

Preface

Groundwater pollution has emerged as a critical environmental issue in urban areas, profoundly impacting public health and the overall well-being of communities. With rapid urbanization, the dynamics of urban growth play a pivotal role in shaping groundwater quality. Delhi, being one of India's most populous and swiftly expanding cities, confronts substantial challenges in addressing groundwater pollution. This research endeavors to delve into the dynamics of urban expansion in Delhi and its ramifications on groundwater quality patterns from 2016 to 2022, employing advanced Geographic Information System (GIS) methodologies.

This study harnesses GIS as a potent instrument for analyzing and visualizing spatial data pertaining to land use-land cover and groundwater pollution. Through the integration of satellite imagery, land cover data, and groundwater quality assessments, this research offers valuable insights into the spatial and temporal trends of groundwater pollution in Delhi. The primary focus lies in scrutinizing the correlation between urban growth, delineated by shifts in land use and land cover, and the resultant variations in groundwater quality levels throughout the study duration.

Furthermore, this research endeavors to assess the suitability of Delhi's groundwater for drinking purposes by employing the Water Quality Index (WQI) alongside GIS techniques. By amalgamating spatial data with water quality assessments, this study aims to provide comprehensive insights into the state of groundwater pollution in Delhi and its implications for potable water resources.