A Metric for Assessing the Sustainability of Safe Water Provision in Healthcare Facilities

In low- and middle-income countries, significant barriers exist to ensuring sustained safe water provision in healthcare facilities. The 2015 Sustainable Development Goals include a provision (Goal 6) to "provide universal access to safe drinking water in health centers by 2030." Currently, an estimated 61% of healthcare facilities in the developing world have an improved water source.[1] Where data exist on access to year-round water on premises, the percent coverage drops by more than 50%. In order to reach these goals, the majority of healthcare facilities will not only need to gain access to a year-round source, but most facilities will require onsite treatment in order for the water to meet national drinking water guidelines. The adoption of Goal 6 necessitates increased understanding of the issues surrounding sustained safe water provision from water treatment systems within healthcare facilities.

In response to this need, a research team at The Center for Global Safe Water, Sanitation, and Hygiene (CGSW) at Emory University, with funding from the General Electric Foundation, developed a sustainability assessment tool to measure the sustainability of safe water provision in healthcare facilities with water treatment systems. It was created through in-depth literature review and over three years of fieldwork evaluating the sustainability of safe water provision in hospitals in Honduras and Ghana.

Overview of Tool

Purpose of Use	Evaluation of sustainability of safe water provision
Level of Use	Service provision in institutional (healthcare facility) setting with a centralized or ward-level water treatment system (any type of system)
Target User	Those interested in understanding the current sustainability of safe water provision at a healthcare facility with an installed water treatment system (e.g. MoH, MoE, NGOs, academia, donors)
Frequency of Use	Post-implementation; Annually
Inputs	Survey Questions (mobile data collection), Observations, Water Quality Testing
Outputs	Radar plot with sustainability score 0-4, 4 domains of sustainability
Time and Resources	½ day at each hospital site (2 enumerators); analysis and data visualization pre-programmed based on inputs

The structure of the sustainability assessment is divided in 3 different levels: Domains, Subdomains, and Indicators. There are four domains: Technical feasibility, On-Site Capacity, Financial and Operational Accountability, and Institutional Engagement. Each domain is divided into four subdomains. The subdomains are evaluated based on a series of indicators (Figure 1).

How the Sustainability Assessment Tool Works:
The sustainability assessment is used to evaluate the sustainability of safe water provision from an installed, centralized water treatment system in a healthcare facility. The total sustainability score is based on the

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[1] WHO and UNICEF. "Water, Sanitation and Hygiene in Health Care Facilities: Status in low- and middle-income countries and way forward" (2015)

domain and subdomain scores derived from the indicator scores. Indicator scores are derived from answers to survey questions, observations, and results from water quality testing (Figure 2). The tool generates a total sustainability score (0-4) for the facility, drawing from the indicator and subdomain scores. The higher the score, the greater the evidence of an enabling environment for sustainability.

Figure 1: Domains and Subdomains of Sustainability

**Figure 2: Sustainability Assessment Scoring Structure**
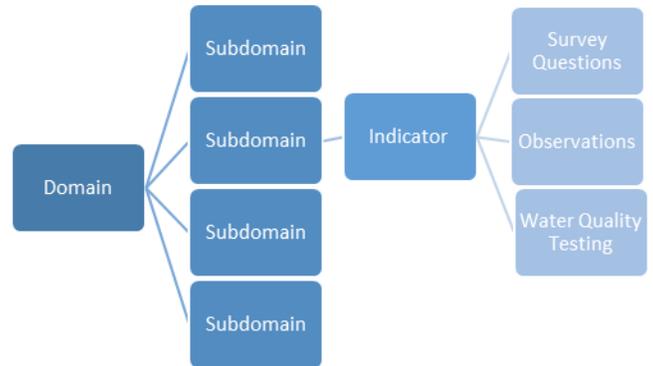
What the Sustainability Assessment Tool Provides

The sustainability assessment was designed for rapid data collection and analysis (less than ½ day). A mobile data collection platform allows for automated and rapid data visualization and feedback dissemination between data collectors and stakeholders.

The sustainability score identifies strengths, weaknesses, opportunities, and threats in regard to the sustainable provision of safe water. Figure 3 shows the domain scores for an example hospital plotted on a radar plot. The radar plots provide a simple depiction of how the healthcare facility is fairing in sustaining safe water provision and can be used to compare across healthcare facilities and time periods. The sustainability score(s) can be used by a healthcare facility, donor organization, or supporting NGO to target efforts toward specific domains and/or subdomains to improve sustainability. Furthermore, the findings contribute to the evidence-base for promoting safe water in healthcare facilities as a priority within the global water sector.

Figure 3: Sustainability Assessment Output for an Example Hospital

- - - - **Sustainability Cut-Point:** *Basic* evidence for an enabling environment for sustainability.
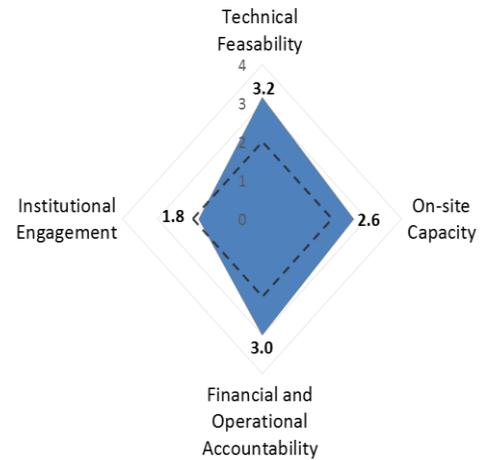
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