WATER SAFETY FROM CATCHMENT TO MOUTH

- ✓ Continuity of water supply, adequate quantity
- ✓ Water is free of contamination

Measures to ensure water quality

- Ensure the catchment is free of open defecation, waste and other contaminants.
- Fencing around intake and RVT.
- Drainages around intake and RVT to prevent water logging and contamination.
- Bury all plastic pipes to 90cm depth.
- Maintain cover slabs of structures.
- Clean tanks and chambers both inside and outside.
- Clean tap stands regularly.
- Replace rusted pipes and fittings.
- Prohibit the practice of taking water from community taps to individual households by open pipes.
- Store water in clean, covered jars.
- Consider household water treatment e.g. by filtration, sedimentation, boiling or chlorination.

Water quality parameters

- Bacterial contamination must be measured in all schemes, using e.g. presence/absence test.
- Arsenic must be measured in all Terai schemes.
- Turbidity, pH value, ammonia, iron and water hardness tests are recommended.
- Phosphate and nitrate should be measured if source is located in agricultural lands.

Solutions to environmental and climate-induced hazards

Catchment degradation (e.g. due to deforestation, overgrazing) affects water cycle and makes the area more vulnerable to landslides.

- Restore vegetation by planting.
- Regulate grazing, collection of fodder and firewood.
- Prevent soil erosion.

Source depletion & dry-up can happen due to catchment degradation, climate change, or natural reasons.

- Improve water retention i.e. by vegetation cover.
- Improve water recharge i.e. by ponds, eyelash pits etc.
- Adaptation by collecting and storing surface water, waste runoff and rainwater; water conservation & reuse.

Landslides, gullies and soil erosion

- Control deforestation and grazing.
- Bio-engineering works, check-dams, gabion boxes.

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FCG International

WATER SERIES

Water Safety Plan (WSP++)

RURAL WATER SUPPLY AND SANITATION PROJECT IN WESTERN NEPAL PHASE II

Western and Mid-Western Nepal

Water Safety Plan (WSP++) is for safe supply & safe quality of drinking water!

- ✓ Safe supply refers to scheme functionality & water quantity.
- ✓ Safe quality water is free of bacterial and chemical contamination.

The WSP++ concept

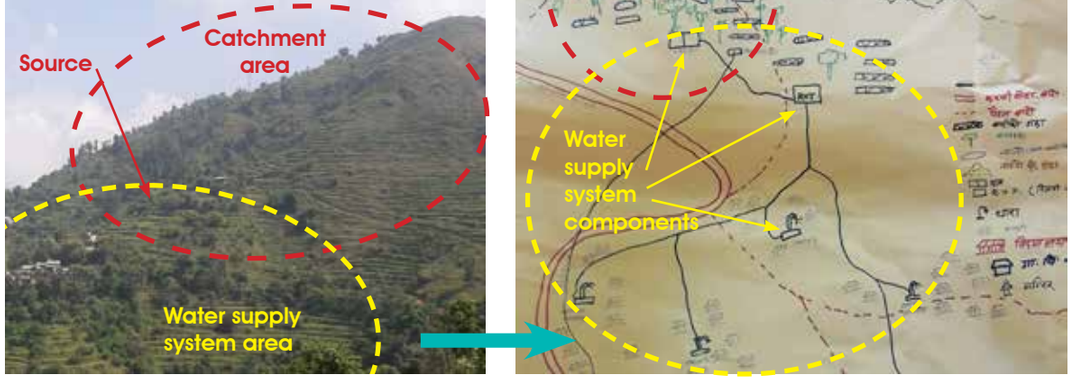
Water supply standards concern both water quantity and water quality, as well as reliability of service now and in the future. Therefore, WSP++ is more than water quality.

WSP++ covers both short- and long-term operation & maintenance issues, as well as water tariff. It also addresses human made, environmental and climate-induced risks and hazards.

Users´ participation and commitment are essential to ensure scheme functionality and water safety. It is a precondition for successful implementation of WSP++.

Water tariff must be calculated, not guessed. Funds are needed for regular operation and maintenance costs, salary of Village Maintenance Worker (VMW), repair works and replacement of components.

Layout-map of a water supply system, its different components and the catchment area and its land uses.



WSP steps

Step 1. WSP team formation

Select members in a mass meeting. The members should consist of users of the scheme only, and include Water User and Sanitation Committee (WUSC) chairperson and VMW.

Step 2. System analysis

List out all scheme structures and components. Understand their purpose and operation process.

Define the water catchment area; this is usually the area above the source. Identify land uses in the catchment and signs of catchment degradation (e.g. bare slopes, deforestation, overgrazing, erosion).

Describe source characteristics in terms of discharge and seasonality.

Draw a map of water supply system and the catchment.

Water quality test kit for field.

pH value, ammonia, iron, nitrate & phosphate testing based on colour indication.

Water supply ceases when water sources run dry.

Exposed pipeline is a risk for scheme functionality.

Management of drainage water - reuse for cultivation.

Step 3. Identifying hazards

Visit the scheme from catchment to taps. Identify risks to water quality and quantity. Pay attention to both human made, environmental and climate-induced hazards that can affect water quality and/or quantity. What kind of land use changes can be observed or expected in the future in the scheme and its water catchment area? Are there new roads or houses planned that can affect quality or quantity of water?

A) Risks to safe water quality

- Identify possible ways of water contamination throughout the scheme.
- Monitor water storage and use at households.
- Test the water quality.
- Observe water turbidity at source.

B) Risks to safe water quantity and scheme functionality (environmental and climate related hazards)

- Discuss about current rainfall pattern, occurrence of extreme weather events, changes in climate and source discharge. What implications these have on water supply (quantity & quality)?
- Are there any hazards such as floods, source depletion and dry-up, expanding gullies and landslides etc. that can disturb water supply?
- Are there signs of catchment degradation? Slopes with degraded vegetation have poor capability to retain water, thus preventing groundwater and spring recharge.

Step 4. Preparation and implementation

Identify measures to prevent water contamination and environmental and climate induced hazards, as well as adaptation measures.

- Short-term plan for regular activities and minor improvements that do not require external support.
- Long-term plan for major upgrading works.

Step 5. Monitoring and verification

- Monitor water quality regularly, record the results!
- Measure and record source discharge monthly in water scarce areas where activities are taken to improve the catchment management.
- Conduct a user survey – satisfied user is happy to pay water tariff that guarantees safe water supply!

Step 6. Review, report and document

- Review the effectiveness of WSP, discuss the results and way forward with users, plan for any improvements to WSP and report to VDC.