ASSESSING WETLAND SUSTAINABILITY INDEX USING INDEX-BASED APPROACH: A STUDY OF COASTAL AND LANDLOCKED INDIAN STATES

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ABSTRACT

Wetlands are critical ecosystems that provide essential services such as biodiversity support, water purification, and climate regulation. However, rapid urbanization, agricultural expansion, and institutional neglect have accelerated their degradation in India. This study evaluates wetland sustainability across four states - two coastal (Tamil Nadu and Odisha) and two landlocked (Madhya Pradesh and Uttar Pradesh) using a composite Wetland Sustainability Index (WSI) based on three dimensions: Economic, Environmental, and Health indicators.

A quantitative framework was developed by selecting relevant indicators under each dimension for the years 2020–21 and 2021–22. Data were normalized and aggregated using a simple additive weighting method to construct the indices at both indicator and state levels. The study aimed to compare the sustainability status between coastal and landlocked states and observe temporal changes.

Findings reveal that landlocked Madhya Pradesh showed the highest overall WSI, driven by strong environmental and health scores, while Uttar Pradesh consistently ranked lowest. Odisha demonstrated the most improvement in environmental and health indicators, indicating policy responsiveness. Tamil Nadu maintained economic and health strength but showed a decline in environmental performance, highlighting urban ecological stress.

The analysis underscores that coastal and landlocked status influences wetland sustainability outcomes, particularly in resource reliance and hydrological support systems. It also highlights the urgent need for integrated data systems and decentralized, state-specific policy action.

KEYWORDS: Wetland Sustainability, Sustainability Index, Environmental Indicators, Economic Indicators, Health Indicators, Wetland Ecosystem services, Coastal States, Landlocked States, Water-borne Diseases, Conservation Budget, Ecosystem Services, Spatial Comparison, India Wetlands

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