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# The influence of land-use activities on nutrient inputs into upland catchment streams, Ghana

The impacts of agricultural intensification and expansion on freshwater quality in Ghana are poorly understood. The study applies an integrated conceptual framework, DPCER (Driving forces-Pressure-Chemical state-Ecological state-Response), with appropriate indicators that describe the interlinkages between land use in small rural upland catchments and in-stream nutrients. Increasing agricultural activity in the catchments is mainly through the expansion of farmed area with minimal additional fertilizer use. The DPCER model is an effective reporting tool; however, the study recommends the inclusion of a hydrological element (DHPCER), as total nutrient load estimates were dependent on catchment discharge dynamics. The study shows that with increasing land use, there are significant increases in nutrient loads in-stream and changes to biological communities, although water quality remains within the Ghanaian Target Water Quality ranges for domestic use and aquatic ecosystem health.