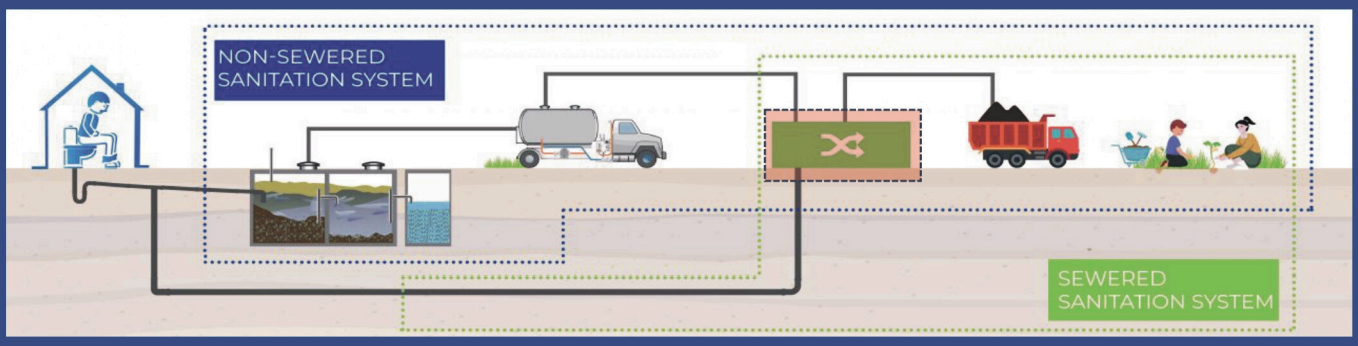
Government of Nepal
Ministry of Water Supply
National Water Supply and Sanitation Research,
Innovation and Capacity Development Center

CONTAINMENT IMPROVEMENT

Training Manual



2025

Containment Improvement

Material and Learning Application

Foreword

Nepal's declaration as Open Defecation Free (ODF) on 13th Asoj 2076 (30th September 2019) marked a monumental first step for our nation, achieving the construction of basic sanitation facilities across every household. This success was built on a national movement that prioritized simple toilet construction.

However, as we move beyond basic access, our focus must shift to the next vital stage of the Sanitation Service Chain: safely managed sanitation. After years of use, the containment systems constructed during the ODF campaign are beginning to fill up, posing serious environmental and public health threats, and increasing the burden of downstream treatment. This presents us with a significant challenge—and a crucial opportunity—to ensure the sustainability and safety of our sanitation progress.

This training package directly addresses these challenges by equipping sanitation professionals, engineers, and technical personnel with practical knowledge and tools to improve and maintain on-site sanitation systems. It includes design standards, inspection checklists, maintenance protocols, and regulatory guidance, supporting safer and more sustainable practices.

By promoting informed upgrades and replacement (if necessary), the training empowers practitioners to guide communities in making responsible sanitation choices. It also supports the integration of these practices into municipal by-laws, building permits, and supervision systems, ensuring performance across the full life cycle of containment infrastructure.

I commend the experts and institutions involved in preparing this valuable resource. I urge all targeted participants from government, private, academic, and non-governmental sectors to engage fully with the materials. Your expertise, informed by this training, is essential for securing a healthier, safer, and truly hygienically managed sanitation future for Nepal.

Ram Kumar Shrestha
Executive Director
NWSSRICDC

Table Of Content

Acronyms

Eco-San	Ecological Sanitation
ENPHO	Environment and Public Health Organization
FS	Faecal Sludge
FSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
GIS	Geographic Information System
GoN	Government of Nepal
HH	Household
ISO	International Organization for Standardization
ITN-BUET	International Training Network-Bangladesh University of Engineering and Technology
ODF	Open Defecation Free
PPE	Personal Protective Equipment
SDB	Sludge Drying Bed
SDG	Sustainable Development Goal
SFD	Shit Flow Diagram
SS	Sewered System
SSC	Sanitation Service Chain
SSP	Sanitation Safety Plan
ST	Stabilization Tank
STP	Sewerage Treatment Plant
SWM	Solid Waste Management
TN	Trainers' Note
ToR	Terms of Reference
TP	Treatment Plant
WWTP	Wastewater Treatment Plant

1. Introduction

This Trainer's Manual is to support people who facilitate or conduct the "Containment Improvement" training. This introduction section provides background on how to use the manual and lesson plan, tips that help plan for a successful training, and several tools to help delivering the training, including lessons plans and materials. The main objective of this trainer manual is to guide the trainer, for effective delivery of the training while conducting the sessions. The instruction on the manual goes hand on hand with the presentation slides. It is recommended that one adapt the tools to suit their style and the needs of the audience.

To this, this manual comes with other materials, a folder compiled of Power-point slide deck, slides compiled along with slide notes for the trainer's reference. For the effective delivery of the package, it is highly recommended to use the documents/ files simultaneously.

2. Training Overview

Nepal declared open defecation free (ODF) with the achievement of basic sanitation, that is, the construction of toilets in every household. With the national movement/ campaign for ODF, all the stakeholders associated opted for simple containment for the campaign. The construction of toilets, the first component of sanitation service chain, was a first step towards safely managed sanitation. However, after all these years after ODF, the next step towards safely managed sanitation is the containment improvement or a focus on containment types and improvement. As with the present context of facing the filling up of the containments, constructed back then, is the right time to make a move on the second step of SSC.

Hence, the training package mainly focuses on different types of containment as an advanced options for the mitigation/ adaptation of the issue being faced related to containment system. The package deals with upgrading the containment system along with the knowledge and information on each of the containments and upgrading the existing containments rather than discarding earlier one and moving to the next option.

2.1 Training Objectives

The general objective of the package is to strengthen participants' understanding of safe containments concept and enhance their skills in upgrading and improving existing containment structures.

Specific Objectives

- To clearly define an appropriate containment system and its contribution in achieving safely managed sanitation.
- To describe the advantages and disadvantages of various types of containment, with an emphasis on the specific challenges associated with each of them.
- To evaluate different containment systems and explore strategies for their improvements.

2.2 Participatory Learning

Participatory learning styles are widely used for the active engagement of the participants throughout the training. Effective learning comes from shared experiences and participants learning from each other. Various methods for active engagement of participants are used for the delivery of the course content through interactive presentations, demonstrations, group discussions, case studies and assignment for further practice and discussion.

Use of short sentences, pictures and illustrations, graphs, gestures, demonstrations, small group discussions and hands-on practice are highly recommended for active learning. These methods will help all participants understand and remember the information better.

3. Training Planning

The following activities should be undertaken to get started with training, planning and arranging logistics.

3.1 Trainers and the Planning Team

For each training:

- Choose a **training course coordinator** or anchor. This person should be present throughout the training and is responsible for overall coordination, timing, and mood of the training course. To this, he/she is also responsible for allocating sessions and preparing as necessary along with delegating responsibilities with deadlines.
- **Coordinate with Trainers** for the session delivery. This will probably be a mix of availability, expertise, style, and gender. It is beneficial to establish the strengths and weaknesses of each trainer and work to the strengths during the different training components.
- **Allocate sessions** (or part) for each of the chosen trainers – these trainers will be responsible for:
    - preparing for the sessions they are responsible for
    - ensuring that all resources for their sessions are collated and ready
    - collaborating with the other trainers – the role each trainer will have at each point in a day - delivering the assigned sessions, supporting other trainers for delivery of their sessions, must be planned and known to maintain the flow of the training, avoid confusion and embarrassment
    - ensuring the session runs on time

3.2 Targeted Participants

The anticipated primary target group for the training are sanitation practitioners and engineers/professionals from government, private organizations, I/NGOs and academic professionals who are responsible for the dissemination of knowledge on the importance of safe containments. However, the curriculum may have value for other sector professionals, including decision-making officials at central and provincial levels.

