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TITLE OF PROJECT:

**Water Resource Management towards
achieving Land Degradation Neutrality- A Case of Belagavi District,
Karnataka- India**

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ABSTRACT (150-300 words):

India's agricultural sustainability is jeopardized by the alarming reality that 29% of its land, equivalent to 96.4 million hectares, is currently degraded. This research, centered on Karnataka's Belagavi district—a semi-arid area grappling with persistent drought and desertification—addresses crucial gaps in existing land degradation frameworks. Introducing an innovative Water Land Degradation Index (WLDI), this study integrates 30 selected indicators, differentiating between 14 for drought vulnerability and 16 for desertification vulnerability. Through scenario modeling, three distinct states of land degradation emerge—No Degradation, Partial Degradation, and Complete Degradation—each demanding tailored proactive or restorative interventions. The identification of a critical taluk as the endpoint prompts dual stimulation and optimization modeling using WEAP software to comprehensively assess water sources, their geographical links, and their impacts on diverse demands within the taluk. Stressing the fundamental connection between water management and land capabilities, the study advocates for nuanced strategies tailored to the specific states of land degradation. Validation of proposals through the optimization model unveils tangible alterations in the critical taluk's geographical dynamics. This research pioneers a holistic approach, asserting the indispensability of water management aligned with land capacities to inform judicious land use practices and mitigate the looming threat of land degradation.

KEYWORDS:

Land Degradation, Water resource management, Desertification, Drought, Agriculture, Hydrological modelling, WEAP

CATEGORY:

Urban planning, Environmental planning, Impacts, Hazards, risks, and effective adaptation to climate change, Climate change: measurements, modelling, and predictions, Technology transfer and innovative solutions to climate change