



Determinants of the process and outcomes of household participation in collaborative forest management in Ghana: A quantitative test of a community resilience model



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ABSTRACT

This study tested a proposed community resilience model by investigating the role of institutions, capital assets, community and socio-demographic variables as determinants of households' participation in Ghana's collaborative forest management (CFM) program and outcomes of the program. Quantitative survey data were gathered from 209 randomly selected households from two forest-dependent communities. Regression analysis shows that households' participation in the CFM program was predicted by community location, past connections with institutions, and past bonding social capital. Community location and past capitals were the strongest predictors of the outcomes of the CFM program as judged by current levels of capitals. Participation in the CFM program also had a positive effect on human capital but had minimal impact on the other capitals influencing household well-being and resilience, suggesting that the impact of co-management on household resilience may be modest. In all, the findings highlight the need for co-management policies to pay attention to the historical context of community interaction processes influencing access to capital assets and local institutions to successfully promote equitable resilience.

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1. Introduction

The concept of co-management has emerged as a response to the call for the inclusion of local communities in governance and sustainable resource management (Noble, 2000; Plummer, 2006). Co-management is a dynamic and process-oriented resource management approach that involves the distribution of rights, responsibilities, and power among different actors, such as resource users, government agencies, and research institutions, across multiple levels (Berkes, 2009; Huitema et al., 2009). Co-management has appeal because it combines the strengths of both centralized and community-based resource management approaches (Berkes et al., 1991; Carlsson and Berkes, 2005).

Expected outcomes of co-management include more efficient and equitable decisions, sustainability of the resource base, and enhanced capacity of local communities (Plummer and Armitage, 2007). In forest policy in particular, expected benefits have

expanded from the supply of forest products to enhanced access to capital assets such as social capital, human capital, natural capital, physical capital, and economic capital. As a result, co-management has become an instrument for attaining social justice, the sustainability of rural livelihoods (Carter and Gronow, 2005), community goals (Jentoft, 2000), and building community resilience (Tompkins and Adger, 2004; Goldstein, 2012). Community resilience refers to the ability of communities to adapt to social and ecological drivers of change while maintaining or enhancing their well-being (Harris et al., 1998; Akamani, 2012). However, not much research has gone into linking the process and outcomes of co-management (Fernandez-Gimenez et al., 2008). With the exception of a few studies, the relationship between co-management and community resilience is yet to be explored empirically. A number of studies have illustrated the positive contributions of co-management to community resilience. Berkes and Jolly (2001) analyzed the responses of the Inuvialuit people in Canada's western Arctic to climate change and found that the implementation of co-management programs enhanced community resilience through linkages with higher institutional levels, as well as enhanced local level flexibility in community

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response to climate change impacts. More recently, [Fernandez-Gimenez et al. \(2008\)](#) studied the process and outcomes of collaborative monitoring programs in the western US. They found that the benefits of collaboration included enhanced understanding and social learning among participants, as well as increased trust and sense of community, all of which potentially contribute to community resilience. On the other hand, other studies have also shown that co-management could potentially lead to the erosion of resilience at the local level. For instance, a study conducted by [Gelcich et al. \(2006\)](#) on the co-management of marine resources in Chile revealed that the program had led to the intensification of conflicts and the loss of trust and resilience among traditional fisheries institutions. Similarly, other studies have noted that co-management often leads to inequitable outcomes that disadvantage less powerful actors ([Berkes, 2009](#)) while offering opportunities for local elite control over resources ([Cinner et al., 2012](#)). But the social and institutional factors that influence the process and resilience outcomes of co-management are less understood.

The collaborative forest management (CFM) program in Ghana offers an opportunity to further explore the relationship between co-management and community resilience. Ghana's adoption of the 1994 Forest and Wildlife Policy provided the policy framework for the pursuit of CFM as well as sustainable forest management ([Kotey et al., 1998](#)). This policy was a response to the social and ecological crises created by the failure of past non-participatory forest policies that were characterized by a narrow focus on forest reserves to the neglect of off-reserve forests, and marginalized rural communities from benefit sharing ([Asare, 2000](#)). The new policy employs a participatory approach that involves communities and other stakeholders in forest decision-making with the goal of promoting the sustainable management of all forests, as well as the equitable sharing of benefits to improve the well-being of rural forest-dependent communities ([Asare, 2000](#); [Nsenkyire, 2000](#)). The focus of the new policy in promoting the sharing of responsibilities and benefits between government agencies and communities in the forest management process is consistent with co-management. Recent evaluations of agroforestry projects implemented under the CFM program in Ghana have shown that while these projects have yielded various short-term benefits, their contribution to sustaining rural livelihoods and the capacity for adaptation in the long run are constrained by various institutional shortfalls ([Kalame et al., 2011](#); [Ros-Tonen et al., 2013](#)). Key among the institutional constraints are the absence of fair and secure benefit-sharing agreements between communities and government representatives ([Ros-Tonen et al., 2013](#)), insecurity of tenure, and benefit capture by local elites due to lack of accountability ([Marfo et al., 2012](#)). Thus far, not much empirical evidence exists on the impact of the CFM program on the resilience of rural forest-dependent communities.