3.3 Selecting Participants

For the most effective training, it is important to take care of inviting participants by considering:

- **Number of participants**. It is important to choose the correct number of participants. You may want to have a small group to provide intensive training and support, or a larger group to have a wider range of participation. A common reason for training sessions failure is that too many participants attend. In the same case, a total number of 15 to 20 participants are highly recommended so that everyone has the chance to fully participate in the training and also have a good range to share and learn the experiences.
- **Criteria for participation**. This training program is specifically designed to enhance containment systems, making it particularly relevant for professionals in the field, such as sanitation engineers and municipal engineers. This is basically to make learning more effective

3.4 Logistics Management

Pre-training

- What is the budget?
- Who will invite the participants and trainers and communicate with them?
- Who will organize and coordinate food and accommodation?
- Who will manage participant's travel?
- Who will organize the training site and set up?
- Who will purchase and organize the training equipment and materials?
- Who is responsible for pre-training registration?
- Who is responsible for onsite registration?
- Who is responsible for printing the participant's materials including training evaluation form?
- Who is responsible for facilitating the whole training?
- Who is responsible for the logistical arrangements, like banner preparation, stationeries?
- **Who is responsible for coordination with trainers and resource person?**

During the training

- Who will coordinate with the resource person?
- Who will check for the time management?
- Who will ensure internet and power facility?
- Who will check that snacks and food are ready at the appropriate times?
- Who will prepare the room in the morning and reorganize in the evening?
- Who will prepare the necessary flip charts for the day?
- Who is in-charge of checking participant list details, ensure attendance of all?
- Who is in-charge of preparing evaluations, certificates and USB sticks?

Post-training

- Who will type up the training evaluations?
- Who will clean up the training materials and space?
- Who is responsible for replacing materials if needed?
- Who is responsible for the reporting, consolidating participants' feedback, photos, and video documentation?
- Who is responsible to maintain communication and follow up with the participants?

4. Training Preparations

There are several things that you will need to do to get ready for the training.

4.1 Training Space

As there are various interactive activities inbuilt in the session, an open space for the group division and work is required for the activities in the training, a venue with the facility should be selected.

Visit the training site at least a couple of days before the event for finalizing the venue itself; specify and ensure all the requirements like rest room for women and men with adequate sanitary facilities like soap, sanitizer, tissues, dustbins, internet connection with appropriate bandwidth, seating arrangements, etc. Visit the training site before the participants are due to arrive and set up your electrical equipment and materials. Try to identify potential sources of distraction in the room, both to yourself and participants, and make changes to mitigate them.

Seating arrangements have a big influence on the training. It is recommended to arrange the tables and chairs so that participants can make eye contact with one another and can break into small groups easily. Participants will also need to be able to view the facilitators/ trainers, the PowerPoint slides, and flipchart posters.

4.1 Equipment and Materials

You will need to gather and bring the following materials and equipment to the training.

Equipment

- Computer/ Laptop
- Projector
- Extension cord(s) (optional)
- Camera
- Speaker

Materials

- Name tags
- Markers
- Pen
- Paper- A4 size paper, meta-cards
- Newsprint paper or large pieces of paper
- Masking tape

Some equipment and materials are optional depending on how you use the lesson plans. Check the lesson plans and determine what equipment and materials you will need. Be aware that certain things may need to be purchased and gathered well in advance of the training, possibly prior to your arrival.
For all other materials required for individual sessions refer to the lesson plans.

4.3 Presentations Slides

This training includes presentation slides that can be used as a learning aid. Most presentation slides have suggested wording or scripts to use as you deliver the information (the slide notes in each presentation – also known as speaker's notes). As part of your preparation, you should look at each slide to make sure you understand how the whole presentation flows. The slide notes also give additional guidance on how to use a slide.

The timing allowances are based on the trainer following the speaker's notes at a moderate pace. Adding extra wording will take more time so be aware of impacts on other parts of the presentation or training.

5. Facilitating High Quality and Effective Trainings

The significance of the trainer/facilitator cannot be overstated. Training success is usually a function of how well it is facilitated. This entire trainer's manual provides guidance on what to deliver and makes suggestions as to how this might best be done. However, participants attending the training will differ, and their interaction will also shape the training and ultimately the learning experience.
There are several qualities a trainer/facilitator should try to develop to achieve the most from a group of participants, many of whom will not know each other. The following is general advice which applies to this and other training you may facilitate.
Introduction: Introduce yourself to instil confidence that you are qualified to provide the training.

Serve the participant: Facilitating a training may be an achievement, but it is important to remain grounded and keep your focus on the participants. Your trainer/facilitator's role is to facilitate learning, not to only impart knowledge, get through the material or to tell participants what to do.

Respect and be respected: Attending a training will be costly for participants, or their organization, in both time and money. Respect their desire to learn and don't fabricate expertise. No question should be dismissed as irrelevant or stupid. If you don't know the answer, say so and seek out someone who can help respond or direct the participant to where they can find the answer.

Take charge when necessary, e.g., managing disruption: There may be times when you need to take charge. For example, when a participant is being disruptive – during a break, you could have a quiet word with the person in question to request an adjustment to their behaviour. Break-time could be moved earlier if the problem needs urgent attention.

Encourage questions: Any form of discussion, especially those developed through questions, should be actively encouraged. Participants are more likely to ask questions if they feel physically and socially comfortable, relaxed with their fellow participants and the facilitator. Therefore, you should work to build a rapport with participants as soon as possible. In addition to clarification and further detail, asking questions will help you to gauge the level of understanding, which in turn should influence what and how material will be delivered.

Be responsive: Participants' opinions and questions should not be seen as an unwelcome interruption, but as an opportunity to explore perceptions and to offer any clarification as needed. Consider opening the question up to the training for an answer. But keep an eye on the clock and encourage people to be brief.

Be responsive: Participants' opinions and questions should not be seen as an unwelcome interruption, but as an opportunity to explore perceptions and to offer any clarification as needed. Consider opening the question up to the training for an answer. But keep an eye on the clock and encourage people to be brief.

Responding to wrong answers: During the training questions are asked to the participants. If they answer incorrectly, it is important first to check whether you have understood the answer by rephrasing and asking if that is what was meant. At this point, their answer can be rephrased to be more accurate but without deviating too much from the participant's answer. If their answer is still incorrect, then it is important not to simply dismiss the answer but to identify the thinking behind it and then work towards a correct answer. It is essential that the participant's view is always respected.

Honouring the answer: You can use a flipchart to record discussions or feedback from exercises. When you do this, it is important not to paraphrase their comment but instead write it down as stated. This ensures that their meaning is not lost and acts as a method of affirmation for the participant – that their opinion is worthy.

Deviate, but not too much: The learning material supplied in this Trainer's Guide is only a starting point. Sharing first-hand experience and nationally relevant, practical examples to emphasize a point can solidify the subject material for some learners. Interjecting the theory sessions with 'real-life stories' should be encouraged. However, care should be taken to not deviate too much, or go over the time allocated time or confuse the participants.

