Anthropogenic opportunities and constraints for tropical savanna social-ecological systems: the CASEST project

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Abstract

Protected areas (PAs) constitute the keystone of the conservation strategy throughout the world. However, the increasing landscape and habitat changes occurring around PAs have raised new conservation challenges. In many regions, including tropical savannas, interface areas (IAs) between PAs and the outside world are transformed by the expansion and industrialization of agriculture. These changes represent a major threat to biodiversity and

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induce the loss of key ecosystems services (ES) for local people's livelihood and wellbeing. Yet, if correctly managed, IAs may have positive impacts on biodiversity and on local development. The CASEST project aims to (i) build a conceptual framework for analyzing IA social-ecological dynamics, (ii) identify the anthropogenic drivers and leverage points of positive landscape connections and trade-offs at different temporal and spatial scales, and (iii) model IA social-ecological dynamics. In a first step, a quantitative literature review highlighted main research outcomes and challenges about IA social-ecological dynamics. From this work, we are building a conceptual framework for IAs that will be tested in three tropical savanna PAs, in Zimbabwe (Zone Atelier CNRS INEE Hwange), Brazil (Bodoquena National Park) and South Africa (the Garden route). In particular, we will combine (i) remote sensing analyses in order to quantify and map landscape changes at different spatio-temporal scales, and (ii) interviews with local and regional stakeholders in order to map ES demand and trade-offs, and uncover how stakeholders handle trade-offs. Finally, the two approaches will be integrated to model the feedbacks between local and regional anthropogenic drivers (e.g. demography, land uses, infrastructures, ES demand, social networks) and landscape changes at different scales, and therefore address the relationships between social and landscape connectivity. As a final outreach, the CASEST project aims to deliver an operational model for supporting local and regional policy making in the sustainable management of IAs.