guide for various stakeholders, as such, the monitoring SMOSS will become part of monitoring the progress of Indonesia's progress towards achieving SDG 6.

UNICEF's Country Programme work, going forward, includes:

a. Scale-up household assessments and develop/improve a sanitation database in selected districts that can be used as a customer's database for providing regular desludging services. The assessment will be followed-up with concrete action to facilitate households to schedule timely desludging services and encourage households to install standardized septic tanks.
b. Continuing efforts to institutionalize monitoring SMOSS into government systems. An initial agreement with the Ministry of Health[4] has been reached to include the tool as part of post-ODF monitoring and guidance. The Ministry of Health is now reviewing all the indicators from the tool and will finalize the guidance. The review of the indicators is in coordination with other line ministries such as Bappenas and the Ministry of Public Works and Housing. Consequently, the Ministry of Health will issue regulations to enforce monitoring to all local governments and formally assign sanitarians to incorporate sanitation monitoring into their routine household surveys. The tool's guidance synchronized with the post-ODF guidance should include the key information on support/troubleshooting, analysis and managing data. But there is indeed a gap since the guidance itself may not be enough, and face-to-face training is required, the financial consequence will then follow. This is also part of the key topic discussed at the ministry level.
c. Strengthen monitoring beyond the household level (i.e., safe transportation and disposal after emptying) in collaboration with the Ministry of Public Works and Housing, UNICEF will review existing FSM apps in Indonesia, and explore opportunities to have a consolidated monitoring sanitation system covering all components along sanitation service chain for better estimates and tracking of safely managed sanitation data.
d. Work toward an integrated national sanitation data system. This would require greater coordination and investment in physical and human capital to improve data governance and specialized analytical and data security skills. Synergy with BPS, Bappenas and relevant ministries, including management of SDGs dashboard.

VII. EXPRESSIONS OF THANKS

In partnership with the government of Indonesia and sub-national levels of government, UNICEF would like to express our sincere gratitude to JMP for its generous contribution to filling critical gaps in improving monitoring capacity as part of accelerating sustainable access to safely managed sanitation. UNICEF believes that this collaboration will further strengthen our partnership to achieve broader results for children in Indonesia.

[4] *During a national consultation workshop conducted on 26 December 2022, participated by Bappenas, Ministry of Health, Ministry of Public Works and the association of experts on environment engineering (HAKLI).*