Alternate delivery approaches: This Trainer's Guide has made suggestions as to how to deliver the material. If a trainer prefers to 'lecture' this is unlikely to result in achieving the learning objectives and is not an effective way to run the training. Each participant has a different way of learning; some prefer images, some individual thinking, some prefer to listen, others like reading, some doing group work etc. The training needs to include a range of styles so that each participant has an opportunity to learn in their preferred style.

Work with passion: If the trainer/facilitator is enthusiastic about the material it is likely to engage the participants more.

Be confident with the material: Confidence will come as understanding of and familiarisation with the material is developed. Prior preparation is essential.

Stick to time: The timetables suggested are guidelines, but it is important that breaks, lunch and the end-of-day deadlines do not overrun unnecessarily. Appropriate arrangements for meals and refreshments are essential. Participants' learning is enhanced through regular breaks and in order to prevent participants from becoming overtired or demoralised it is important to start and end the day on time.

Help participants appreciate time management: Any overrun in time often comes from lengthy presentations by rapporteurs following group discussions. Make it clear at the start that presentations are time-bound, and people must learn how to present in allotted time. Trainer/facilitators should be very firm but friendly, and simply end presentations when the allotted time is up. Using a timer or buzzer will help.

H**andling digital and electronic tools and equipment**: Using the tools and equipment independently is one of the basic skills of the trainer. As a trainer, one should be aware on the digital and electronic tools and equipment that he/she uses during the training. Preparing before the training, knowing the equipment well - how it functions are few ideas to get started with handling the digital and electronic tools and equipment.

6. How to Use This Manual

This section explains the training agenda and individual sessions that have been developed to meet the participant learning expectations.

6.1 Lesson Plan

For each session of training, a lesson plan has been developed with the detailed guide for the trainer. Here is a list of the icons used in this Trainer Manual and their explanations.

	**Learning Outcomes.** Describes what the participants will be able to do by the end of the session to demonstrate increased knowledge, improved skills or changes in attitude.
	**Time.** The clock symbol appears next to the amount of time the session may take. This is an estimated time, and the session may be longer or shorter depending on how you facilitate it.
	**Materials.** Lists all the materials that will be required for the session.
	**Preparation.** The clipboard represents preparation that needs to be done prior to the session including materials required and things to prepare in advance.
	**Introduction.** The hook signals the introduction to a topic. The introduction connects participants' personal experience to the topic of the lessons and motivates their interest.
	**Main Activity.** The puzzle appears at the beginning of a main learning activity.
	**Trainer Notes (TN).** The exclamation point appears to remind you of things to do or consider while facilitating the session.
	**Handouts.** This appears when there are handouts for the participants.
	**Assignment.** This appears when the participants are to go for a discussion on the task assigned to participants

6.2 Icons used in Power point

The following icons and images are used throughout the Power Points:

Group Activity

Documentary show

Case study

Time

6.3 Learning Outcomes

The following learning outcomes describe what the participants will be able to do by the end of the training to demonstrate increase knowledge, improved skills, or changes in attitude. Each lesson plan refers to the specific learning expectations covered in that lesson.

Lesson Plan	**Topics**	Learning Outcomes
1	Training Opening	1. Get to know the participants, the host and the trainer. 2. Discuss the participants' learning expectations from the training.
2	Sanitation Status	1. Discuss about the sanitation status of Nepal 2. Explain the importance of containment
3	Containment and its types	1.Define proper containment and how it contributes in achieving safely managed sanitation 2.Explain the pros and cons of each type of containment focusing on the challenges of each containment
4	Containment Improvement	1. Evaluate different types of containment 2. Discuss and explore strategies for the containment improvement
5	Training Closing	1. Evaluate whether learning expectations were met 2. Analyze the orientation and provide feedback

6. 4 Training Agenda

The general outline of the training is as follows:

- **Training opening**. To welcome people and allow participants and trainers to get to know one another.
- **Individual lessons**. To focus on a selected topic. Each lesson includes an introduction, a main lesson, and a closing activity to review the content.
- **Breaks and lunch**. To keep people working and feeling positive, breaks are needed. Plan for a mid-morning and mid-afternoon break that allows people to use the washroom and have a snack. While planning your training it is also important to clarify with participants in advance as to whether food and snacks will be provided.
- **Review of previous day**. Start the day with a review of the material learned during the previous day. This also helps focus the participants and trainers' minds on the content of the training.
- **End of training closing.** The end of the training can be official or unofficial depending on what is appropriate. Certificates are typically handed out. The lesson plan "Training Closing" describes this session.
- **End of training evaluation.** To allow participants to assess the strengths and weaknesses of the training for further improvement. See the end of training evaluation for a template of this evaluation.
- **Organizer and trainers debrief.** A daily exercise to discuss what went well, what areas of the day can be improved and what needs to be done for the next day and in the future. A major debrief is held at the end of the training.

Environment and Public Health Organization

Training on Containment Improvement

Training Schedule (For non-technical participants)

Venue: …… Date: ……

TIme	Session
9:00 – 09:30	Training registration and attendance
09:30 – 10:30	Training opening and Introduction
10:30 – 10:45	BREAK
10:45 – 11:45	Sanitation Context: Nepal
11:45 – 12:30	LUNCH
12:30 – 14:00	Types of Containment
14:00 – 14:15	BREAK
14:15 – 15:45	Containment Improvements
15:45 – 16:15	Activity and Discussion
16:15 – 16:45	Training Evaluation and Closing
16:45 – 17:00	Hi-Tea

Environment and Public Health Organization

Training on Containment Improvement

Training Schedule (For technical participants)

Venue: …… Date: ……

TIme	Day 1	Day 2
09:00 – 09:30	Training registration and attendance	Previous day review
09:30 – 11:00	Training opening and Introduction	Containment Improvement
11:00 – 11:15	BREAK	BREAK
11:15 – 12:45	Sanitation Context: Nepal	Practical design exercise
12:45 – 13:45	LUNCH	LUNCH
13:45 – 15:15	Types of Containment	Discussion /Self-commitment
15:15 – 15:30	BREAK	BREAK
15:30 – 17:00	Types of Containment	Training Evaluation and Closing

Lesson Plan 1
Training Opening

Learning Outcomes

At the end of this session participants will be able to:

1. Introduce participants and trainers in participatory method.
2. Discuss the group's expectations and agenda for the workshop.

Materials

- Markers
- Meta-cards
- Newsprint paper
- Name Tags
- Pens (1 per person)
- Notebooks or paper (1 per person)
- Introduction PowerPoint

Preparation

- Write the agenda for the day on the flip chart paper
- Write the heading "Group Learning Expectations" on flip chart paper
- Write the heading "Group Agreements" on flip chart paper
- Put a notebook, name tag and pen at each seat (1 per person)
- Prepare the online pre-test form

Trainers Note: In some cases, a formal welcoming ceremony will start the training. Consult with your host beforehand to determine the protocol and the amount of time required. You may need to adjust your agenda accordingly.

Introduction

1. Introduce trainers, training hosts and other guests as appropriate and welcome participants.
2. Introduce the training as follows:
   a. This training covers topics related to containment, types and ways to improve it.
   b. This is designed for sanitation service providers especially engaged at municipalities: engineers, department/section chiefs, focal person, etc.
   c. This training is participatory. There are different types of group activities in various sessions.
3. With the information, share the objectives of the training to participants.
4. Inform participants that the objectives are set to meet from the session covered and present the training structure to the participants.
5. Review agenda for the day with participants.
6. Explain the building/workshop layout, bathroom location, emergency exits, first aid, and daily schedule.
7. Lead an introduction/icebreaker activity to help participants meet each other and introduce themselves to the group. See options below for suggested icebreakers.

