

## Lesson Plan 3: Introduction to Operation and Maintenance



### Lesson Description



In this lesson, participants are introduced to concepts of operation and maintenance and their importance in managing water supply schemes.

### Learning Outcomes



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

1. Describe what is meant by “operation”
2. Describe what is meant by “maintenance”
3. Explain the importance of operation and maintenance in water supply schemes

### Materials



- Flip chart paper or white board
- Markers or chalk
- Blank cards or a piece of paper cut into 4 sections

### Preparation



- Read and prepare the lesson plan
- Write learning outcomes on a piece of flip chart paper
- Prepare definitions for operation and maintenance (See lesson plan)
- Prepare cards or pieces of paper with four reasons why O&M is important (See lesson plan)

### Introduction

**5 minutes**



1. Ask the participants: “How did you come to this training today?” Highlight the different responses, ranging from walking to bicycles, to scooters to cars. If people walked, use a different example such as a tractor or a cell phone etc.
2. Ask one of the people who used a vehicle (bike, motorcycle, car) to explain the different actions they needed to do with their vehicle to turn it on and get to the training venue.
  - a. Turn on vehicle, put on helmet, check gas, check or adjust mirrors, drive to location, buy gas, use brakes and acceleration, park, turn off, etc.
3. Thank the participant, and ask another participant all the things he/she does to keep their vehicle clean and working well over time.

- a. Keep filled with gas, use it carefully, avoid accidents, clean windows and mirrors, wash vehicle, adjust mirrors, replace broken or worn down parts, inspections and regular checks, etc.
4. Explain to participants that just as with vehicles - these two groups of activities are things that must be done in the correct management of water supply schemes.
5. Present the learning outcomes or lesson description.

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**Group definition of terms**
**15 minutes**

1. Ask the participants: “In the introduction, which of the two people was doing activities that were operational activities?” – *The first person*.
2. Tell the group that you want to brainstorm an idea of what it means when you talk about “operation” of water supply schemes.
3. Write the word “Operation” on a piece of flip chart paper or on the board.
4. Ask the participants to tell you key words or related ideas they can think of, and write any ideas they provide on the flip chart. *Possible responses include: using or doing something, daily functioning, service delivery, starting and stopping, users, procedures, handling, action, process, pumping water, turning on valves, etc.*
5. Based on their ideas, you may be able to pull different ideas together into an overall idea of what “operation” means. You may or may not complete a full definition now.
6. Ask the participants: “In the introduction, which of the two people was describing activities that were maintenance?” – *The second person*.
7. Tell the group that just as you did with “operation,” you want to brainstorm an idea of what it means when you talk about “maintenance” of water supply schemes.
8. Write the word “Maintenance” on a piece of flip chart paper or on the board.
9. Ask the participants to tell you key words or related ideas they can think of and write any ideas they provide on the flip chart. *Possible responses include: repairs, fixing, prevention, taking care, protecting, break-downs, wear-and-tear, etc.*
10. Based on their ideas, you may be able to pull different ideas together into an overall idea of what “maintenance” means. You may or may not complete a full definition now.
11. Tell the group you are going to present definitions of the two terms, to compare with their brainstorming.
12. Present the following definitions one at a time and discuss with the full group.
  - a. Operation: The actual running of a technology or service. In water supply schemes, it may include providing fuel, starting and handling pumps, control of water collection points, and mechanical or water treatment procedures.
  - b. Maintenance: The activities that keep the technology or service in working condition, including management, cost recovery, repairs, and preventative maintenance to avoid breakdowns.
13. Ask the participants: “Why do we talk about these two activities together?” – *They must be integrated. Operation will not continue if there are problems with*

*maintenance, and maintenance is not useful if the system stops working and users find alternative water sources.*

14. Clarify any questions or uncertainties with the group before moving on.

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### Importance of O&M

**25 minutes**



1. Tell the group you want to have a focused discussion on the different benefits of successful operation and maintenance of water supply schemes.
2. Explain that you are going to divide the participants into several groups. Each group will be given a different reason why operation and maintenance is important, and will discuss among themselves why it is. After they discuss within their groups, they will share their ideas and reactions with the large group.



3. Divide participants into 4 groups and give each group one of the following statements:
  - a. Operation and maintenance keep the system functioning properly
  - b. Operation and maintenance are important to sustainability over time
  - c. Operation and maintenance improve quality of life and health standards
  - d. Operation and maintenance help manage the expenses and investments.
4. As the groups discuss, circulate among them and clarify any confusions they may have. They should discuss why the statement is true and how O&M contributes to the underlined section.
5. After 5-10 minutes, ask each group to explain the reason they had for O&M, and share a few of their ideas on why this is true. If a group experiences significant difficulty, add to their ideas to ensure each of the 4 is discussed appropriately.
6. Clarify any mistakes made by the groups, and then any remaining questions.
7. Tell the groups that together, you want to try to create a full answer responding to the question: "Why is O&M of water supply schemes important?"
8. Write the question on flip chart paper or the board.
9. Together as a group, create a complete answer and write it under the question.  
*Possible response: Operation and maintenance of water supply schemes is important to ensure good management and provide safe water sustainably to communities over time.*
10. Explain to participants that often, the importance of O&M in water supply schemes has been overlooked. One of the main reasons services have failed in the past is not due to technical challenges, but due to poor operation and maintenance, planning, cost recovery, and management.
11. Tell the participants that throughout this workshop they will practice planning and practical skills related to operation and maintenance of water supply schemes, and by the end they should be prepared to respond to a variety of O&M situations.

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### Review

**5 minutes**



1. Ask the participants to form pairs and discuss:

- Something new they learned about operation and maintenance.
- Which of the 4 reasons why O&M is important do they think is the most important

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**Reflections on Lesson**