Examining the CFM program as a driver of change, this study is designed to test a proposed community resilience model ([Akamani, 2012](#)) of the determinants and outcomes of community response to drivers of change. The paper employs quantitative survey data to test the factors influencing household participation in the CFM program as well as the resilience outcomes of the program. The paper addresses two main research questions. First, what are the determinants of household participation in the CFM program? And second, what are the determinants of the resilience outcomes of the program? In the next section of this paper, we present the theoretical foundations of the study. This is followed by a description of the study context as well as methods of data collection and analysis. Results are then presented and discussed. The final section presents the conclusion and implications.

2. Community resilience

Growing recognition of the complexity and unpredictability of human–environment interactions has led to the adoption of the resilience framework for studying and promoting the sustainability and well-being of resource-dependent communities ([Joseph and Krishnaswamy, 2010](#)). However, this emerging field of study lacks robust theoretical models for informing research and policy ([Cutter et al., 2008](#)). In the field of forest policy, for instance, there is a need for theoretical models of the relationship between forest-dependent communities and changes in forest policy ([Donoghue and Sturtevant, 2007](#)), such as the co-management of forest resources.

Here, we adopt and test a proposed community resilience model ([Fig. 1](#)) for understanding the process and outcomes of community and household response to social and ecological drivers of change ([Akamani, 2012](#)), based on a synthesis of the interactional community theory in rural sociology ([Wilkinson, 1991](#)) and the theory of social-ecological resilience ([Folke et al., 2002](#)). The concept of social–ecological systems suggests that social and ecological systems are not distinct from each other but rather are interdependent and co-evolving in an unpredictable manner ([Berkes and Ross, 2013](#)). A key assumption of the proposed model is that forest-dependent communities are social–ecological systems that are constantly exposed to drivers of change from various scales, such as policy implementation (e.g. co-management), demographic change, technological change, and so forth. A community's resilience or its ability to successfully adapt to change is critical for enhancing community sustainability in the face of these multiple drivers of change ([Magis, 2010](#)). Community resilience is often used interchangeably with community capacity to depict the multiple dimensions of community well-being, as well as the ability of communities to adapt to change ([Donoghue and Sturtevant, 2007](#)). The model explains the sources of community resilience, as well as the process and outcomes of community response to these drivers of change.

Resilience is conceptualized as a function of access to capital assets as well as relevant institutions and organizations. Capital assets are the resources that communities employ as they respond to various drivers of change ([Magis, 2010](#)). Capital assets are

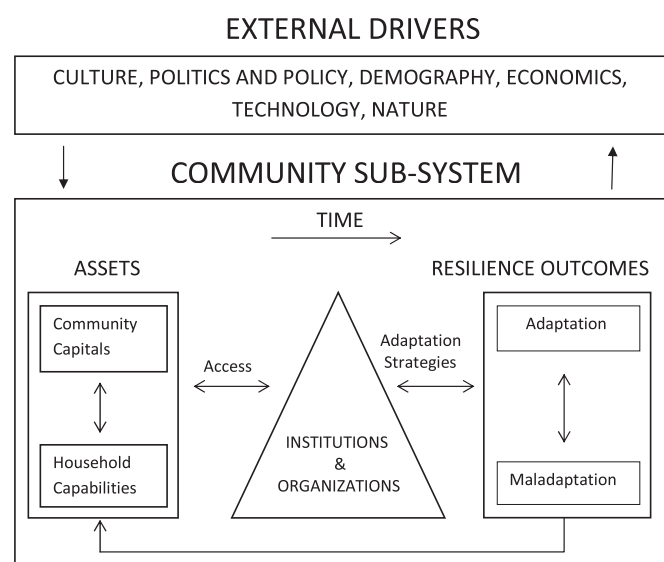


Fig. 1. The community resilience model (adapted from [Akamani, 2012](#)).

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