Option 1 – Introduction with a story

1. Inform participants that they are going for a quick activity.
2. For this, inform participants that they will be divided into 4 to 5 groups and as per the members in their groups, participants are to make up a story by which other participants will be able to recognize the member mentioned in the story and present it.
3. The trainer may also ask to add on that the group members may also add some of the few details of each member in the story.
4. Ask participants if they are clear on instruction and divide participants into 4/ 5 groups.
5. After the group division, ask participants to start their story, and inform participants that they will get 5-7 minutes for the activity.

Trainer's note: Trainer may provide a newsprint paper to note down the gist of the story or to present the story with some pictures and illustrations or simply may ask to note the points on their note-copy.

6. After the allocated time, ask groups to stop and ask a group to present their creativity to the large group.
7. Once the group is done with the story, ask participants from other groups to identify the names of the group members. (Ask the presenting group/ members to correct if someone is not identified correctly).
8. Once a group is done, ask another group to repeat the process and introduce themselves.

Option 2 – Bingo Card

1. Inform participants that they are going for an activity for networking and introducing participants with each other.
2. For this, inform participants that each participant will get a card/ page with 5*5 table. Each box of the table will contain interesting human characteristics, personalities, and life facts for the match.
3. Present some points on the box for an example. Ex. owns or has owned a pet, has never smoked before, has actively participated in some sports, etc.
4. Inform participants that participants are to go to other participants and communicate and find a person with the mentioned trait (in a box) and ask to sign on particular box.
5. Similarly, go to next person and communicate and find a trait that matches the one with the box and again ask to sign on it.
6. Ask participants to repeat the process till they get a row (across, up, down or diagonal) has been checked off.
7. Once they have the row, ask participants to call "Bingo" and announce the winner.
8. Briefly, name each of the participant to introduce all participants among the large group. (if needed only)

Learning Expectations

1. Explain participants that they are now going to collect the expectations from the training.
2. For this, inform participants that each of them will get 2 meta-cards and they are to write their learning expectations, one in each meta-card.
3. Provide meta-cards to the participants and provide a minute to note their expectations.
4. Once participants have written their learning expectations, collect the meta-cards and read out representative expectations to the large group.
5. Inform participants that they will be discussing the expectations at the end of the training.
6. Paste the meta-cards in the station under the learning expectation and if any of the expectations are not related then you may paste it under the parking lot.

Group Agreement

1.Explain that ground rules are agreements created by the group that will allow everyone to l Learn together.

2. For this, inform participants that you have drafted an agreement and present the newsprint paper with group agreement and read the points for all participants.

Pre-test

1.Inform participants that they are going for the pre-test. Inform participants that the test is for evaluation of the learning process, so participants do not have to worry about score and be honest with their experience and knowledge.

2.For this, provide the pre-test form or a link to the digital form of pre-test form to participants and inform them that they will get 10 minutes time for the activity.

3. After the activity, review the daily agenda with break and lunch times.

4. Ask the participants if they have any questions at this point.

Reflections on Lesson

Lesson Plan 2
Sanitation: The Context

Learning Outcomes

At the end of this session participants will be able to:

1 Discuss about the sanitation status of Nepal

2. Explain the importance of containment

Materials

- Markers
- Meta-cards
- Newsprint paper

Preparation

- Read and prepare lesson plan
- Write learning outcomes in newsprint paper
- Review the presentation slide and make changes as per requirement

Introduction

1. Ask participants about their goal (individual) in the next 5 years (slide 2).
2. Inform participants to share their goals.
3. Collect responses from 2 to 3 participants.
4. Summarize participant responses as individual have their own goals, Nepal government has also made its goal on sanitation (national and international) and being actively engaged to achieve it.
5. Inform participants, in this session we will discuss more about these goals and present the training structure, learning outcome and presentation outline of the session in slide 3, 4, and 5 respectively.

Sanitation Status

1.All of us must have the common understanding about the terminology Sanitation. Thus, ask participant what is their understanding on Sanitation? Collect responses from the participants and present the definition of Sanitation.

2.With slides 6 and 7, define sanitation and its importance.

3. Explain ODF and national context - ODF declaration. This slide is about the achievement of Nepal as Nepal is declared as Open Defecation Free nation on 30th September 2019 (13 Ashoj 2076). Highlights the words total sanitation, Sustainable Development Goal in the statement made by Honorable Prime Minister (slide 9).

4.Before moving ahead in the sanitation sector, these two terms total sanitation and sustainable development goals are taken as the reference point or targets. Thus, we will be discussing more throughout the orientation.

5. After the common understanding on sanitation, present slide 11 which highlight the basic sanitation coverage, along with the milestones in the sector i.e. the endorsement of ' sanitation and hygiene master plan, 2011' and 'water and sanitation as a constitutional

right in 2015'. The graph also presents the progress in the sector from the year 2015.

6. Present the graph of sanitation status of Nepal in slide 12. Describe the sanitation status of Nepal in reference to MICS 2019. Ask participant, as per the context of Nepal, what is the overview of data in urban and rural context in the sewer or non-sewer system. Collect participants responses and summarize.

Sanitation and its service chain

1. Ask participants if they know the about the sanitation system in Nepal? Collect participants responses. Expected answer: Non-sewer Sanitation System and Sewer Sanitation System.
2. Collect participants responses if they could tell something about non-sewer and sewer sanitation system.
3. Summarize participants responses with slide 15. Inform non-sewer sanitation system is basically "desludge and dispose" while sewer sanitation is "flush and forget". Inform participants, generally in both system waste is simply transferred and is disposed without any treatment i.e. flush and forget. The ground reality of today is, either waste is drained through sewer line or is being accumulated in storage tank, the end-product is disposed into water bodies or in open environment without any treatment, which is creating a chaos in public health.
4. Explain the concept of sanitation service chain. Explain sanitation system as it is a chain of services starting from the origin of waste/waste generation to the end use or disposal. The whole sanitation system comprises of 5 components namely:

User interface – where the waste is generated
Containment – where the waste is contained or stored
Emptying and transportation – how the waste is then transferred from the containment
Treatment – the waste is treated to reduce/eliminate the harm/impact it might create to the environment and human health
Reuse and Safe disposal – how the treated waste is further disposed or is reused

5. Explain the concept in terms of non-sewered sanitation system
6. In addition to it, inform the whole idea of sanitation service chain might be different for the toilets/sanitation facilities connected to a sewer network, where there is lack of containment and the waste is directly transferred to next component of the sanitation service chain, i.e. treatment and then to safe disposal or reuse.
7. Ask participant if the sanitation service chain is really happening or is it in practice. Further ask if the waste from the containment is being transferred to the treatment facility? And Is the waste being safely disposed without any impact to human health and environment? Collect responses from 2 to 3 participants and summarize.
8. In reference to the SFD graphic inform participant 43% of the population managed fecal sludge in the city and 57% population did not manage fecal sludge.
9. In addition to it, present the SFD graphic of Kathmandu valley (slide 19). Inform this SFD shows the condition of Kathmandu, where 88% of the population do not treat and dispose waste. Here, in the graph represents the situation of Kathmandu valley where, only 12% of population treat the fecal sludge while the rest is disposed in water bodies, or openly. Here, the green color representing the safely managed sanitation is seen very minimal while the red block covers almost all parts of the SFD.
   One more fact is that, the 12% population who safely disposed waste is also not true at all, but in actual, only 4% population treat the fecal sludge safely while the 8% is contained in a containment that has not been emptied yet and is believed to be safe.

