



Riverine environment and its dynamics:

Challenges, issues and sustainable managements

'Riverine environment and its dynamics: Challenges, issues and sustainable managements' is the title of the book and is depicting the challenges of contemporary riverine environment. River is a natural resource that is inevitable to prosper all the civilizations. Such studies are nothing but the engine for analysing economic development including the sustainable environment. Degradation of river-floodplain systems is of serious concern. River and riverine landscape degradation is rapidly exaggerating over time and is becoming a political issue associated with socio-economic implications. This book offers an insight into the basin management i.e., basin morphometric characteristics, water resource, species diversity, land use and land cover changes, and also landscape evolution. Many of the scholars are especially recognized and specialized in the studies of riverine environments and the book is not an exception. As riverine landscapes are depending largely on hydrological conditions and hydraulics of the channel, the studies on morphometry, surface and subsurface ground water storage with seasonal hydrological dynamics are of prime focus to maintain the ecological integrity. The book will be helpful for the researchers, planners and different stakeholders.



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Delineation of Groundwater Potential Zones Using Analytic Hierarchy Process (AHP) Technique in Balason River Basin of West Bengal, India

Saidur Rahaman^{1,2}, Mantu Das² & Dr. Snehasish Saha³

Abstract

Groundwater potential remains an essential topic in the Balason river basin of West Bengal, India. Groundwater potentials can be predicted using an integrated analytical hierarchy process (AHP) approach using a GIS and remote sensing. The goal of this study is to create a groundwater potential zone (GWPZ) map for the Balason River Basin that is reliable and based on scientific evidence. In this situation, the AHP of the MCDA method is used to investigate the potential prospect zones for groundwater resources with significant parameters. To create distinctive thematic layers, USGS satellite data, 30 metre spatial resolution of Landsat 8 images and SRTM-DEM data were used. Eight primary influencing factors were selected: geomorphology, lineament density, slope, slope aspect, lithology, soil types, and land use land cover (LULC), and drainage density. The AHP method produces a GWPZ map utilizing significance scale, pair-wise comparison, signifies consistency ratio, normalized, and weighted overlay technique. The GWPZ map comprises "Very poor," "Poor," "Moderate," "Good," and "Very Good" potential zones with 9.91, 38.45, 25.49, 14.61, and 11.83% share of the overall area respectively. Finally, using receiver operating characteristic (ROC) curve analysis, the generated GWPZ map is approved. Furthermore, the best strategies will be to bring up a good level of groundwater recharge zone through water storage and sustainable land use planning. As a result, groundwater availability should be viewed as a measure of progress in the economic sector and the development of a sustainable human civilization.

Keywords: Groundwater resource, Groundwater Potential Zones, Balason basin, Weighted Overlay Model (WOM), Analytical hierarchy process (AHP), RS & GIS

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