## Lesson Plan 2: Introduction to Water Supply Schemes

**2 hours**

**Lesson Description**

The focus of the lesson is to introduce water supply schemes, types of water supply schemes, and the parts of the scheme. Participants will also explore the role of user committees to operate and maintain water supply schemes sustainably.

**Learning Outcomes**

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

1. Describe water supply schemes and types
2. List the parts of water supply schemes
3. Explain the role of user committees

**Materials**

* Flip chart paper
* Markers
* Meta cards
* Tape
* Water Supply Scheme handout

**Preparation**



* Read and prepare the lesson plan
* Write learning outcomes on flip chart paper
* Write the parts of water supply schemes on meta cards.
* Prepare a flip chart paper with responsibilities of the water user committees (See notes at end of lesson plan)
* Prepare meta-cards with the following topics: “What is a water supply scheme” “Parts of water supply schemes”, “Forming a user committee,” and “Responsibilities of user committees.”
* Print 1 “Water Supply Scheme” handout for each participant

**Introduction 5 minutes**



1. Show the participants a glass of water, or serve glasses of water to the participants.
2. Ask the participants:
	1. “How do you know it is safe to drink?”
	2. “Where do you think this water came from?”
3. Inform participants that they will be exploring water supply schemes, which can provide safe drinking water for communities.
4. Present the lesson description or learning outcomes.

**Drawing the water supply 20 minutes**



1. Inform participants that they are going to start the workshop with a group activity. For this, participants will be divided into 3 groups.
2. Explain that in their groups, they will draw a diagram of their existing water supply scheme. If the group is new or does not have one, ask them to draw their community and what they think it could look like
3. Inform them that they will have 10 minutes to draw their map.
4. Divide participants into 3 groups, provide a brown sheet of paper and markers to each, and ask them to start their drawings.
5. As the participants are drawing their diagram, circle the room and check with each group to see how much they know already and are able to draw. If participants struggle too much, you can move on more quickly to the next section.
6. Have each group briefly present their diagrams. Explain you will explore the components in more detail in the next activity.

**Water Supply Schemes, Types and Parts of Water Supply Schemes 45 minutes**



1. Ask participants: “What do we mean when we talk about a water supply scheme? Why is it beneficial?”
2. Discuss and summarize their answers and describe water supply schemes along with the key benefits and types. See the trainer’s notes at the end of the lesson plan for key information in more detail.
	1. Water supply is the provision of water by public utilities, commercial organizations, community endeavors, or by individuals, usually via a system of pumps and pipes.
	2. Benefits in sustainable health and hygiene benefits to the rural population through improvements in water supply and sanitation, engage in income generating work by saving time to fetch water, etc.
	3. Types are open systems, and closed systems.
3. After discussion on water supply schemes, ask participants to return to their drawings from the introduction session.
4. Ask the participants to highlight any parts of water supply schemes that they have mentioned on their drawings. As the groups highlight the parts, paste cards with the parts of the water supply scheme, categorizing them into 2 groups: transmission line and distribution line.
5. If not all the parts are mentioned in the picture or during the discussion, ask participants what might be other parts. If they mention any others, add the cards to the diagram. If participants miss some parts, add them yourself.
6. Tell the participants you are going to show them a complete picture of a water supply scheme.
7. Show the picture of the complete water supply scheme. If you are able to draw it, you may wish to do so. Ask them to compare it to their diagrams and try to identify any missing parts.
8. Once all the parts are posted, ask participants: “Why are there 2 categories and what does each signify?”
9. Collect participant’s answer and summarize them as follows:
	1. A transmission line collects water from the source
	2. Distribution lines carry water to the users in the community
10. After discussing the parts of water supply schemes, collect the meta cards from the wall or board and inform participants the next activity will be to explore each of these parts in more detail.
11. Explain that in this discussion, participants will be divided into 4 different groups. In each group, participants will be provided 3 meta cards with different parts of water supply schemes.
12. In their groups, participants are to:
	1. Discuss the function or how to use the part
	2. They should write a line or two about each part on the back of each meta card
13. Participants will be given 10 minutes for the activity and after that time, present their descriptions to the full group.
14. Have the groups present their parts of the water supply scheme. Continue until all groups have presented. Clarify and incorrect information or confusion with the full group.
15. Explain you will give them a handout with detailed information for each part at the end of the session they can use for review.

