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Path Dependence, Community Resilience, and Social Responses to the Implementation of Collaborative Forest Management in Ghana

MANAGING AFRICAN COMMONS IN THE CONTEXT OF COVID-19 CHALLENGES (GUEST EDITOR: E. MAPEDZA)

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ABSTRACT

The concept of community resilience has been receiving attention in recent decades as a framework for understanding the capacity of communities to respond to drivers of change while maintaining or enhancing their well-being. However, the process of community response to drivers of change and the factors influencing the change process remain poorly understood. In this study, the community resilience literature was applied in the analysis of community responses to the implementation of collaborative forest management (CFM) in Ghana. Qualitative data were generated from two forest-dependent communities in the Ashanti region of Ghana using key informant interviews and the review of documents. The results highlighted the role of drivers of change, institutions, capital assets, and arenas for interaction in shaping the awareness and motivation, as well as access to resources and opportunities for collective action in both communities. Importantly, community history and context helped explain differences in the responses of the two communities to the implementation of the CFM program. These findings highlight the need for greater recognition of path dependence and other attributes of complexity in resource-dependent communities in order to inform policies that contribute to enhancing community resilience.

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1. INTRODUCTION

In recent decades, a shift has been occurring from centralized forest management approaches toward co-management which entails the sharing of rights and responsibilities between government representatives and local communities (Berkes et al., 1991; Ayers and Kittinger 2014; Akamani and Hall, 2019; Gelcich et al., 2019). The turn toward co-management has been posited as part of the broader shift in the conservation and development arenas from an emphasis on government to governance, which refers to the mechanisms by which state and non-state actors interact to collectively address societal problems (Plummer and Fennel, 2009; Berkes, 2010). These ongoing transitions are expected to generate a range of positive outcomes, including enhanced equity, efficiency, and effectiveness of resource decision-making processes, as well enhanced resource sustainability and community resilience (Tompkins and Adger, 2004; Plummer and Armitage, 2007; Cinner et al., 2012; Akamani and Hall, 2015). However, realization of these benefits requires an understanding of the factors influencing the capacity of communities to successfully respond to the implementation of these conservation policies (Fabricius et al., 2007; Marshall and Marshall, 2007; Akamani et al., 2015).

In view of the growing awareness of the uncertainties stemming from climate change and other drivers of change in recent decades, researchers and policy makers interested in the sustainability of resource-dependent communities are increasing embracing the concept of community resilience (Adger, 2000; Fielke et al., 2018; Berkes and Ross, 2013; May, 2021), which Magis (2010: 401) defines as "the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise." The popularization of the community resilience concept reflects the growing influence of the field of social-ecological systems research in the study of human-environment interactions (MathisonSlee et al., 2022). Social-ecological systems can be conceptualized as integrated and inter-dependent systems of humans and nature that interact with each other in a dynamic and co-evolving fashion across multiple spatial and temporal scales (Anderies et al., 2004; Folke, 2016).

The availability of capital assets, as well as relevant institutions and organizations are generally considered as contextual factors that are essential in meeting the requirements of social-ecological resilience (Walker et al., 2006; Nelson et al., 2007; Akamani, 2012). A growing body of research on social-ecological resilience from the individual level to larger regional systems also increasingly suggest that the ability of social-ecological systems to successfully respond to change is largely dependent on proximate factors, such as the level of awareness about existing threats and opportunities, the motivation to act, as well as access to resources and opportunities for change (Lambin, 2005; Brown and Westaway, 2011; Akamani and Holzmueller, 2017). Moreover, attributes of complexity, such as scale, self-organization, and path dependence are increasingly seen as essential in understanding communities and their responses to drivers of change (Seixas and Davy, 2008; Ayers and Kittinger, 2014; Wilson, 2014; Berkes and Ross, 2016; Akamani and Hall, 2019; Stotten et al., 2021). Thus, more clarity is needed on the process of community responses to drivers of change, such as the implementation of forest policies, and the factors influencing it (Donoghue and Sturtevant, 2007; Beckley et al., 2008; Akamani, 2012).

