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**Groundwater potential to supply population demand within the  
Kompienga dam basin in Burkina Faso**

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Groundwater from crystalline basement aquifers is the main source of domestic water supply for the rural population in the northern Volta river basin. Estimation of groundwater potential in the Kompienga dam basin, using the methods of chloride mass balance, water balance and water table fluctuation, shows that only a small portion of the annual rainfall contributes to the basin groundwater replenishment. However, this potential recharge appears sufficient for the existing population's water demands and water development schemes. Existence of preferential flow in the aquifers' recharge processes and considerable underutilized groundwater potential form favorable factors in the basin water resources management.