

## **PREFACE:**

Urbanization, a hallmark of contemporary development, profoundly influences both the environment and biodiversity. "Eco Urban Dynamics: Analyzing Biodiversity and Urban Growth Through Night Time Light Emission" delves into the intricate interplay between urban expansion and ecological change. This study uses night-time light (NTL) emissions as a novel proxy to quantify and analyze urban growth and its ecological impacts, with a particular focus on the biodiversity-rich region of Kerala, India.

Kerala, renowned for its rich biodiversity and unique ecological landscapes, presents an ideal case for examining the impacts of urbanization. Over the past two decades, the region has experienced significant population growth and urban sprawl. This expansion has inevitably led to changes in land use patterns, including deforestation and the transformation of natural habitats into urban and semi-urban areas. Night-time light data, sourced from satellite imagery, offers a valuable tool for mapping and understanding these changes in a temporal and spatial context.

This research aims to provide a comprehensive analysis of how urban growth, as evidenced by NTL emissions, correlates with changes in biodiversity. By integrating geospatial analysis with ecological data, the study seeks to identify trends, patterns, and potential areas of concern. The focus is on understanding the balance between urban development and ecological conservation, highlighting the need for sustainable urban planning.

The findings of this research are expected to inform policymakers, urban planners, and conservationists about the critical need to harmonize urban growth with ecological sustainability. By illuminating the dynamic relationship between urbanization and biodiversity through the lens of night-time light emissions, this study contributes to the broader discourse on sustainable development and environmental stewardship in rapidly urbanizing regions like Kerala.