Using the implementation of Ghana's collaborative forest management (CFM) program as a driver of change and based on theoretical insights from a community resilience model (Akamani, 2012), a qualitative research approach was employed in collecting and analyzing data from two forest-dependent communities in the Ashanti region of Ghana. The purpose was to understand the process of community responses to the implementation of the CFM program. The study was informed by two research questions: how did communities respond to the implementation of various projects under the CFM program? And how can differences and/or similarities in the responses of the two communities be explained from a community resilience perspective? In the next section of the manuscript, the conceptual foundations of the study shall be presented. Next, a description of the context of the CFM program will be presented, after which the site of the study, as well as methods for data collection and analysis shall be described. Following that, the results of the data analysis will be presented along with a discussion of key findings. The last section of the manuscript then provides concluding remarks.

2. THEORETICAL FRAMEWORK: COMMUNITY RESILIENCE

The community resilience concept is generally concerned with the capacity of community members to respond to various forces of change without compromising their well-being (Harris et al., 1998; Akamani, 2012; Chuang et al., 2018). Within the broader social-ecological systems literature, Folke et al. (2002) define resilience as the amount of disturbance a system can absorb and still remain within the same state, the capacity of the system for self-organization, and the capacity to learn and adapt to change. Resilient social-ecological systems have the capacity to cope, adapt, and transform in response to

drivers of change while maintaining desirable attributes of the system (Folke et al., 2002; Nelson et al., 2007; Folke et al., 2010). For instance, the shift in forest policy from sustained yield forest management to ecosystem-based forest management in the Pacific Northwest United States in the early 1990s had differential impacts on the well-being of forest-dependent communities due to differences in the ability of communities to transition from commodity-based to amenity-based economies (Charnley et al., 2008).

As depicted in Figure 1, communities, as social-ecological systems, are often exposed to multiple drivers of change, such as national and international policy interventions, demographic transitions and ecological change that present challenges and opportunities for community sustainability (Fabricius et al., 2007; Akamani, 2012). A driver of change refers to "any natural or human-induced factor that directly or indirectly causes a change in an ecosystem" (Nelson et al., 2005: 175). Drivers of change vary in their attributes, such as frequency, duration, and intensity (Cutter et al., 2008). The effects of direct drivers of change, such as land use change, are often compounded by the influence of indirect drivers of change, including demographic, economic and technological forces (Nelson et al., 2005). While the effects of drivers of change may be either positive or negative (Akamani, 2012), the perception of crises has been found to be one of the most frequent triggers of transitions toward co-management (Castro and Nielsen, 2001; Plummer and FitzGibbon, 2004; Ayers and Kittinger, 2014). The perception of crises can provide a window of opportunity for change toward a more desirable system by highlighting awareness on the shortfalls of the existing system and generating interest among stakeholders to consider alternatives (Swanson and Chapin, 2009; Chapin et al., 2010; Cinner et al., 2012).

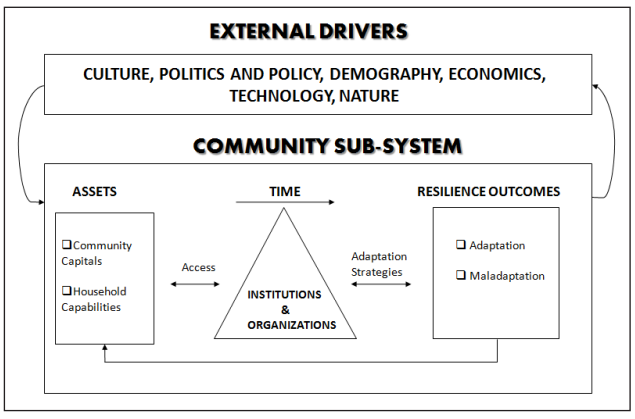

Figure 1 The Community Resilience Model illustrates the mechanisms by which differences in access to capital assets and institutions as a result of social interaction processes lead to differential adaptation strategies in response to drivers of change, as well as differential resilience outcomes. Adopted from Akamani (2012).