10. Further explain with the data on how the bacterial contamination in drinking water affecting the public health in Nepal. Inform these findings are the serious public health concern with regard to both endemicity and outbreak of waterborne diseases in the country.
11. Explain the relation of water contamination and improper containments available.
12. Discuss ideas and come up with a solution to improve the condition (improper containment affect the public health).
13. Inform participants that among all the ideas presented, the ideas related to the containment are the parts that can be taken immediately as these interventions are not that costly compared to the FSTP/WWTP construction. Hence, it can be intervened immediately.
14. In addition to this, the act of governance also supports the improvement of the containment. Emphasize the importance of building codes and by-laws. Slides 24 to 33, focus on the various government provisions and regulatory frameworks that mandate the construction of septic tanks across different levels – ranging from individual households to city wide applications. These legal instruments are crucial in ensuring compliance and promoting standardized containment practices.
15. Other means are community awareness. Inform participants if these all are there to support as an enabling environment, then one can go through the different types of containment and means to upgrade it.

Review

1. Divide participants into 4 groups for the review activity.
2. Ask participants to discuss on the sanitation status of Nepal and importance of containment within the group. Provide 5 minutes for the discussion.
3. After the allocated time ask the group to summarize their discussion regarding the sanitation status of Nepal. Ask other groups to add additional information if any.
4. Again, ask about the importance of containment, roles of containment in contaminating water sources and the corresponding solutions. Collect response from group (different from previous one). Ask for additional information in any from another group.
5. Facilitator summarizes and present the key messages and reference from the session and end the session.

Reflections on Lesson

Lesson Plan 3
Containment and its Types

Learning Outcomes

At the end of this session participants will be able to:

1 Define proper containment system and how it contributes to safely managed sanitation
2. Explain the pros and cons of each type of containment focusing on the challenges of each containment

Materials

- Markers
- Meta-cards
- Newsprint paper
- Flex- Sanitation service chain
- Pictures of different types of containment

Preparation

- Write different types of containment on meta-cards/ print the pictures of different types of containment
- Prepare for power-point presentation, cue the presentation
- Information sheet of different containment (See at end of lesson plan)
- Prepare for video presentation (speakers, sound check)

Introduction

1. Inform participants that they are going for an activity. For this, ask participants to pair up with a nearby participant.
2. In their pair, ask participants to list different types of containment that they are aware of.
3. Provide 2-3 minutes time for the activity. After that, ask a pair to name a type of containment and ask other pairs to add another type of containment, one per pair.
4. Now as the participants name the type of containment, paste a meta-card or a picture with the respective name, on a board.
   Trainer's note: If the training team has any models or samples of different types of containment, present it (showcase it) to the participant as they name it.
5. After all pairs have mentioned the types of containment, if there is any type left then paste it on the board.
6. After all types of containment are named inform participants that they are going for more details on each type of containment in the session.
7. Present the training structure, learning outcomes and presentation outline of the session.

Containment and Types

1. Relating to the information from the earlier session, present the flex of SSC to participants.
2. Inform participants that in the sanitation service chain (slide 5), the next component after toilet is containment, and moving forward to safely managed sanitation, one should

be focusing more on the same to advance in the sanitation sector.

3. Define containment to participants (slide 6) as:
   a. a component of SSC
   b. Technologies that store the products generated at the User Interface
   c. Some of the containment designed for storage as well as treatment
4. Now going back to activity from the introduction part, inform participants that there are different types of containment as they had listed. Present slide 7 as a reference.
5. Regarding the different types of containment inform participants, they will be going for a group work (slide 8).
6. For this, let participants know they will be divided into five groups and each group will be provided with an information sheet related to the assigned topic (type of containment).
7. In their groups, participants have to discuss on the containment type and note the highlights of each type of containment in provided newsprint paper. Inform participants they will get 10 minutes timeframe for the activity.
8. Now divide participants into five groups and hand over a type of containment with its information sheet to each group.
   Trainers' note: Types of containment: Single Pit, Twin Pit, Ecosan Vault, Biogas Digester, Septic Tank, etc.
9. Ask participants to start their work at once.
10. After the allocated time elapsed, instruct the groups to stop their work. Select one group to present their findings to the larger group.
11. After each presentation, invite feedback from other groups and the facilitator. Display the relevant slide for the containment type being discussed and summarize the key information.
12. Continue this process with each group, having them present their findings, gathering feedback, displaying the relevant slide, and summarizing the information until all groups have presented.
    Note: The training slides were tailored to suit different participants. Technical participants received detailed presentations, while non-technical participants were provided with brief summaries focusing on key aspects of containment.

Challenges of Each Type of Containments

1. Inform participants that they are going for another group work.
2. In their earlier groups, ask participants to discuss some of the challenges one might face while having the respective containment type.
3. Provide 5-7 minutes time for the group activity.
4. After this ask a group to present their ideas and ask another group to add on more (if any). Facilitator summarize.
5. Repeat the process for all the groups.
6. Informed participants if they might face the mentioned challenges in each type of containment then one should always come up with an upgradation to overcome or mitigate the challenges.
7. For this they will discuss more in the next session.

Review

1. In their earlier groups, ask participants to discuss the best option for each geographical region (Terai, Hilly and Mountain) along with the rationale.
2. Provide 2 minutes for the discussion and ask a participant from each group to share their discussion.
3. Present slide 59 as a references or resources for additional reading materials and end the slide.

Reflections on Lesson

Information sheet on different types of containments

1. Single pit:

This system is based on the use of a single pit to collect and store the excreta. The system can be used with or without flush water depending on the User Interface. When the pit is full there are several options. If there is space, the pit can be filled with soil and planted with a tree, as per the Fill and Cover, and a new pit built. The faecal sludge that is generated from the Collection and Storage/Treatment Technology has to be removed and transported for further treatment or can be managed burying the waste into another pit

Health Aspects/Acceptance: A simple Single Pit is an improvement to open defecation; however, it still poses health risks:

- Leachate can contaminate groundwater;
- Stagnant water in pits may promote insect breeding;
- Pits are susceptible to failure/overflowing during floods.

Single Pits should be constructed at an appropriate distance from homes to minimize fly and odour nuisances and to ensure convenience and safe travel.

Maintenance: There is no daily maintenance associated with a simple Single Pit. However, when the pit is full it can be a) pumped out and reused or b) the superstructure and squatting plate can be moved to a new pit and the previous pit covered and decommissioned.

2. Twin Pit:

This is a water-based system utilizing the Pour Flush Toilet (pedestal or squat pan) to produce a partially digested, humus-like Product, which can be used as a soil amendment. Greywater can be used in system and does not require separate treatment.
The Twin Pits are lined with a porous material that allows the Effluent to infiltrate into the ground while solids accumulate and degrade at the bottom of the pit. While one pit is filling with Blackwater, the other pit remains out of service. When the first pit is full, it is covered and temporarily taken out of service. It should take a minimum of two (2) years to fill a pit. When the second pit is full, the first pit is re-opened and the contents are removed. The Treated Sludge that is generated in the pit after two (2) years is removed and transported for Use and/ or Dispose manually using a Human Powered emptying and transportation Conveyance Technology. Since it has undergone significant degradation, it is not as pathogenic as raw, undigested sludge. There is no need to transport the treated sludge to a (Semi-) Centralized Treatment facility as treatment of the Blackwater takes place onsite.