**Formation of User Committees and their Responsibilities 45 minutes**

1. Explain that for the continuous supply of water to users, these parts and lines should be well maintained.
2. Explain that to conduct necessary operation and maintenance, people need to be responsible for the management.
3. Ask participants: “Do you know who these people are, and how they are selected for this purpose?”
4. Collect answers from participants and explain that a group of people is often selected from within a community. This group is typically responsible for operating and maintaining water supply schemes effectively.
5. Discuss briefly there are four main steps for the formation of this group. You may also want to write these four steps on flip chart paper or the board.
	1. Identify the users
	2. Conduct mass meetings
	3. Form a water user committee
	4. Register and renew the user water committee
6. Explain that this group is formed from within users, representing the whole group of users or the community. Because of this, the group is termed a “Water User Committee” or sometimes a “Water Supply User Committee”.
7. Ask the participants: “Once this group has been formed, what do you think are their main responsibilities?”
8. Discuss briefly with the full group and listen to ideas from several participants.
9. Inform participants that they are going to discuss more about this topic in new groups.
10. Explain that for this, participants will be divided into 4 groups and in their groups, they should discuss the responsibilities of the user group. They will have 10 minutes to do this.
11. Divide participants into 4 groups and allow them 10 minutes to discuss.
12. Once all groups have finished, paste the flip chart paper you have prepared with the responsibilities of water user committees at the front and ask the groups to compare their discussed ideas with the list. Refer to the trainer notes for more information.
13. Ask each group if there were any similarities in their descriptions and in the posted list, and if there were any differences. Have each group share 1-2 ideas.

**Review 10 minutes**



1. Inform participants that they are going to do a review activity.
2. For the activity, participants will be divided into groups of 4 and each group will be given one card. On the card will be a specific topic from the lesson.
3. Explain that in their groups, they should discuss the topic and any key information or things they have learned, and then they will give a quick summary to the other groups.
4. Divide participants into groups of 4 and provide one of the following cards to each group.
	* What is a water supply scheme
	* Parts of water supply schemes
	* Forming a user committee
	* Responsibilities of user committees
5. Provide 3 minutes time for discussion and after the time ask groups to present a few main points of their discussion in the large group.
6. Distribute the **“Water Supply Schemes**” handout to all participants and tell them that it provides them additional information on each component of the water supply scheme, as well as key considerations for operation and maintenance of that part.

|  |  |  |
| --- | --- | --- |
| **Intake / Catchment** | **Collection Chamber** | **Air Valve** |
| **Break Pressure****Tank** | **Interception Chamber** | **Washout Chamber** |
| **River Crossing** | **Storage Tank /****Reservoir Tank** | **Tap** |
| **Pipeline** | **Distribution Tank** | **Sectional Valve** |

**Water Supply Schemes**

**Water Supply**

Water supply is the provision of water by public utilities commercial organizations, community endeavors or by individuals, usually via a system of pumps and pipes.

**Benefits**

Helps with sustainable health and hygiene benefits to the rural population through improvements in water supply and sanitation, engages in income generating work by saving time to fetch water etc.

**Types of Water Supply Schemes**

* 1. Open Systems
		1. The source provides consistent and ongoing water supply so that it does not require storage or reservoir tanks.
	2. Closed Systems
		1. The source does not provide sufficient water to meet regular water demands of the community, and requires reservoir tanks to store water for use.

**Parts of Water Supply Schemes**

1. Intake or catchment

A barrel or structure is constructed to collect water from a spring or a section of a river. This is called the intake or catchment. The construction intake varies according to different sources of water. If an intake is to be made in a river then a barrel is constructed to block the water and the water is collected in a collection chamber through a pipe. A net is kept in the pipe which is in the barrel. This net is called strainer. Instead of a net, a net like structure can be constructed by making a hole in HDP pipe, a perforated pipe. While keeping a net firstly, a layer of big stones is made and above that layer a net is kept. Mainly an intake should be constructed in such a way where the floating water nearby the land is not able to enter, it should be free of animals, and should be isolated or fenced off to prevent contamination.

