

PREDICTIVE UNCERTAINTY IN ENVIRONMENTAL IMPACT ASSESSMENT SPATIAL MODELING

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ABSTRACT

At Global level, various countries have experienced untold environmental degradation and ecological deterioration in the past century, with little or no real solution to alleviate many of these concerns. Poorly planned human interference has been the major cause. Because of the dynamic characteristics and multivariate nature of the environment, it has often been difficult to collate, analyze and interpret its data sets. However, this great complexity can be overcome with the present research of CE-EIPS modeling of EIA for an Irrigation Project using spatial technology and related technology with the ground truth verification.

This Research study deals with the modeling of Environmental impact assessment for an irrigation project i.e. Ramapada Sagar (Polavaram) Irrigation project, which has been carried out in parts of West Godavari, East Godavari and Khammam districts of Andhra Pradesh, India. About 14,400 Sq Kilometer area of remote sensing data have been collected and analyzed for environmental impact assessment by using emerging GIS technology. From the modeling analysis, the land use land cover environment, slope analysis are made. The model also conceptualizes sediment delivery from hydrologic unit into a reservoir as a multiplicative function of the potential soil detachment material (delivery ratio) and the area of the hydrologic entity. The Sediment yield index values are intended from the empirical model using for the sub watersheds and is varying from 1060 to 1500 and suggested Catchment area treatment.

It has been pragmatic during water environment analysis, an area of about 50 sq. km is under inundation at low water level +135ft (41.15m), 200 sq.km is under inundation at +140ft (42.67m), and an area of 360 sq.km is under Inundation at +150ft (45.72m) FRL.

KEYWORDS: Environmental Impact Assessment Spatial Modeling, Ramapada Sagar (Polavaram) Project, Remote Sensing (RS), Geographic Information System (GIS), Catchment Area, Land Use Land Cover, Sediment Yield Index, Water Environment, Submergence / Inundation