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Application of indicators for identifying climate change vulnerable areas in semi-arid regions of India



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ABSTRACT

This paper aims at assess district-wise vulnerability index of the state of Karnataka State, which is predominantly is rained and is highly susceptible to climatic variability. Secondary data on relevant indicators were collected to prepare indices viz., crop production losses, exposure, sensitivity and adaptive capacity. Following normalization and using appropriate weights for indicators, these four indices were used for constructing vulnerability index, which can be used a rapid assessment method for prioritizing districts that need measures to moderate the detrimental impact of climate change. It has been observed that Climatic variability caused higher production losses in cereals, pulses and oilseeds in Davangere, Gulbarga and Raichur districts, respectively. Districts like Koppal, Raichur, Bijapur Gulbarga, Gadag, Bagalkote and Bellary were placed under extreme degree of exposure. As per the sensitivity index scores, Kolar district is the most sensitive. Further, Bengaluru (Urban), Dakshin Kannada and Kodagu are ranked first, second and third in terms of adaptive capacity in the state. Overall, vulnerability index scores indicate that Gulbarga, Koppal, Raichur, Bellary, Bagalkote, Bijapur and Belgaum are extremely vulnerable districts in the state. It was also estimated that around 70% of the cultivated area, which supports 60% and 67% of livestock and rural population of the state, respectively are facing 'extreme to high' level of vulnerability. The ranking based prioritization of the vulnerable areas calls for a holistic approach for each district or a group of districts to reduce their sensitivity, minimize exposure to rainfall variability through implementation of site-specific and leverage adaptive capacity through better health and education facilities, expansion of employment opportunities in other sectors or reducing over dependence on agriculture.