Water Safety Plan (WSP+++) Ensures Water Security via Quality, Quantity, and Multiple Use of Water

WSP+++ Concept

WSP+++ combines water quality and quantity as well as reliable services now and in the future. It contributes to sanitation and hygiene and is needed for multiple use of water and livelihood purposes.

WSP+++ covers short- and long-term Operation and Maintenance (O&M) as well as the water tariff. It addresses natural and human-made risks. Funds are needed for regular O&M costs, salary of the Village Maintenance Workers (VMW), repairs, and replacement of components. User participation and commitment are essential to ensure sustainability.

WSP Steps

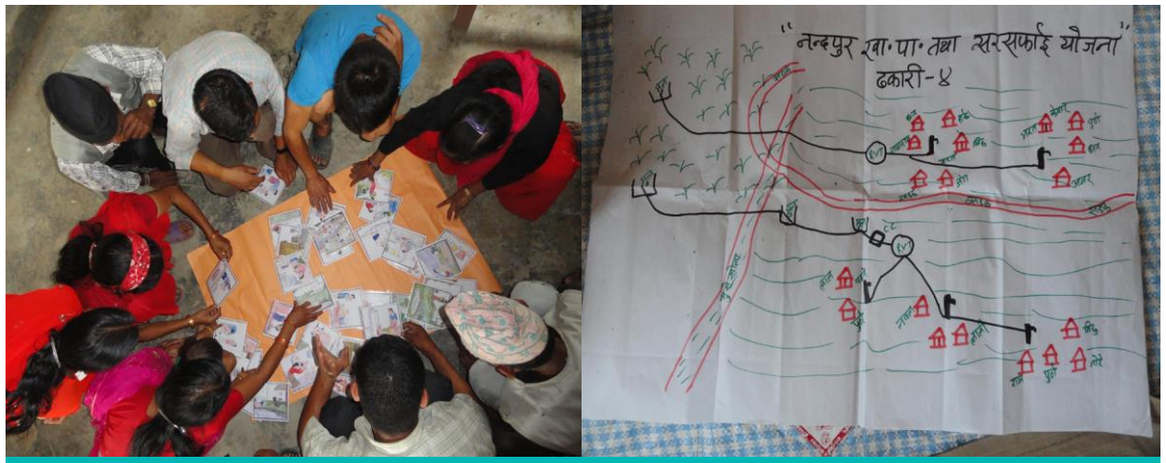
Step 1. Team Formation

The WSP team is formed in a mass meeting and should consist of at least five members of which two are women. The members should consist of users only and include the Water User and Sanitation Committee (WUSC) chairperson and the VMW. Other members could represent agriculture, education, and health sectors, with knowledge of climate change related aspects if possible.

Step 2. Water System and Service Analysis

The WSP team draws a map of the water supply system with its catchment and service area. The map includes descriptions of:

- Water source and its immediate environment: water discharge, seasonal changes, assumed recharge areas and runoff & its impact such as landslides and locations damaged by floods.
- Scheme structures and their purpose. How is water stored and distributed? Is the water treated?
- Land use and any signs of degradation (e.g.landslides, deforestation, road building, overgrazing, erosion, etc.). Is farmland affected by drought?
- Actual present service level. Do all users get water of adequate quality and quantity when needed? Is there enough water for multiple use, such as livestock and home gardens? Is there a special demand of water from professionally engaged farmers?
- Sanitation and hygiene services. Do all users have toilets? Are they used? Is handwashing possible and practised? How is drinking water stored at home?



The WSP team works together to analyse the water supply and service level and draw a map of the whole system with its catchment and service area.

Step 3. Identifying Hazards and Control Measures

The WSP team **visits the whole scheme from source to taps** to verify the findings in Step 2**.** They observe both environmental and human-made risks to the reliability of water services. Finally, they discuss options for control measures and improvements.

