

Examination of water quality, environmental sanitation, and capacity building in Swajal villages of Bundelkhand region, UP

[Sponsor: Uttar Pradesh Rural Water Supply and Environmental Sanitation, Government of Uttar Pradesh]

Executive summary

Under the Swajal project, about 3250 drinking water supply schemes – including hand pumps and piped water supply – have been constructed covering 356 villages spread over the entire Bundelkhand region of Uttar Pradesh. TERI (The Energy and Resources Institute) has been entrusted with the task of examining the water quality of water supply schemes along with capacity building of the rural communities on issues related to safe water, health, and hygiene in Swajal villages of Bundelkhand region. The following activities were undertaken to meet the project objectives.

Monitoring and analysis of water quality, including environmental sanitation survey

This included primary data collection, monitoring, and analysis. Physical, chemical, and bacteriological parameters (pH, total dissolved solids, total hardness [as calcium carbonate], chlorides, sulphates, fluorides, nitrates, iron) were measured, and residual chlorine test and H₂S strip-bottle tests were performed on samples from hand pumps and piped water schemes in the field labs established for this purpose. Secondary data was collected from the DPMUs (District Project Management Units) to understand the history of functioning of both the piped water supply schemes as well as hand pump schemes.

Over 5577 hand pumps (covering Swajal and non-Swajal hand pumps) and 28 piped water supply schemes were covered as a part of the water quality monitoring exercise in seven districts, providing detailed district-, block-, and village-level analyses. Critical aspects were outlined after comparing the test result of each parameter against the maximum permissible limits. A GIS (geographical information system) framework was also developed for spatial analysis of primary and secondary collected data.

A detailed sanitary survey identified possible reasons – broken hand-pump platform, poor drainage, unhygienic surroundings, improper functioning of chlorinator, and so on

– for contamination of the water sources. Based on the observations, corrective actions desired for ensuring safe water quality were implemented.

Capacity building

A community-based participatory approach was used to build awareness among the villagers, particularly women and children, towards the linkages between water quality and health impacts, maintenance of hand pumps, personal hygiene, and sanitation practices. On-site training of village mechanic/community members (for example, the Village Water and Sanitation Committee, VWSC) on chlorination, residual chlorine, and the H₂S strip test was conducted. Educational material (posters and brochures) was also designed in local languages in consultation with the PMU (Project Management Unit) and DPMUs, so as to sensitize the communities on matters related to sanitation and water quality.

Management information system

An MIS (management information system) has been developed for improving efficiency in recording and reporting the results of water quality monitoring at both the VWSC–DPMU level and DPMU–PMU level, reflecting the need for an action at specific levels. The MIS will support effective supervision, planning, and decision-making on water quality monitoring activities.