Adequacy: The Twin Pits with Pour Flush is a permanent technology that is appropriate for areas where relocating pit latrines is not feasible. It is a water-based technology and requires constant supply of water for flushing (e.g. recycled greywater or rainwater). Greywater can be co-managed along with the blackwater in the twin pits. This technology is not appropriate for areas with a high groundwater table or areas that are frequently flooded. In order for the pits to drain properly, the soil must have a good absorptive capacity; clay, tightly packed or rocky soils are not appropriate. As long as water is available, the Twin Pits with Pour Flush technology is applicable for almost every type of housing density. However, too many wet pits in a small area is not recommended as there may not be sufficient capacity to absorb the liquid into the soil matrix from all of the pits and the ground may become water-logged (oversaturated). The dried sludge is manually emptied from the Twin Pits (it is dug out, not pumped out), so vacuum truck access to the pits is not necessary. The Twin Pits with Pour Flush technology will only work properly if the two pits are used sequentially and not concurrently. Therefore, an adequate cover for the out of service pit is required.

Health Aspects/Acceptance: The water seal provides a high level of comfort and cleanliness, with few odours. It is a commonly accepted sanitation option, however some health concerns exist:
· Latrine leachate can contaminate groundwater;
· Stagnant water in pits may promote insect breeding;
· Pits are susceptible to failure/overflowing during floods.

Maintenance: The pits must be emptied regularly and care must be taken to ensure that they do not flood during rainy seasons. After a recommended two year resting time, the pits should be emptied manually using long handled shovels and proper personal protection. If the pits are self-emptied there are no operational costs except for any replacements to the structure or slab in the event of damage.

3. Dry Eco-San:

This system is designed to separate Urine and Faeces to allow Faeces to dehydrate and/or recover the Urine for beneficial use. This system can be used anywhere, but it is especially appropriate for rocky areas where digging is difficult, where there is a high groundwater table, or in water-scarce regions. The inputs to the system can include Faeces, Urine, Anal Cleansing Water and Dry Cleansing Materials. There are two User Interface Technologies for this system; a Urine Diverting Dry Toilet (UDDT) or a Urinal. Dry cleansing materials will not harm the system, but they should be collected separately from the UDDT and directly transferred for Surface Disposal.

There are also 3-hole separating toilets that allow anal cleansing water to be separated from the urine and the faeces into a third, dedicated hole. It is important that the faeces remain separate and dry. When the toilet is cleaned with water, care should be taken to ensure that the faeces are not mixed with water.
Anal Cleansing Water should never be put into Dehydration Vaults, but it can be diverted and put into a Soak Pit. When storing the Faeces in chambers, they should be kept as dry as possible to encourage dehydration and hygienization. Therefore, the chambers should be watertight and care should be taken to ensure that no water is introduced during cleaning.

Also important is a constant supply of ash, lime, or dry earth to cover the Faeces to minimize odours and provide a barrier between the Faeces and potential vectors (flies). The pH increase will also help to kill organisms. A separate Greywater system is required since it should not be introduced into the Dehydration Vaults and preferably not into the pits. Urine can be disposed of easily and without risk to the environment because it is generated in relatively small volumes and is nearly sterile. The Urine can be diverted directly to the ground for Use and/or Disposal as Land Application (D2), Irrigation (D5) or soil infiltration through a Soak Pit (D6). Storage Tanks (S1) can be used for the Collection Storage/Treatment of Urine. The Dried Faeces that are generated from the Collection and Storage/Treatment Technology can be removed and transported for Use and/or Disposal.

The success of this system depends on the efficient separation of urine and faeces as well as the use of a suitable drying agent; a dry, hot climate can also contribute considerably to the rapid dehydration of the faeces. The system can be used regardless of the users' acceptance to Urine use; it can be adapted to suit the agricultural and cultural needs of the users. All types of solid cleansing materials can be used, although they should be discarded separately. Anal Cleansing Water must be separated from the Faeces although it can be mixed with the Urine before it is transferred to the Soak Pit (not shown in the System Template). If Urine is used in agriculture, Anal Cleansing Water should be kept separate and treated along with Greywater.

Adequacy: Dehydration Vaults can be installed in almost every setting from rural to dense urban because of the small land area required, the minimal odours and the ease of use. They are especially appropriate for water scarce and rocky areas. In areas that are frequently flooded, Dehydration Vaults are appropriate because they are constructed to be watertight. Furthermore, where there is no plot of land available, the vaults S.7 view as can be installed indoors, which also makes this technology applicable for colder climates (where leaving the house is less desirable).

Health Aspects/Acceptance: The UDDT is not intuitive or immediately obvious to some users. At first, users may be hesitant about using it and mistakes (e.g. faeces in the urine bowl) may deter others from accepting this type of toilet as well. Education and demonstration projects are essential in achieving good acceptance with users.

Maintenance: A UDDT is slightly more difficult to keep clean compared to other toilets because of both the lack of water and the need to separate the solid faeces and liquid urine. For cleaning, a damp cloth may be used to wipe down the seat and the inner bowls. Some toilets are easily removable and can be cleaned more thoroughly. No design wil work for everyone and therefore, some users may have difficulty separating both streams perfectly which may result in extra cleaning and maintenance. Faeces can be accidentally deposited in the urine section, causing blockages and cleaning problems. As well, urine pipes/fittings can be blocked over time and may require occasional maintenance. This is a waterless technology and water should not be poured downthe toilet. The urine tends to rust most metals; therefore, metals should be avoided for the construction and piping of the UDDT.

4. Bio-gas Digester

An Anaerobic Biogas Reactor is an anaerobic treatment technology that produces (a) a digested slurry to be used as a soil amendment and (b) biogas which can be used for energy. Biogas is a mix of methane, carbon dioxide and other trace gases that can be easily converted to electricity, light and heat.

An Anaerobic Biogas Reactor is a chamber or vault that facilitates the anaerobic degradation of blackwater, sludge, and/or biodegradable waste. It also facilitates the separation and collection of the biogas that is produced. The tanks can be built above or below ground. Prefabricated tanks or brick-constructed chambers can be built depending on space, resources and the volume of waste generated. The hydraulic retention time (HRT) in the reactor should be a minimum of 15 days in hot climates and 25 days in temperate climates. For highly pathogenic inputs, an HRT of 60 days should be considered. Normally, Anaerobic Biogas Reactors are not heated, but to ensure pathogen destruction (i.e. a sustained temperature over 50°C) the reactor should be heated (although in practice, this is only found in the most industrialized countries). Once waste products enter the digestion chamber, gases are formed through fermentation. The gas forms in the sludge but collects at the top of the reactor, mixing the slurry as it rises. Biogas reactors can be built as fixed dome or floating dome reactors. In the fixed dome reactor, the volume of the reactor is constant. As gas is generated it exerts pressure and displaces the slurry upward into an expansion chamber. When the gas is removed, the slurry will flow back down into the digestion chamber. The pressure generated can be used to transport the biogas through pipes. In a floating dome reactor, the dome will rise and fall with the production and withdrawal of gas. Alternatively, the dome can expand (like a balloon). Most often biogas reactors are directly connected to indoor (private or public) toilets with an additional access point for organic materials. At the household level, reactors can be made out of plastic containers or bricks and can be built behind the house or buried underground. Sizes can vary from 1,000L for a single family up to 100,000L for institutional or public toilet applications. The slurry that is produced is rich in organics and nutrients, but almost odorless and partly disinfected (complete pathogen destruction would require thermophilic conditions). Often, a biogas reactor is used as an alternative to a conventional septic tank, since it offers a similar level of treatment, but with the added benefit of biogas. Depending on the design and the inputs, the reactor should be emptied once every 6 months to 10 years.

