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A multi-agent system for simulating land-use and land-cover change in the Atankwidi catchment of Upper East Ghana

Land-use and land-cover change is one of the most substantial human-induced changes on earth. In rural West Africa, where people directly depend on the natural resource base for a living, such changes can lead to severe long-term impacts on local livelihoods and the ecosystem. A proactive approach is therefore required to assess the impacts of policy interventions on the dynamics of the human-environment system. This study uses an agent-based approach to simulate long-term changes in the human-environment system under selected credit and dam-construction schemes in Upper East Ghana. The model can be used as a decision-support tool for local decision makers to assess the impacts of these two policy schemes on the combined temporal evolution of changes in land use/cover and socio-economic farm-household indicators.