ABSTRACT

In 2000 the United Nations (UN) created the Millennium Development Goals (MDGs) to focus on addressing major issues like poverty, education, children's health, sustainable environment, disease prevention, and economic development. One of the targets (7C) of the MDGs is to halve the portion of the population that does not currently have sustainable access to safe drinking water and basic sanitation by 2015. As a region, sub-Saharan Africa is not on track to meet the goal. In fact, the region has the lowest clean drinking water coverage of any region in the world. This project develops a general framework to improve water resource planning in sub-Saharan Africa. The project defines criteria, data and methods to improve planning for clean drinking water wells. The result is a general framework for 1) finding locations where contamination of water wells is least likely to occur, and 2) ensuring the benefits of clean water support overall community health and education. This is all with the aim to increase efficient water resource planning to support the MDG to increase safe drinking water coverage. The general framework is implemented as a model which is the functional component of the framework. The general framework was refined through the implementation of the model in a model fitting study in rural Uganda. The result of the implementation is a suitability map identifying locations where (1) risks to drinking water are minimized and (2) benefits to people living in the study area are maximized. The success of the model was evaluated by assessing the locations of existing wells against what the model identified as suitable well locations. The framework and model fitting process can be used as a tool by governments and non-government organizations (NGOs) to improve current water site suitability workflows.