The critical resources needed for community response to drivers of change are often represented by capital assets, comprising social capital, natural capital, human capital, economic capital, and physical capital (Beckley et al., 2008; Flora and Flora, 2013). Natural capital is a function of the stock of resources in the biophysical system, and it is shaped by the ownership and access rights to these resources (Costanza et al., 1997; Akamani, 2012). Social capital represents measures of quality social relations, such as social norms that facilitate cooperative behavior and community collective action (Beckley et al., 2008). Human capital refers to an individual's attributes that influence the capacity to access and utilize resources for community development (Magis, 2010). Economic capital comprises financial assets, as well as other opportunities for income and employment that contribute to community and household well-being (Wall and Marzall, 2006). Physical capital refers to the availability and access to various forms of built infrastructure, such as schools, roads, water supply systems and housing (Magis, 2010). Besides their roles as measures of community well-being, these capital assets play essential roles in building community resilience, such as the mobilization and sharing of information and resources, as well as the provision of incentives and opportunities for community collective action (Magis, 2010; Flora and Flora, 2013). Donoghue and Sturtevant (2007) made a distinction between foundational assets and mobilizing assets. The authors contend that while foundational assets, such as physical capital, natural capital, and economic capital constitute the resources a community possesses, mobilizing assets, such as human capital and social capital are integral parts of the social interaction processes through which foundational assets are mobilized for community collective action.

Beside capital assets, community resilience is also shaped by institutions, which refers to the formal and informal rules that order social interactions, expectations and behaviors (Young, 1982; Agrawal and Perrin, 2008; North, 1990). Environmental or resource regimes refer to the institutional arrangements that shape human interactions with various natural resources (Young, 1982). Such institutions represent a subset of the social institutions of the larger society. As such, community capacity to adapt to drivers of change may be shaped by both specialized resource regimes as well as broader societal governance structures (Robinson and Berkes, 2011; Eakin et al., 2014). Effective institutional arrangements that facilitate interactions among different types of institutions (state, market, and civic) at multiple levels play essential roles in the mobilization and sharing of information and other critical resources, as well as providing incentives and creating opportunities for adaptation (Dietz et al., 2003; Agrawal and Perrin, 2008; Österblom and Folke, 2013; Akamani and Holzmueller, 2017).

While the structure of community resources and institutions are critical to resilience, the process of community response to change remains less understood (Akamani, 2012). Insights from the interactional community theory help explore the social processes that influence differential access to resources and institutions in community adaptation process (Figure 1). The interactional community theory (Kaufman, 1959; Wilkinson, 1991) conceptualizes the community as a dynamic entity comprising social fields or arenas through which individuals and groups act to address their common concerns. The interactional community theory recognizes that there are many social fields with special interests within a given locality, but it is primarily concerned with the community field or those place-based social processes that lead to the attainment of community-oriented goals (Wilkinson, 1991; Theodori, 2005). The community field, which is an arena for the pursuit of the general interests of the community, tends to serve critical purposes, including enhancing broad-based awareness about problems and opportunities, mobilization of resources, and providing organizational structures for the pursuit of shared interests (Wilkinson, 1991; Flint et al., 2008). Such community fields are not given, but rather are the emergent outcomes of social interaction processes when conditions are right (Theodori, 2005; Flint et al., 2010). Brennan (2008) identifies the creation of opportunities for interaction and communication among the different segments of the local society as a critical condition for the emergence of the community. However, the emergence of the community can also be inhibited by structural constraints, such as poverty, inequality, ruralness and limited access to social infrastructure (Wilkinson, 1991).

