

Gis-Based Water Pollution Assessment of Buriganga River, Bangladesh

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Abstract : Water is absolutely vital not only for the survival of human beings but also for plants, animals, and all other living organisms. Water bodies, such as lakes, rivers, ponds, and estuaries, are the source of water supply in domestic, industrial, agriculture, and aquaculture purposes. The Buriganga River flows through the south and west of Dhaka city. The water quality of this river has become a matter of concern due to anthropogenic intervention of vital pollutants such as industrial effluents, urban sewage, and solid wastes in this area. Buriganga River is at risk to contamination from untreated municipal wastes, industrial discharges, runoff from organic and inorganic fertilizers, pesticides, insecticides, and oil emission around the river. The residential and commercial establishments along the river discharge wastewater either directly into the river or through drains and canals into the river. However, several regulatory measures and policies have been enforced by the Government to protect the river Buriganga from pollution, in most cases to no affect. Water quality assessment reveals that the water is also not appropriate for irrigation purposes. The physical parameters (pH, TDS, EC, Temperature, DO, COD, BOD) indicated that the water is too poor to be useable for agricultural, drinking, or other purposes. Chemical concentrations showed significant seasonal variations with high-level concentrations during the monsoon season, presumably due to extreme seasonal surface runoff. A comparative study of Electrical Conductivity (EC) and Total Dissolved Solids (TDS) indicated a considerable increase over the last five years. A change in trend was observed from 2020 June-July, probably due to monsoon and post-monsoon. EC values decreased from 775 to 665 mmho/cm during this period. DO increased significantly from the mid-post-monsoon months to the early monsoon period. The pH value of river water is strongly alkaline, ranging between 6.5 and 7.79. This indicates that ecological organic compounds cause the water to become alkaline after the monsoon and monsoon seasons. As the water pollution level is very high, an effective remediation and pollution control plan should be considered.

Keywords : precipitation, spatial distribution, effluent, remediation

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