Adequacy: This technology is easily adaptable and can be applied at the household level or a small neighborhood. Biogas reactors are best used for concentrated products (i.e. rich in organic material). If they are installed for a single household that is using a significant amount of water, the efficiency of the reactor can be improved significantly by also adding animal manure and biodegradable organic waste. Depending on the soil, location, and size required, the reactor can be built above or below ground (even below roads). For more urban applications, small biogas reactors can be installed on the rooftops or in a courtyard. To minimize distribution losses, the reactors should be installed close to where the gas can be used. Biogas reactors are less appropriate for colder climates as gas production is not economically feasible below 15°C.

Health Aspects/Acceptance: The digested slurry is not completely sanitized and still carries a risk of infection. There are also dangers associated with the flammable gases that, if mismanaged, could be harmful to human health. The Anaerobic Biogas Reactor must be well built and gas tight for safety. If the reactor is properly designed, repairs should be minimal. To start the reactor, active sludge (e.g. from a septic tank) should be used as a seed. The tank is essentially self-mixing, but it should be manually stirred once a week to prevent uneven reactions. Gas equipment should be cleaned carefully and regularly so that corrosion and leaks are prevented. Grit and sand that has settled to the bottom should be removed once every year. Capital costs for gas transmission infrastructure can increase the project cost. Depending on the quality of the output, the gas transmission capital costs can be offset by long-term energy savings.

5. Septic Tank:

A Septic Tank is a watertight chamber made of concrete, fibre glass, PVC or plastic, for the storage and treatment of wastewater and greywater. Settling and anaerobic processes reduce solids and organics, but the treatment is only moderate.
A Septic Tank should typically have at least two chambers. The first chamber should be at least 50% of the total length and when there are only two chambers, it should be 2/3of the total length. Most of the solids settle out in the first chamber. The baffle, or the separation between the chambers, is to prevent scum and solids from escaping with the effluent. A T-shaped outlet pipe will further reduce the scum and solids that are discharged.

Liquid flows into the tank and heavy particles sink to the bottom, while scum (oil and fat) floats to the top. With time, the solids that settle to the bottom are degraded anaerobically. However, the rate of accumulation is faster than the rate of decomposition, and the accumulated sludge must be removed at some point. Generally, Septic Tanks should be emptied every 2 to 5 years, although they should be checked yearly to ensure proper functioning.

The design of a Septic Tank depends on the number of users, the amount of water used per capita, the average annual temperature, the pumping frequency and the characteristics of the wastewater. The retention time should be designed for 48 hours to achieve moderate treatment.

A variation of the Septic Tank is called an aquaprivy, which is a simple storage and settling tank located directly below the toilet, so that the excreta fall into the tank. To prevent odours from surfacing, a waterseal must be maintained but it may not completely prevent smells and the tank must be frequently desludged. The effluent must be dispersed by using a Soak Pit or Leach Field or by transporting the effluent to another treatment technology via a Simplified Sewer or Solids-Free.

Adequacy: A Septic Tank is appropriate where there is a way of dispersing or transporting the effluent. Because the Septic Tank must be desludged regularly, a vacuum truck should be able to access the location. Often Septic Tanks are installed in the home, under the kitchen or bathroom which makes emptying difficult. If Septic Tanks are used in densely populated areas, onsite infiltration should not be used otherwise the ground will become oversaturated and excreta may rise up to the surface posing a serious health risk. Instead, the Septic Tank should be connected to a sewer and the effluent should be transported to a subsequent treatment or disposal site. Larger, multi-chamber Septic Tanks can be designed for groups of houses and/or public buildings (i.e. schools). Generally, the removal of 50% of solids, 30 to 40% of biochemical oxygen demand (BOD) and a 1-log removal of E.coli can be expected in a well designed Septic Tank although efficiencies vary greatly depending on operation and maintenance and climactic conditions. Septic Tanks can be installed in every type of climate although the efficiency will be affected in colder climates. Even though the Septic Tank is watertight, it should not be constructed in areas with high groundwater tables or where there is frequent flooding.

Aquaprivies can be built indoors and above ground and are appropriate for rocky or flood-prone areas where pits or other technologies would not be appropriate. However, because they require frequent emptying and constant maintenance, they are only recommended for very specific applications.

Health Aspects/Acceptance: Although the removal of pathogens is not high, the entire tank is below the surface so users do not come in contact with any of the wastewater. Users should be careful when opening the tank because noxious and flammable gases may be released. Septic Tanks should have a vent. A vacuum truck should be used to empty the sludge from the Septic Tank. Users should not attempt to empty the pit themselves except with a technology like the Gulper.

Maintenance: Septic Tanks should be checked to ensure that they are watertight and the levels of the scum and sludge should be monitored to ensure that the tank is functioning well. Because of the delicate ecology, care should be taken not to discharge harsh chemicals into the Septic Tank. The sludge should be removed annually using a vacuum truck to ensure proper functioning of the Septic Tank.

Lesson Plan 4
Containment Improvement

Learning Outcomes

At the end of this session participants will be able to:

1 Evaluate different types of containment
2. Discuss and explore the strategies for the improvement of containment

Materials

- Markers
- Newsprint paper

Preparation

- Prepare for power-point presentation, cue the presentation
- Print the case scenario for the group work

Introduction

1. Present slide 2 on Containment Improvement. Ask participant if they felt the need of containment improvement or if anyone had asked them for the containment improvement. Ask participants to share their experiences.
2. Collect responses from 4 to 5 participants. Summarize the response from participants.
3. Present the training structure, learning outcome, and presentation outline of the session using slide 3, 4 and 5 respectively.

Containment Improvement

1. Ask participants how many of them were directly involved in the ODF campaign.
2. Ask 1-2 participants to explain their experience regarding the ODF campaign and their effort.
3. After all those efforts, ask participants if they are aware of the situation of toilet and toilet use in the area they had worked. Possible answer: Yes/ No
4. Ask participants if they can name some of the issues related to the use of toilet and/ or condition of toilets and containments if made.
5. Summarize the participants' voices by presenting the slide 6. It includes the information such as Toilets constructed in ODF with on-site sanitation systems are filled up. Thus, it is necessary to think about the safe management of fecal sludge contained in those containment. This challenges us to meet SDG 6 on safely managed sanitation by 2030.
6. Further, ask participants if the condition could be improved by any means and how?
7. Collect response from 2 to 3 participants and summarize their response as construction of FSTP and improvement of on-site sanitation system could be the possible solution in recent time.
8. Additionally, improvement of on-site sanitation systems can be done through selection of appropriate technology, retrofit and replacement.