Finally, in line with the concept of path dependence, the community resilience literature highlights the importance of community history and context in shaping community adaptation processes and their outcomes (Akamani, 2012; Wilson, 2014). The concept of path-dependence suggests that past decisions and events influence future actions by shaping the structure of incentives and constraints (Heinmiller, 2009; Dennis et al., 2020). In social processes that are characterized by increasing returns on prior investments, a positive feedback loop is created that makes it virtually impossible for actors to switch to an alternative pathway as the relative benefits of continuing the current trajectory increases while the cost of initiating change increases over time (Pierson, 2000). As depicted in Figure 1, the process of community response to drivers of change may result in the maintenance or improvement in the level of community well-being (adaptation) or a decline in community well-being (maladaptation). The arrow leading from "resilience outcomes" to "assets" depicts that these outcomes shape the stock of resources that influence community capacity to respond to future drivers of change (Akamani, 2012). These theoretical insights were applied to the case of Ghana, although the "resilience outcomes" component of the model was not explicitly analyzed in this paper.

3. COLLABORATIVE FOREST MANAGEMENT IN GHANA

In Ghana, the co-management of forest resources started with the adoption of the Forest and Wildlife Policy in 1994. Kotey et al. (1998) cite a mix of local and external factors, such as the influence of international debates on sustainable forestry, concern over the rights of forest-dependent communities, and inadequacy of government resources to sustain the top-down forest management approach, as facilitating the change in policy. The overall goal of the 1994 Forest and Wildlife Policy is "the conservation and sustainable development of the nation's forest and wildlife resources for the maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society" (Asare, 2000b: 5). In furtherance of the policy, a Collaborative Forest Management Unit was established in 1993 by the Forest Services Division of the Ghana Forestry Commission (GFC) to enhance public involvement in the management of the High Forest zone of southern Ghana. The GFC defines CFM as any interaction between the agency and local communities which aims at generating equitable benefits to local communities while enhancing efficiency in the forest management process (Asare, 2000b; Nsenhyire, 2000). Two of the CFM projects of relevance to this study are the establishment of community-based forest management organizations and the implementation of agroforestry projects.

3.1 COMMUNITY-BASED FOREST MANAGEMENT ORGANIZATIONS

Following the adoption of the 1994 Forest and Wildlife policy, the establishment of Community Forest Committees (CFCs) was one of the first initiatives under the CFM program. The GFC defined the CFC as "a community-based Non-Governmental Organization which will ensure that local aspirations and ideas are taken into account in the conservation, management and utilization of forest resources" (Nsenkyire, 2000: 1). Asare (2000a) provides several reasons why such a community-based organization was needed. Among them are the absence of a legitimate body representing local community interests in forest management issues, lack of awareness of community members about forest management issues and the rights of community members, and the absence of community-based forest monitoring institutions. CFCs were, therefore, designed to enhance community involvement in all levels

of forestry from policy formulation, plan preparation, plan implementation, to monitoring (Asare, 2000b). Membership of the CFC was to range from 7 to 11, comprising all major stakeholder groups in the forest managementt process, such as forest user groups, traditional leadership, and community development agents. Once selected, these members were to be trained and supported to execute their functions (Asare, 2000 a,b).

Closely related to the CFC is the Community Biodiversity Advisory Group (CBAG), another community-based forest organization. Both primarily serve as representatives of the community through which the CFM program is implemented. However, unlike the CFC whose scope of operation covers forest resources found both within and outside the boundaries of forest reserves, the role of the CBAG is primarily to protect areas in forest reserves that have been designated by the GFC as Globally Significant Biodiversity Areas.

3.2 THE MODIFIED TAUNGYA SYSTEM

Agroforestry, which involves the integration of trees with food crops on a given land parcel (Cobbina, 2000; Asase and Tetteh, 2010), has a long history in Ghana's forestry sector, and it constitutes a major component of the current CFM program. The Modified Taungya System (MTS) is a modified version of the old taungya agroforestry system that was implemented in Ghana between the 1960s and 1980s. In that system, local farmers assisted in planting trees in degraded forest reserves. In return, farmers had access to these forest lands for cultivating their crops for a few years until the trees were well-established. This system served as an important source of food supply and a source of livelihood for forest-dependent communities, most of whom had used their farmlands for cocoa plantations (Mayers and Kotey, 1996). Although the taungya system served as an important source of connection among forest-dependent communities and the GFC the program was terminated in the late 1980s due to its widespread failure. Mayers and Kotey (1996) cited the lack of interested participants and lack of appropriate local institutions as the main causes of the failure of the project.

