WATER QUALITY ASSESSMENT AND ENVIRONMENTAL IMPACT OF ABANDONED MINE SITES IN KUBA TOWN AND ENVIRONS, BOKKOS L.G.A, PLATEAU STATE - NIGERIA

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Water Quality Assessment and Environmental Impact of Abandoned Mine Sites in Kuba Town and Environs, Bokkos L.G.A., Plateau State, Nigeria was conducted to evaluate the extent of environmental degradation associated with legacy mining activities in the area. Abandoned mine sites represent one of the most serious environmental challenges in many mining regions of Nigeria, particularly due to their impacts on surface water quality, land stability, and ecosystem health. This study assessed the environmental impacts of abandoned mine sites in Kuba Town and its environs using field reconnaissance, water sampling, vegetation assessment, and community observations. A total of ten (10) water samples were collected from different abandoned mining ponds within the study area. Additional data were obtained through direct field inspection, interviews with local residents, and mapping of abandoned mine pits using a handheld GPS. Laboratory analysis of the water samples revealed elevated concentrations of heavy metals, including lead (Pb: 0.020–0.040 mg/L), zinc (Zn: 0.012–0.45 mg/L), and cadmium (Cd: 0.014–0.067 mg/L), with values exceeding permissible environmental limits. The water samples also showed high suspended solids and slightly acidic pH values ranging from 6.13 to 6.60, indicating degradation of water quality. Vegetation assessment revealed poor regeneration in most affected areas, while open mine pits and heaps of tailings posed significant hazards to humans and livestock. The findings indicate that unregulated artisanal and small-scale mining activities have resulted in considerable land degradation, water pollution, and biodiversity loss in the study area. The study recommends urgent reclamation measures, including pit backfilling, re-vegetation, and the implementation of community-based environmental monitoring programs. These findings provide baseline information for environmental restoration planning and policy enforcement in Plateau State and other mining-impacted regions of Nigeria.

Keywords - Water quality, Abandoned mine sites, Heavy metals, Environmental degradation.