

**Characterization of shallow aquifers for the identification of suitable zones for manual drilling by integration of different data sources. The experience of UNICEF in Africa
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Manual drilling refers to several drilling methods that rely on human energy to construct a borehole and complete a water supply. In the last years it has been considered a potential solution to increase the access to groundwater in low income countries. Although different techniques for manual drilling are available, they can be applied only where shallow geological layers are relatively soft and water table is not too deep. Therefore it is important to identify those zones with suitable shallow hydrogeological conditions. Since 2006 country maps of suitable zones for manual drilling have been produced at country level in 15 African countries by UNICEF. These maps are based on the interpretation of different categories of existing data- a) thematic maps, especially geological map+ b) water point database at country level, containing the information about static water level and type of water point+ c) stratigraphic logs, elaborated using a semiautomatic procedure to extract textural characteristics of shallow layers+ d) available digital elevation models and extraction of morphometric parameters+ e) multitemporal analysis of satellite images and extraction of environmental indicators potentially related to shallow hydrogeological conditions+ f) Interviews with local key informants (hydrogeologists, drillers, water technicians) in the country, and systematization of their qualitative experience+ g) field observation of landscape features+ h) records of water level and pump tests in large diameter wells. The method of interpretation has been adapted to the available information, the scale of the analysis, and the specific geological and morphological characteristics of each country. This paper presents a critical review of the different approaches that have been tested in the whole set of 15 countries where this mapping activity has been completed and recommendations for the exploration of shallow hydrogeological conditions by integrating different categories of existing data in Africa.

