

**Study of nutrient pollutants and their impacts on the water quality of the mindu reservoir
in Morogoro municipality
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The study on Mindu Reservoir, whose 50% of its waters has been plagued by aquatic weeds, involved the physicochemical parameters characterization. Sampling and determination of both water and sediment samples followed the standard techniques. The parameters pH, EC, DO, NTU and NO₃⁻ were determined in situ, using a portable field probe (by HANNA instruments). Water samples were analyzed for TN, TP, HCO₃⁻, SO₄²⁻, Cl⁻ and NO₃⁻ (APHA 1985). Filtered water samples were analyzed for Ca and Mg using AAS. The FE-spectrophotometer was used for K and Na determinations. As the average value for P-PO₄³⁻ was found to be above the eutrophication level, the N: P ratios average value at 8.51 ± 4.3 suggested a Redfield behavior of nutrients with nitrogen being a limiting one. XRD-mineralogical determination on the sediments indicated that the dominant clay minerals are kaolinite and illite. The CEC values measured > 48 cmol (+)/kg clay, are high enough for the sorption of nutrients and pollutants. The PCA showed five factors that explain processes influencing the water characteristics. Therefore Mindu Reservoir is classified as eutrophic with calcium magnesium bicarbonate type of water. Both River inflows overlay flows and sediments forms the mode of nutrient transport with the later behaving as a sink of nutrients. The evaporation, bio-geo-chemical and N fixation processes along with macrophyte productivity, supports the hypotheses that physical-bio-geo-chemical processes influence the spatial distribution of major ion in the Reservoir. A detailed multidisciplinary study that captures more than one year cycle was recommended, to capture inter seasonal variability, and for the sequestration of nutrients in various trophic levels.