The sharing of rights and responsibilities under the MTS is consistent with the turn toward collaboration under the Forest and Wildlife Policy of 1994. The GFC is responsible for providing seedlings, training and extension services, marketing of the products, and provision of the necessary financial resources for the project. Farmers mainly provide labor for land preparation, as well as planting and taking care of the trees. They also collaborate with the local community to protect the trees from wildfires and illegal logging. In terms of benefits, farmers have the right to grow non-permanent food crops on their lands for the first four years of tree establishment until tree canopy is formed. Financially, the farmer and the GFC each receive 40% of all proceeds that accrue from the tree plantation. The traditional landowners receive 15% and the local community receives 5% (GFC, 2005).

Closely related to the MTS project is the National Forest Plantation Development Program (NFPDP) and the Community Forest Management Program (CFMP). The NFPDP is a broader national policy on forest restoration that was initiated in 2001, of which the MTS is a part (GFC, 2016). As such, the implementation agencies and guidelines for the NFPDP are the same as that of the MTS. The CFMP is another variant of the MTS that was started in 2004 with funding from the African Development Bank and the Government of Ghana. The CFMP also operates with similar guidelines as that of the MTS, although participation in the CFMP is restricted to 50 farmers per community. The CFMP is also widely perceived to be a more lucrative project for participants, as it provides additional funding for alternative livelihood sources.

4. METHODOLOGY

4.1 STUDY LOCATIONS

This study analyzed the responses of two forest-dependent communities in the Ashanti region of Ghana (Kwapanin and Kyirayaso) to the implementation of the CFM program. The communities were selected using a theoretical sampling approach that focuses on selecting cases based on their utility for the analysis of relevant theoretical concepts (Eisenhardt and Graeber, 2007). In consultation with staff of the GFC, the communities were chosen to ensure differential levels of involvement in the CFM program in order to explore the factors accounting for the differences in responses. Kwapanin was selected for its higher level of involvement in the CFM program while Kyirayaso was selected to represent a lower level of involvement. Both communities were chosen from within 5 km of a forest reserve as forest-dependent communities, and had population sizes of less than 5000, which is the population threshold for small and rural towns in Ghana. The socio-demographic attributes of the selected communities are similar to those of other rural communities in the Ashanti region.

Kyirayaso is a small farming community that is located in the Atwima Mponua District. At the time of the study, the community had a population of 976 inhabitants according to the 2010 Population and Housing Census of Ghana. The community abuts the Tano Offin Forest Reserve which covers an area of 413.92 square kilometers, of which 178.34 square kilometers has been designated as a Globally Significant Biodiversity Area (Derkyi et al., 2013). The majority of residents of Kyirayaso are members of the Akan ethnic group. The community is governed by

traditional institutions, comprising traditional leaders who operate based on informal customary norms, as well as local government institutions that constitute part of the decentralized system of governance in Ghana.

Kwapanin is also a relatively larger and more ethnically diverse farming community with 1482 inhabitants according to the 2010 Population and Housing Census of Ghana. The community abuts the Afram Headwaters Forest Reserve which covers an area of 201 square kilometers. Similar to Kyirayaso, Kwapanin is governed by informal traditional institutions, as well as formal local government institutions. However, unlike the relatively pristine Tano Offin Forest Reserve in Kyirayaso, the Afram Headwaters Forest Reserve in Kwapanin has partly been degraded by severe wildfires and massive deforestation and was used mainly for agroforestry projects at the time of the study. Another important difference between the two communities is that Kwapanin was involved in the old taungya agroforestry system prior to the termination of the project in the late 1980s. As such, the community had historical working ties with the GFC prior to the implementation of the CFM program. As the results will later show, these differences help explain the differential responses of the two communities to the implementation of the CFM program.

