Asset Management for water systems

A financial-technical approach for improving water supply services

The Assessment Management Toolbox has been developed by Practica with partners in Nepal, and deployed by the WASH Alliance International (WAI) in Uganda, Nepal and Bangladesh. The Asset Management approach has also been introduced in Kenya, Ghana and Mozambique by Practica.

What is asset management?

Water systems are made up of various valuable components, such as pipes, pumps, overhead tanks, and treatment facilities. Over their lifetime, these assets deteriorate and require regular maintenance to prevent breakdowns and downtime. The cost of managing these assets increases over time as the system ages and deteriorates.

Water Systems' Asset Management is an approach to support water users' committees, water operators, caretakers, and governmental institutions in optimising their water systems' technical and financial performance and guaranteeing long-term sustainability. It assures the water quantity & quality, systems' reliability and accessibility match the demand of customers, and it supports decisions on infrastructure's design, use and maintenance.

Why is asset management needed?

The water sector invests a lot in infrastructure to increase the access of communities to clean drinking water. There is however less attention to sustainability in the long run. The need for proper operation and maintenance is recognised, but little systematic approaches are being adopted.

The WAI aims to make a difference by introducing a toolbox for various sector players.

How does the WAI Asset Management toolbox contribute to water systems' sustainability?

- List assets systematically
- Provide templates for risk- and cost-based maintenance planning / logging
- Generates financial models based on risk-based maintenance
- Supports the water tariff determination and service level agreements
- Monitors and optimizes the use of assets
- Supports decision-making and long-term funding strategies.

How can one implement Asset Management in a simple manner?

The WAI has developed paper-based manuals and Excel-based templates to support stakeholders in making asset inventories, maintenance plans / logs, financial overviews for 10 to 15 years, determining water tariff and monitoring income and expenditures.

Date	Issue identified	Action taken	Downtime (in days)	Hardware cost of repair (UGX)	Labour cost of repair (UGX)	Transport cost of repaid (UGX)	Person or organisation that repaired system
14-Oct-21	Vandalism of Nuts	Creation of Lockable Access Door/Spotting (Welding)	5	500,000	700,000	550,000	Paul
23-Feb-22	Valve - CWX Mini Motorised	Replacement	7	485,000	40,000	100,000	Paul
23-Feb-22	Battery	Replacement Kung Lung Battery	30	100,000	20,000	100,000	Scheme Operator
24-Feb-22	Distribution Pipe Leakage -Main Road@2 Pointa	Connectors	4	240,000	40,000	100,000	Paul AFSRT Eng
05-Jul-22	Charge Controller Fuse, Holder, Cable	Replacement	2	135,000	20,000	100,000	Paul

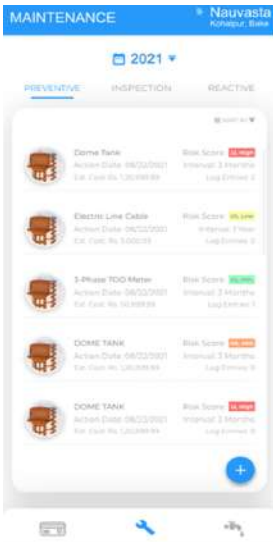
Example of maintenance log from Omot, Uganda from WAI's manual on Asset Management for rural water systems

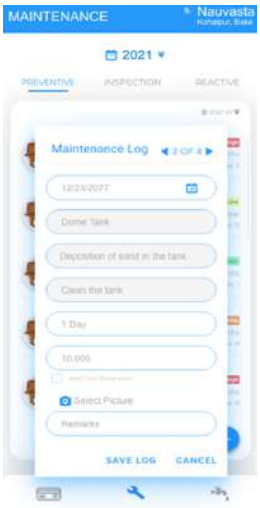
Which digital open-source tools made by WAI are available?

Learning environment

The learning environment is a user-friendly, and interactive digital training module on Asset Management. It consists of 3 different modules aimed at different target groups: from end users to WASH professionals. The modules can be followed consecutively, depending on the capacities and needs of the target groups. It is suitable for online learning by professionals and as a resource classroom facilitation and field training to local staff and communities. It contains concept descriptions, animated videos, case studies, short quizzes and practical assignments for learning..

Screenshot of the e-learning environment





The android smartphone app

The Android app aims to support Asset Management improvements, planning, implementation and monitoring in the field in a digital manner. The app contains a mobile cashbook, a maintenance plan, log and notification function and the option to insert water quantity and quality data.

The web-dashboard

The Web-Dashboard enables a two-way data interaction with the app. It aims to serve as an online visual dashboard for insights on maintenance performance and/or as a planning or financial tracking tool for stakeholders on a decision-making level.

Screenshot of the mobile app displaying a maintenance plan and log

Screenshot of the web-dashboard displaying a financial comparison between expected and actual income & expenses and cumulative cash flow for an example water scheme.