Management of Sediments and Their Associated Nutrients in the Sanitary Area of Bovilla Lake (Albania) and the Efficiency-Effectiveness of its Water Making into Drinking Water

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Abstract

Access to safe and sufficient drinking water is a fundamental public health and environmental priority. In Albania, Tirana's primary water source, Bovilla Lake, treated at the Babrru water treatment plant, faces recurrent challenges linked to watershed mismanagement. Elevated turbidity, odor, and treatment costs reflect increasing pressures on the raw water quality.

Applying the DPSIR (Drivers, Pressures, State, Impact, Response) framework, [1], this study investigates the physical and environmental conditions within the critical 320–400 m elevation sanitary area. Results indicate that intensive agriculture, livestock farming, and deforestation are driving soil erosion, sediment deposition, and nutrient enrichment. Concurrently, untreated urban runoff and inadequate waste management practices exacerbate water quality deterioration.

The findings highlight the urgent need for targeted interventions to regulate land use and anthropogenic pressures within the buffer zone. A coordinated, integrated watershed management approach across the broader Bovilla catchment is essential to protect the long term sustainability and safety of Tirana's drinking water supply.

Keywords

Drinking water, sanitary area, management of sediments.