4.2 DATA COLLECTION AND ANALYSIS

Using a qualitative research approach that aims at understanding social phenomena from the perspectives of research participants (Ely et al., 2001; Creswell, 2007), data for the study were generated by conducting key informant interviews and reviewing relevant documents. Prior to the interviews, relevant documents on forest management were reviewed to gain an in-depth understanding of the national and local context of the study. Information generated from the document review process also helped in the identification of key stakeholder categories to be represented in the interviews.

Research participants for the interviews were purposively selected using a snowball sampling approach that relies on the initial participants for information in the recruitment of additional participants (Onwuegbuzie and Collins, 2007). Research participants were selected to represent relevant sectors of the local society in each community such as education, commerce, and local government (Luloff, 1999). Local and external stakeholders in the forest management process were also specifically targeted in the sampling process (Table 1). The external forest organizations comprised representatives of the GFC and a local non-governmental organization involved in the forest management process. The local forest organizations also comprised representatives of the community-based forest management organizations in the selected communities.

SECTOR REPRESENTED	COMMUNITY	
	KWAPANIN	KYIRAYASO
External Forest Organizations	4	5
Local Forest Organizations	2	3
Traditional Leadership	2	3
Local Government	2	1
Forest User-groups	7	9
Educational Sector	1	0
Total	18	21

Table 1 Key informants at the community and district levels.

Each of the interviews was conducted using an interview guide that included open-ended questions on the type of CFM projects implemented in each community, the rationale for the implementation of the projects, actors involved in the implementation process and so forth. The interviews continued until theoretical saturation was achieved, at which point additional interviews did not seem to yield new insights on the phenomenon of interest (Guest et al., 2006).

Following the fieldwork, the data were analyzed in the NVivo software using a deductive coding approach whereby the researcher analyzes the data using categories and sub-categories generated from theory or an established body of literature (Armat et al., 2018). To reduce researcher bias in the coding process, a coding manual, containing relevant categories and their definitions from the community resilience literature was developed and tested with the input of another analyst (Pope et al., 2000), following which the refined coding manual was then used to code the data. Key categories of interest in this manuscript include drivers of change, institutions, capital assets, and interactional arenas. During the process, an analytical memo was kept on theoretical relationships that were emerging from the data. Following the coding process, qualitative comparative analysis (Leech and Onwuegbuzie, 2008) was used to further analyze and interpret the data. This process involved the systematic analysis of differences and similarities between the two cases with regard to the categories and sub-categories. Also, to ensure comprehensiveness in the interpretation of the data, deviant or negative cases – cases that contradicted the emerging patterns in the data – were identified and included in the analysis (Pope et al., 2000).

5. RESULTS AND DISCUSSION

Recent decades have seen an increased focus on community resilience as a framework for understanding the sustainability of resource-dependent communities.

However, the process of community response to drivers of change remains poorly understood. Using qualitative data from two forest-dependent communities in southern Ghana, this study analyzed the process of community response to the implementation of Ghana's CFM program. The results discussed below, highlight the importance of drivers of change, community capital assets and institutions, availability of arenas for interaction, and the influence of community history and context in shaping the awareness, motivation, as well as capacity and opportunities for community response to drivers of change.

5.1 DRIVERS OF CHANGE

One of the main explanatory variables from the community resilience literature on how communities act is the role of drivers of change. In line with findings reported in the existing literature (Cinner et al., 2012; Ayers and Kittinger, 2014), the results of this study showed that the shift towards co-management was triggered by perceptions of social and ecological crises, including forest degradation and rural poverty. These crises created awareness about the failures of the top-down forest management approach, and contributed to community members' motivation to participate in the CFM program.

During the interviews, key informants were asked to describe conditions in their communities at the time just prior to the implementation of the CFM program. Responses overwhelmingly pointed to the prevalence of a range of unfavorable socio-economic conditions, such as lack of employment opportunities, lack of credit facilities, and inadequacy of farmlands that caused hunger, poverty, and general hardships in community life.

