

Globally, water covers approximately 73% of the planet earth most of it being salty water, however, the availability of this water to human usage is limited. As a result, more than 1.1 billion people lack access to water and approximately 2.7 billion globally finds water scarce for at least one month in a year. Rainwater harvesting strategy has been an option in many areas which is one of the nature best gift although is not fully utilized. The main objective to the study was to optimize the site selection process for rainwater harvesting structures in Mandera County, Kenya. To achieve the above objectives, the following specific objectives were utilized; to identify the factors that might affect the rainwater harvesting sites, to identify the most suitable locations for different types of rainwater harvesting and to come up with a map of suitable locations of rainwater harvesting structures. The project utilized various spatial data, including a 30M resolution Digital Elevation Model (DEM) to derive slope maps and stream order maps. The analysis was performed using ArcGIS 10.8 environment to integrate multiple criteria, such as slope, stream order, rainfall, soils, population, and Euclidean distance. The findings of this study provide valuable insights for decision-makers and stakeholders involved in rainwater harvesting projects in Mandera County. The GIS-based MCA approach enables an objective and systematic evaluation of various criteria, facilitating informed decision-making and sustainable implementation of rainwater harvesting structures. The results contribute to improved water availability, resilience against water scarcity, and enhanced water management practices in the region, ultimately benefiting the local population and promoting sustainable development.