

Multi-indicator eco-environmental vulnerability assessment in Africa

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Abstract: Eco-environmental vulnerability evaluation plays a key role in providing useful information about ecological and environmental background for designing suitable policy measures to improve and restore the environment. Africa is the continent facing many challenges and suffers from various drastic environmental problems, including drought, deforestation, water pollution, Argo-industrial agriculture, overfishing and overgrazing, etc. Here we quantify the status of eco-environmental vulnerability in African Countries (57 countries), employing 16 indicators across six domains, including hydrometeorology, natural hazards, socioeconomics, land resources, topography, and climate change. The eco-environmental vulnerability is scaled into six levels consisting of *potential*, *light*, *slight*, *medium*, *heavy*, and *very heavy*. Results show that different African Countries have widely varying patterns of eco-environment vulnerability requiring different unique performances for environmental improvement. Among African Countries, a largest fraction of *very heavy* vulnerability level is attributed to Ethiopia (27.96%), followed by Madagascar, Kenya, Nigeria, Mozambique, Tanzania, and Congo (16.61%, 7.09%, 5.67%, 5.30%, 5.04%, 2.48% respectively). In general, high vulnerability levels are concentrated in Southeast Africa where are of low-income nations with high population and growing rate, and suffer from high frequencies of natural hazards. These findings help us understand the key ecological and environmental characteristics of African Continent to assist policy-makers to set improvement targets on specific areas and adopt effective practices, while keeping track of other aspects of eco-environment.

Keywords: Eco-environmental vulnerability; multi-indicator; Africa