Access to safe drinking water is crucial for human health and well-being, yet millions lack this basic necessity. Sub-Saharan Africa, particularly Liberia, faces a significant water crisis. This project investigates the performance of hand-powered water pumps, a primary source of clean water in Liberia.

Despite their importance, these pumps are often dysfunctional due to mechanical failures and limited maintenance. This study leverages a Liberian government WASH program dataset to assess factors influencing pump performance (functionality, damage, water quality). We will explore how community-level factors, such as mechanic availability and WASH committee leadership, impact pump functionality and reliability.

By statistically modeling these relationships using logistic regression model and machine learning, we aim to identify areas for improvement and enhance the sustainability of hand-pumped water systems. The project's findings can inform strategies to ensure clean water access for Liberian communities by proving policy recommendation insights regarding water access issues.