An Assessment of Groundwater Available Potential for Migrants and Displaced People Using GIS and Remote Sensing Techniques a Case of West Nile, Uganda

| Living reference work entry | First Online: 09 October 2025

| pp 1–21 | Cite this living reference work entry

University Initiatives on Climate Change Education and Research

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Abstract

Over recent years, many people have left their homes due to political persecution, conflicts, poverty, human right violations, climate-related disasters, and diseases. These people usually hosted by developing countries that still survive on limited budgets and often vulnerable to disasters and economic crises. It should be noted that migrants and displaced people are settled in camps where access to basic needs like water remains uncertain due to poor rapid assessments of water available potential. The study used GIS and remote sensing techniques to assess groundwater available potential in West Nile, Uganda, a known refugee host region having 12 districts (i.e., Maracha, Pakwach, Zombo, Yumbe, Adjumani, Nebbi, Koboko, Madi-Okollo, Obongi, Terego, Moyo, and Arua) with 6 camps (i.e., Rhino, Palorinya, Lobule, Imvepi, Bidi bidi, and Adjumani). The methodology involved analyzing seven groundwater occurrence control factors (e.g., rainfall, geology, land use, soil, DEM) using AHP approach and ArcMap to generate a groundwater available potential map which was then classified into three classes (i.e., poor, fair, and good). Areas with poor groundwater potential accounted for 4.9%, fair 88.3%, and 6.8% as good. Districts of Adjumani, Madi-Okollo, Obongi, and Moyo had good groundwater potential zones, whereas Pakwach and Nebbi had poor groundwater potential. Camps (i.e., Rhino and Polarinya) had relatively good groundwater potential zones while Lobulo and Bidi-bidi had poor potential. Therefore,