1. Collection chamber

A collection chamber is constructed to collect water from the intake. There is a valve inside a collection chamber. The size of chamber can be constructed according to the need.

1. Air valve

The main job of this valve is to bring out the air that might be in the water supply pipe. If the movement of air increases then it decreases the movement of water due to which water cannot flow properly. This air valve is always constructed in a high point of the pipeline.

1. Break pressure tank

This is constructed to control the level of water. In short it is also known as BPT. It controls the pipe from breaking due to increasing level of water. It is constructed below a storage tank. It contains a ball valve which controls the level of water.

1. Interception chamber:

It also controls the level of water like BPT. This is also known as IC and is constructed above the storage tank. There is no ball valve in it.

1. Washout chamber:

It is constructed to take out the sediments from the pipe. This is also known as cleaning out chamber. It is constructed in the lowest point of the pipeline so that the sediment can be removed.

1. River crossing:

This is constructed to cross rivulets, streams, flood affected areas or shallow areas. If the river crossing length is short, a G.I. pipe is used however if the length is long, HDP pipe is used with the help of metal string.

1. Storage tank or reservoir tank:

Storage tanks are used to collect water. This is also known as reservoir tank or water tank. As per the need, the size of storage tank can be large or small and also it is constructed in different styles. Typically, medium sized tanks are used most frequently.

1. Ferro-cement tank

This tank is circle in shape. These tanks are more prevalent in present days. It is simple, fast and cheap to construct. It doesn’t require more stones to construct so it can be constructed in the area where there is lack of stones. Also it requires less cement for the construction. An operation tank is constructed to control water. Storage tanks are often constructed by digging a hole in the land so it is safe and water remains cool.

1. Machinery tank:

It is cubicle in shape. It also consists of an operation chamber. It is constructed in those areas where more stones are found.

1. Distribution tank:

This tank is constructed to distribute water equally in two or more than two reservoirs and all the taps. The size of this tank depends upon capacity of reservoir and number of taps.

1. Sectional valve:

This valve is kept when distribution tank requires section so that there is proper distribution of water from both pipelines.

1. Tap:

According to the village a tap is constructed for 10 houses on average. Firstly a tap stand is constructed with cement and stones. A platform is constructed around the tap and drainage for the waste water is also managed.

1. Pipeline:

HDP pipe is used to transport water from spring to tap. To protect HDP pipe from livestock, fire, humans and also to operate it for a longer period of time, the pipeline is dug under around 90 cm down the ground which also keeps the water cool.

**Trainer Notes**

**Formation of User Committees**

1. Identify the users
2. Conduct mass meetings
3. Form the water user committee
4. Register and renew the user water committee

**Responsibilities of User Committees**

1. Regular collection of operation and maintenance funds and manage the salary of any Village Maintenance Workers (VMW)
2. Maintenance of Water Supply and Sanitation Schemes (WSSS) using the Maintenance Fund
3. Record-keeping of expenses during operation and maintenance of the WSSS
4. Work to strengthen and enhance the sustainability of the WSSS
5. Provide suggestions to the user’s group
6. Protection of the source of water / intake
7. Discussion about operation and maintenance of the WSSS, sub-committee meetings and keeping the minutes of decisions
8. Inform users about the current situation and changes to conditions of the scheme
9. Supervision of and support to maintenance workers
10. Declaration of open defecation free areas
11. Coordination with related sectors

**Steps of constructing and implementing a water supply scheme**

1. Need Assessment
2. Pre-feasibility study
3. Contract
4. User committee formation and registration
5. Opening bank account
6. Leadership training
7. Action plan (wellbeing ranking, sub group formation, work division, etc.)
8. Fund collection for capital contribution
9. Procurement plan (group formation, market survey, etc.)
10. Rate finalize and quality inspection
11. Construction phase( first phase in tank to rvt, second dt to tap)
12. Store keeping /recording
13. Mid-term evaluation
14. Project completion and handover (financial clearance, public hearing, etc.)