9. Present slide 7 and inform to participant: as per the different studies conducted on sanitation facilities, only 5% of the existing containments are of proper type. There are various issues in existing containment. (Brief on the case study of Mahalaxmi municipality slide 8 and discuss the legal provisions made by local government in adopting the safe containments.)
10. With slide 9, explain the key issues in existing containment structures and what can be done for their improvement.
11. Define containment improvement and explain the ways of improvement.
12. For the improvement of improper containment, retrofitting is an option. But in case retrofitting cannot be done, replacement is the must for safely managed sanitation systems. Besides, the selection of an appropriate technology is also a form of improvement.
13. Present the slides defining retrofitting and replacement with explanation in which conditions retrofitting and replacement of containments are carried out?
    Retrofitting is done (i) by adding soak-pit to existing holding tank, (ii) by adding another pit (twin pit) to the existing single pit, (iii) by making water seal to existing storage tank.
14. Explain the steps in converting single pit to twin pits for rural context and for urban setting explain the conversion of the holding tank to standard septic tank.

Group work on scenario

1. Present slide 22 and Inform participants that they are going for group work. For this, they will be divided into 4 groups. Each group will be provided with a scenario. Based on the scenario, each group will come up with ideas on containment improvement. Also, inform that they will get 5 to 7 minutes for the activity.
   Trainers' note: Scenario is at the end of lesson plan
2. Divide the participant into 4 groups and provide scenario to each and ask them to start their discussion.
3. After the allocated time, ask each group to present their ideas. After the presentation ask the other group for feedback.
4. Continue the same process for the other 3 groups.
5. Summarize the activity as per need.

Review

1. Relating to their group discussion, ask each group to identify any additional or unsolved question arising from their discussion to share with the larger group.
2. Provide 2 minutes time for the discussion on the question. Then, invite one group to pose their question to everyone.
3. Encourage other groups to respond to the question and engage in discussion as needed. Add further insights or clarification from the trainer if necessary.
4. Repeat the process and discussion for the questions from each group.
5. Present the key message from the session and end the session.

Reflections on Lesson

Case scenario 1

The household has a holding tank. For now, they do not plan for replacement as it may cost them huge amount. What could be possible ideas to improve such containment.

Case scenario 2

A family in a peri-urban area with 7 members built a bio-gas toilet during the ODF campaign as they had few cattle as well. However, with time, the children of the family went abroad for the pursuit of higher studies while the adult members moved to town for better facilities. Now, there are just 2 members back home and are unable to rare any cattle. The once highlight of the house, the bio-gas toilet, has now become a problem to maintain.

Case scenario 3

A small family of 3 members had constructed a simple pit latrine during the ODF. Now as the family members are growing, they are inclined towards cattle raring and farming as well. While thinking back, they wants to upgrade their toilet and its containment for the utmost benefit as per the current situation. What would you suggest for the improvement and why?

Case scenario 4

With the improvement in their economic status, a family is planning to upgrade their toilet as well. Previously, they had constructed a twin pit, but with the space limitation and unwillingness to emptying and transportation of FS in every 6 months to 1 year, the family is planning for the replacement of the containment. What would you suggest the family and why?

Case scenario 5

A small family is now growing bigger with the introduction of new family members. Earlier, as with a few family members, the household had opted for a simple pit latrine which was serving good for the family. However, with the time and additional family members, the pit of the toilet is seemly filling up quick and has become a problem. The family members are now looking for a solution or upgradation to their issue.

Case Scenario 6

A family had constructed a twin pit during the ODF campaign knowing the benefit of it. However, they forgot to consider their area which was flood prone. Now they are regretting their decision and are looking for the suggestions to improve the containment. What would you suggest and why?

Case Scenario 7

A family went for their building permit to their local government. The official engaged in the organization informed that they should construct a proper septic tank for the completion certificate of their house. Now, the household informs the mason to properly construct a septic tank as the HH did not want to face an issue in the future. The mason with limited knowledge on septic tank constructed a water-sealed tank. Initially, after using the toilet, it took 2 years to fill the tank. However, recently, they have desludging the tank in every 6 months.

Case scenario 8

The once open area of municipality X is now crowded with the population migrating to the area. Few families who had twin pits are now facing challenges as the seepage seems to slow down and the pit is being filled sooner than expected. Also, once a pit is filled, they face another challenge of disposing of the product from the pit. Earlier, the land was used for agriculture, and it was not a problem at all, however with the dense population, there is no area left to dispose it.

.

Case scenario 9

The community located in the Terai region faces recurrent monsoon floods every year. Most of the households in that community rely on traditional single pit latrine i.e. poorly constructed with unlined structures. During heavy rainfall, these pits overflow and collapse, contaminating the environment including drinking water sources. What can be the interventions to improve the containments in this community?

Case scenario 10

In the high-altitude village where the temperature often falls below freezing points for several months, most of the households use pit latrines. The excreta inside the pit often freezes, preventing biological decomposition and result in bad odor, overflow and ultimately environment and public health risk. There are also structural challenges as frozen ground makes construction and pit lining difficult. What can be the appropriate containment systems in these areas?

Lesson Plan 5
Training Closing

Learning Outcomes

At the end of this session participants will be able to:

1 Evaluate whether learning expectations were met.

2. Analyze the orientation and provide feedback on the orientation

Materials

- Expectations from the first session
- Orientation closing presentation (if required)
- Post-test forms
- Camera for group photo

Preparation

- Prepare the learning expectations from the opening session
- Print the post-test form/ Prepare an online form for post-test
- Find the senior most from the participants for the closing (either designation or age)

Trainer's Note: In some cases, a formal closing ceremony will close the orientation. Consult with your host beforehand to determine the protocol and the amount of time required. You may need to adjust your agenda accordingly

Review of Orientation

1. Ask participants to form a pair with a nearby participant.
2. After forming pairs, provide pictures/ cards of different types of containment.
3. Ask participants to discuss about the certain type of containment that they got in pair.
4. Provide 2 to 3 minutes time for the activity, and after the time ask 2 to 3 pairs to share their discussion to the large group.

Revisiting Expectations

1. Inform participants that they are going for the closing of the orientation.
2. Inform participants that before wrapping up the session, they are going to check how much the orientation has covered their expectations from participants.
3. Either bring the sheet with all the expectations from participants to the front of the hall or move to the station with all the expectations.
4. Revise all expectations collected in the opening of the orientation

Post Test and Evaluation

1. Inform participants that they are going for the evaluation of the training. For this, participants are to fill up 2 forms: post-test form and orientation evaluation form.
2. Inform participants that the evaluation is meant for the evaluation of the learning of each participant along with the evaluation of the training as well.

3. For the evaluation, participants will get a form (either printed or digital) and participants are to fill it up.
4. For the activity, participants will get 7 to 10 minutes.
5. Provide the form to participants and ask them to fill the form.
6. Once participants are done with post-test form, provide orientation evaluation form to complete.

Closing and Group Photo

1. Invite two participants – a representative from the male participants and another from the female participants to share their closing remarks and thoughts on the training experience.
2. Following the remarks, declare this is the conclusion of the training and thank you all for their active participations and contributions throughout the sessions.
3. After closing, ask the participants to join for a group photo.

Reflections on Lesson

Technical Support By:

Environment & Public Health Organization (ENPHO)
New Baneshwor- Kathmandu(East), Nepal
Tel: (977) 1-5244641 ; 5244051
enpho@enpho.org
www.enpho.org

Government of Nepal

Ministry of Water Supply

National Water Supply and Sanitation Research, Innovation and Capacity Development Center

Nagarkot, Bhaktapur
Phone No: +977-1-6680171, +977-1-6680172
E-mail: wash.nwssricdc@gmail.com