

# Exploring Water Supply Challenges to Selected Villages of Greater Giyani Municipality in Limpopo Province, South Africa

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**Abstract**— Limpopo Province faces significant water access challenges, with one-third of its population lacking sufficient domestic water supply. This study examines water access and supply-related challenges in selected villages in the Greater Giyani Municipality (GGM), which suffers from severe water shortages due to persistent drought. In 2008, water levels in the Nsami and Middle Letaba Dams dropped below 5% and 6%, respectively. A mixed-methods approach was employed, integrating hydroclimatic data with primary data obtained from 638 households across 25 villages. Households were selected using a combination of convenience and purposive sampling to capture diverse water access conditions, with the sample size determined at a 99% confidence level and 5% margin of error. Data were collected through an open-ended semi-structured questionnaire designed to capture household demographics, water sources, reliability and frequency of supply, access distances, consumption patterns, and perceptions of water quality and management. The instrument was pretested to enhance reliability, and triangulation of household surveys, key informant interviews, and site observations strengthened data validity. Ethical clearance, informed consent, and consistent administration further ensured response accuracy and credibility. The analysis revealed that the main water supply sources in GGM are boreholes, communal taps, bulk water through in-house connections, and water vendors. The estimated water demand for the selected villages is 3,230,600 L per day, while the total water supply is only 1,796,676 L per day, resulting in a 44.38% deficit. The questionnaire survey identified two key challenges: unreliable municipal water supply and a lack of access to water within 200 m of households. The study recommends prioritizing water management strategies, such as demand management, groundwater development, and supply innovations, to meet domestic water needs.

**Keywords**— Domestic Water Use, Water Supply, Rural Communities, Infrastructure

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