

Kenya Water Supply Project

Abstract

A student-led, multidisciplinary engineering team is advancing access to clean, reliable, and sustainable water for approximately 180 families in the Kogwari community of Homa Bay County, Kenya. Adopted by the Howard University chapter of Engineers Without Borders in Fall 2024, the project addresses chronic water scarcity in a semi-arid region where residents have historically relied on erosion-prone water pans and contaminated surface sources. These unsafe conditions have contributed to recurrent waterborne illnesses, agricultural instability, and disproportionate burdens on women and children, who often spend over 90 minutes per day collecting water. During a comprehensive assessment trip in May 2025, the team conducted hydrogeological studies, water quality testing, soil and land evaluations, and environmental and social impact analyses. Through household surveys, meetings with elders and youth leaders, and engagement with local institutions, primary and secondary school students, and respected community leaders, borehole development was identified as the most viable long-term solution.

Recent drilling reports revealed elevated salinity levels, requiring the integration of a desalination and disinfection component to ensure potable water quality. The proposed system includes borehole drilling, solar-powered pumping, elevated storage tanks, on-site desalination and treatment, and a piped distribution network designed to deliver up to 30,000 liters of safe water per day for domestic and agricultural use. The project follows a phased engineering approach: site assessment and permitting, borehole drilling and yield confirmation, installation of solarized pumping and treatment systems, storage construction, and distribution network implementation. Borehole drilling is scheduled for December 2025, followed by on-site construction and system installation during a Spring 2026 implementation trip.

To date, \$25,000 has been secured through a grant from Xylem, with an additional \$60,102 required to complete implementation, including drilling, solarized pumping, storage infrastructure, piping, desalination integration, and contingency costs. Beyond infrastructure development, the project prioritizes long-term sustainability through community ownership. Residents have contributed land for the borehole site, committed in-kind labor, and actively participated in planning and decision-making. Training in system maintenance, desalination unit operation, and water safety will support independent management after completion. Success will be evaluated through post-implementation household surveys, system performance monitoring toward the 30,000-liter daily target, and continued collaboration with community leaders to confirm measurable improvements in water access, public health, and overall quality of life.