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Monitoring The Impact on Paddy Fields During the Construction of The Southern Expressway Using Remote Sensing and GIS

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Abstract

Paddy production in Sri Lanka holds immense significance as a critical agricultural sector that sustains the country's population by providing rice, the staple food. Understanding the fluctuations in paddy land area is crucial since it directly influences paddy production, making it a vital national endeavour. In this regard, the primary focus of this investigation is centred around examining the diminishing extent of paddy land area within the Hambantota district. This reduction can be attributed to the construction of the southern expressway, and to unravel this relationship, remote sensing methods have been employed. To assess changes in paddy land area, Landsat images spanning the years 1990 to 2022 were utilized, enabling a comprehensive analysis of the Hambantota district. The outcomes of this study have uncovered a conspicuous decline in paddy land area in close proximity to the expressway during the study period. As one moves away from the expressway, a gradual increase in paddy land area becomes evident. This pattern underscores the transformative impact of infrastructure development on the agricultural landscape. The implications of these research findings extend beyond their immediate significance. They furnish valuable guidance for future construction projects across Sri Lanka, encompassing the construction of expressways, as well as railroads. By integrating these insights into the planning and execution of such projects, adverse environmental impacts, particularly the destruction of paddy lands, can be effectively mitigated. This serves as a vital step towards achieving sustainable development and safeguarding the country's agricultural productivity.

Keywords: *Agriculture, Landsat imagery, Paddy Land, Remote Sensing.*