

Water Quality Assessment of Akkarena Beach: A Local Case for Global Coastal Sustainability

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Abstract. Coastal recreational areas face increasing pressure from human activities, requiring systematic water quality assessments to ensure both ecosystem health and public safety. This study evaluates the water quality of Akkarena Beach, a natural coastal zone in Makassar, Indonesia, that represents a critical recreational and ecological asset in the Makassar Strait. Key physicochemical parameters were analyzed, including turbidity (3.35 NTU), dissolved oxygen (8 mg/L), total suspended solids (12 mg/L), nitrate (0.48 mg/L), and ammonia nitrogen (0.037 mg/L). The results indicate that water quality remains within acceptable ranges for coastal recreation, although nutrient inputs highlight a potential risk of eutrophication if unmanaged. Localized pressures such as domestic wastewater, solid waste from tourism activities, and stormwater runoff were identified as emerging challenges. By situating these findings within the broader discourse on sustainable coastal management, this study underscores the importance of integrating local monitoring initiatives with global perspectives on environmental stewardship. The research demonstrates how localized scientific assessments can empower communities, strengthen resilience against pollution, and contribute to global sustainability goals.

Keywords: Coastal Water Quality, Heavy Metals & Nutrients, Recreational Beach Monitoring, Eutrophication Risk Assessment, Akkarena Beach, Makassar