Guiding questions for the walk

- How is the water quality at source (bacterial contamination, turbidity, taste, smell)?
- How is the source discharge? Has it changed from past years? Has anyone kept any records on these changes?
- Are the structures in a good condition and working properly?
- Are any of the pipelines exposed? Are there repeated issues, such as leakages or pipe bursts?
- Are there possible ways of contamination through the scheme (source, pipelines, reservoir tanks or their covers, taps, etc.)?
- Is there a risk from extreme weather, such as floods?
- Are any of the structures in danger from events such as flooding, road building, landslides, or erosion? Is there a risk of source depletion from droughts?
- Are there signs of catchment degradation? Slopes with degraded vegetation have poor capability to retain water, thus preventing groundwater and spring recharge.
- How is the water stored in households? Is there enough water for handwashing, gardening, and livestock?
- Do all the households have toilets? Are they being used properly?
- Are there any significant increases in water demand from farming or other activities?
- Is there water for MUS? Which structures could be used?

Step 4. Implementation

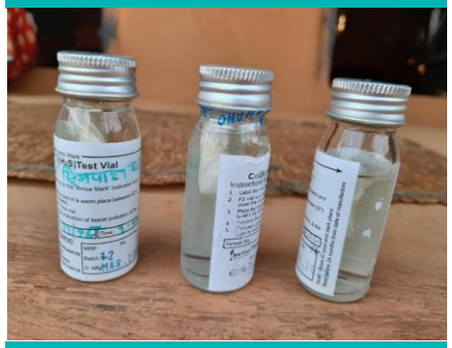
WUSC implements the WSP+++ plan with:

- ✓ Immediate improvements as identified in previous steps
- ✓ Regular activities that do not require external support (part of O&M plan). Includes purchase of repair and back-up materials.
- ✓ Record keeping, including water tariff & public audit. Water tariff must be calculated, not guessed. A satisfied user is happy to pay a tariff that guarantees continued water services.
- ✓ Water quality tests and records. In water scarce areas source discharge should be measured and recorded monthly to identify needs (recharge structures, improved intakes, additional sources).
- ✓ Long-term planning for major upgrading works.

Step 5. Report, Review and Revise

WSP+++ team meets regularly to monitor control measures, review the situation and plan for updates. They review water tariff collection, source measurements and water quality results as well as listen to user feedback. Then they plan for any improvements to WSP+++ and the O&M plan.

WSP team monitors the whole catchment and service area



P/A Vials indicate the presence / absence of bacteria

All structures need regular maintenance

MUS schemes utilise wastewater for e.g., irrigation purposes

Water Safety and Security from Catchment to Mouth

Measures to Ensure Water Quality

- Ensure the catchment area is free of open defecation, waste, and other contaminants.
- Protect the intake and reservoir tanks with fencing, gabion walls and check-dams.
- Bury all pipes to at least 90 cm depth.
- Build drainages around structures (intake, collection chamber, distribution box and reservoir tank) to prevent waterlogging and contamination. Clean regularly.
- Clean and maintain structures regularly. Make sure that chamber covers are intact. Clean tanks and chambers in and out.
- Clean taps. Replace rusted pipes and fittings.
- Prohibit the use of open pipes to take water from community taps.
- Monitor household water quality. Ensure that water is stored in clean, covered jars.
- Consider treatment through filtration, sedimentation, boiling or chlorination.

Solutions to Environmental, Climate-Induced and Human-made Hazards

Catchment degradation (e.g., landslides, gullies, and erosion due to overgrazing, deforestation, etc.)

- Restore vegetation by planting
- Regulate grazing and collection of firewood and fodder
- Prevent soil erosion and road building close to the source
- Build check-dams and gabion walls to protect the source

Source depletion due to catchment degradation, climate change, or natural reasons

- Improve water retention with drought resistant vegetation
- Improve water recharge with ponds, eyelash pits, etc.
- Adaptation by collection, storage and reuse of wastewater, rainwater, and runoff

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WATER SAFETY PLAN (WSP+++)

RURAL VILLAGE WATER RESOURCES MANAGEMENT PROJECT PHASE III

Sudurpaschim and Karnali Provinces, Nepal

GOVERNMENT OF NEPAL

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