



Rural water quality labs are essential for public health

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Topics: Water & Development | Drinking Water

Laboratories play an important role in effective water quality monitoring. The Eawag department of Sanitation, Water and Solid Waste for Development (Sandec) is collaborating on the REACHLabs project, which is analysing the effectiveness of fit-for-purpose (FFP) laboratories in rural areas of low- and middle-income countries. FFP labs are laboratories designed to meet specific local operational and management needs of rural water supplies.

Regular monitoring of drinking water quality is an essential step to manage and protect water supplies from potential causes of contamination and to develop treatment measures. Despite this need, there is a lack of regular operational water quality monitoring in many parts of the world, particularly in rural areas of low- and middle-income countries.

Sandec's Water Supply and Treatment group (WST), Helvetas Nepal, FundiFix and SafePani partnered with the REACH programme led by Oxford University to analyse how fit-for-purpose (FFP) laboratories can support reliable water quality monitoring and operational management of rural water systems. "FFP labs are important because they ensure a regular monitoring of water quality and help to rapidly identify contamination so that proactive responses can be implemented to improve water safety," explains Marisa Boller, Project Officer in the WST research group of the aquatic research institute Eawag.

Laboratories set up to assess adaptation in local contexts

The REACHLabs project examined FFP laboratories in Nepal in partnership with Helvetas Nepal, in Kenya with FundiFix and in Bangladesh with SafePani. One aim was to assess how the labs are being

adapted to local contexts to support the local water service providers and respond to risks in an informed and timely manner. The local circumstances largely determined such factors as the testing capacities of the labs, their power supplies and management arrangements. For example, in Nepal, water users themselves often engaged in monitoring and management activities, whereas in Kenya and Bangladesh, professional service providers handled these aspects.

“The goal of the REACHLabs project is to identify water quality issues at the local context and develop a setup to conduct water quality monitoring with reasonably priced local resources,” explains Bal Mukunda Kunwar, Research and Development Specialist at Helvetas Nepal. There was wide variability in water infrastructure arrangements across the study countries. In Nepal, households had gravity-fed piped water supplies from spring sources, while in Kenya communities were served by boreholes. In Bangladesh, households accessed deep tube wells with hand pumps and small-piped supplies. “The treatment methods would be adapted to eliminate the contamination threats found in the local context,” says Kunwar.



Laboratory set up in Nepal

(Photo:Sara Marks)

FFP labs alleviate the issues of distance, time and cost that often make it infeasible to send rural water samples to highly centralised laboratories. “Without FFP labs, rural areas would rely on transporting samples to centralised labs or use on-site test kits, which often do not result in regular monitoring of water supplies because of time and cost constraints,” explains Boller. The labs create and develop local resources in terms of expertise, equipment, and supplies. These resources then support consistent, well-informed rural water safety

management activities. “Managing supply chains is a crucial part to ensure the sustainability of FFP labs. Sourcing materials locally and adapting methods to local conditions has made the labs more effective,” says Boller.

Results showed that the FFP labs were effective in supporting the local water system operators in proactive management and decision-making. Water quality data at all locations were enhanced by the labs, which helped to ensure reliable supplies of safe drinking water. Tailoring how the labs conduct operational monitoring to local realities effectively contributed to water safety objectives and goals.

REACHLabs project featured in Sandec News

An article about this project is just one of many articles in the annual magazine of the Department of Water, Sanitation and Solid Waste (Sandec). Sandec News highlights the department’s current research, as well as information on publications in the sector and digital learning initiatives. The [magazine is available online](#).

Cover picture: Laboratory set up in Bangladesh (Photo: Ferozur Rahaman).

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Muturi, J. et al., “Characterising and Strengthening Rural Water Quality Labs”, [Sandec News](#), 25 (2024), 44-45.

Financing / Cooperations

FCDO Oxford University Fundifix Limited Helvetas Nepal SafePani REACH: Water Security for the Poor

Related Links

REACH: Fit-for-purpose labs for monitoring and managing rural water supplies

REACH: Strengthening Monitoring & Management of Small Water Supplies

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