

### 73. Evaluation of onsite sanitation technologies using a shit flow diagram at Iten Municipality Elgeiyo-Marakwet, Kenya

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#### Abstract

Ensuring access to safe sanitation in developing countries remains a significant challenge, contributing to public health and environmental problems. Although various interventions have been implemented to tackle these issues, their effectiveness in managing human excreta along the sanitation service chain is still uncertain. This study aimed to assess onsite sanitation technologies in Iten Municipality by utilizing a shit flow diagram (SFD). A mixed method approach was employed, involving quantitative and qualitative data collection. A sample size of 388 household heads was determined using the Yamane formula and selected through a cluster random proportionate sampling technique. Quantitative data was gathered via household survey, while qualitative data was obtained through key informant interviews, site visits, and transect walks. The quantitative data was analyzed using SPSS version 26, while qualitative data was organized into themes and presented in narrative form. The Susana platform and the SFD tools facilitated further data analysis and the creation of the shit flow diagram. The findings revealed that the primary onsite sanitation technologies in Iten are pit latrines (69.1%), septic tanks (22.9%), and anaerobic digesters (2.9%). The study identified hygiene issues and found that approximately 40% of onsite systems malfunctioned. Additionally, about 31% of excreta was inadequately managed, including pits and tanks that were not emptied, overflowing, leaking, or discharging into the environment (15%), emptied but not delivered to treatment (11%), fecal sludge and supernatant delivered to treatment but not treated (1%), and open defecation (3%). The onsite sanitation technologies in the municipality face considerable challenges, underscoring the need for better management and regulations. The study recommends enhancing sanitation infrastructure, implementing standardized maintenance protocols, and providing community education to improve waste management and public health outcomes.

**Keywords:** Onsite Sanitation Technologies; Evaluation; Shit Flow Diagram; Public Health; Human Excreta management