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Title:

Balancing socio-economic resilience with environmental sustainability: De-coupled co-evolutionary livelihood systems in Northern Ghana

Abstract

Problem statement and aims

Socio-economic conditions in Northern Ghana differ greatly to those found in Southern Ghana. This is largely due to the change in climate to semi-arid in the north. Chronic poverty is widespread and other socio-economic indices are significantly lower. Rural communities are often entirely dependent on natural resources for livelihood activities. The strong climatic seasonality restricts farmers to only one crop harvest per year. Deforestation is widespread and continuing, soil erosion inhibits farming, floods and drought are increasingly common, and climate change threatens exacerbation of these problems.

In a challenging environment, households rely on variable natural resources. This research sought to examine how livelihood diversification creates adaptability to ensure resilience to changing socio-economic and environmental conditions. The study also aimed to identify to what extent rural livelihood diversification supported the medium to long-term sustainability of the natural resources on which they depend.

Methods

This research combined complex adaptive systems and co-evolutionary systems approaches. A conceptual framework (Figure 1) indicates how natural resource management and livelihoods form the central links in combined social-ecological systems.

Fieldwork was conducted in Yendi Municipality, Northern Region of Ghana in 2012. The area is semi-arid with an ecosystem type of open Guinea savanna.

This research drew on mixed quantitative and qualitative methods. The researcher was placed with a local non-governmental organisation (NGO), Evangelical Presbyterian Development and Relief Agency-Yendi (EPDRA), who are implementing three participatory agriculture, natural resource management and livelihoods projects. During placement with EPDRA ethnographic observation was used to identify relationship between local institutions (including community institutions) and NGO activities. With aid of a local translator, 40 survey interviews, 23 semi-structured interviews, and seven key informant interviews were also conducted.

Survey data were analysed with descriptive statistics. Qualitative data from ethnographic observation and interviews were analysed using axial coding and textual analysis.

Results

The mean number of livelihoods across all survey respondents was 2.63. In all but one of the demographic areas, females carried out more livelihood activities than males, 2.79 and 2.48 respectively. Farmers and rural respondents had a higher mean number of livelihood activities than non-farmers and urban respondents. Multiple livelihood sources were required because farming activities were restricted to one season and the required natural resources were not reliably available. Livelihood diversification allowed for short-term adaptation to changes in socio-economic and environmental conditions.

Heavy reliance on natural resources for rural livelihoods has resulted in deforestation. Respondents stated that the plants they require are now harder to find than previously and they must travel further to find the resources they need. Despite a continual degradation of local vegetation and environmental conditions, rural communities have not adjusted their livelihood activities over the long-term.

Discussion

Livelihood diversification allows for adaptability to changing conditions in the short-term. This provides increased human, social and financial capitals and reduces the vulnerability of communities to experienced change. However, extraction of natural resources without effective management has resulted in a loss of natural capital, lowering resilience to environmental shocks and stresses. As natural resources become harder to find, this increases socio-economic vulnerability in the medium to long-term. Results indicated that the social and ecological systems in Yendi have become de-coupled. The central links between the systems now shows natural resource use rather than management, feeding back to a continual cycle of environmental degradation and livelihood vulnerability.

The findings highlighted the need for EPDRA to enforce natural resource management and agroforestry projects.

To further this study, ongoing doctoral research is assessing the role of the transfer of knowledge in participatory projects for ensuring resilience of social-ecological systems.



Figure 1. Combined social-ecological systems for natural resource management