> *"Honestly, the community was not like it is today. There was a lot more poverty."* (Traditional leader, Kyirayaso)

> *"Before these initiatives [the CFM projects], in this community, there was hunger in this community because there was no land for us to farm."* (CFMP leader, Kwapanin)

The case of Kwapanin appeared to be more severe due to the adverse effects of earlier historical events in that community. At the time of the CFM program implementation in the early 1990s, it appears the community was still recovering from the devastating wildfires of the early 1980s that had destroyed the cocoa farms that constituted the backbone of the local economy. The wildfires also destroyed much of the community's forest resources. Besides the inadequacy of farmlands and limited employment opportunities, some respondents also lamented over the lack of essential infrastructure in their communities, such as electricity.

Key informants were also asked about the conditions of their forests prior to the CFM program. Respondents from both communities mostly depicted a state of environmental crises stemming from various forms of threats that were facing the forests at the time, including poaching, illegal logging, and wildfires.

> *"There was a lot of poaching and illegal logging, you know, taking place at that time. So, we … we thought that if we don't get in immediately, you know, we'll, we're going to lose everything that is left there."* (NGO representative, Kyirayaso)

> *"The forest used to burn frequently. People used to burn it frequently. But when it happened like that [when the CFM program was introduced], the fires have reduced. This is because people used to set fires when they were in hardships and needed something from the forest [hunting for bushmeat]. But now, that is not happening anymore."* (MTS participant, Kyirayaso)

To understand community motivations for participating in the CFM program, key informants were asked why the CFM program was being implemented. Respondents from both communities expressed the view that the program was intended to improve upon community well-being and the health of their local forests.

> *"Government wants the forest to be there for us for many years to come, so that future generations will also come to benefit from it."* (Traditional leader, Kyirayaso)

> *"Now, one, the community was made to understand that it was a way of fighting poverty. And then, the community was also made to understand that by joining the government to manage the forest, they'll also be protecting some of the important resources in the forest, like timber, and non-timber resources. And then … protecting the animals in the forest."* (Headmaster, Kwapanin)

While most community members emphasized local environmental and socio-economic concerns as the goals of the program, responses from interviewees who were affiliated with the GFC highlighted institutional issues, such as the failure of past non-participatory forest management approaches and the need for community participation as the rationale for the CFM program.

> *"First of all, most of the policies that were actually planned to be implemented in the forest reserves failed simply because we did not involve the communities who are also beneficiaries of the forest reserves and therefore need to understand why certain things were put in place … So, we thought it wise that, in fact, we have to involve them. Get them involved … to let them understand why we are doing certain things in certain ways."* (GFC staff, Kyirayaso)

5.2 INSTITUTIONS

The results of this study showed that community response to the CFM program involved the roles of various formal and informal institutions across multiple levels from the local to the international. In line with the literature (Agrawal and Perrin, 2008; Akamani and Holzmueller, 2017), this network of institutions and organizations facilitated the provision of information, incentives, resources, and opportunities for community participation in the program. The adoption of the Forest and Wildlife Policy of 1994 created an enabling policy environment that provided opportunities and incentives for collaboration and the equitable sharing of benefits. Under this policy, both communities received information and resources from external organizations in establishing community forest organizations. In both communities, participation in the CFM program started with the establishment of community forest organizations with the support of external organizations. In Kwapanin, the CFM program started in 1993 with the formation of an association of NTFP collectors when the community was chosen by the GFC for the pilot phase of the CFM program. The group comprised about sixteen women who harvested food wrapping leaves from the Marantaceae plant. Following the bushfires the community experienced in the early 1980s, leaf gathering became an important economic activity, serving as a major source of livelihood for about 75% of the women and their households (Mayers and Kotey, 1996). However, the women walked about 10 to 12 miles to harvest the leaves every morning, and these had become scarce after the wildfires. Also, their activities were constrained by permit requirements from the GFC. As part of the CFM program, the group received various forms of support from the GFC, including the issuance of free permits, aimed at enhancing the conditions of the women through the extraction of NTFPs. It was learned that the establishment of the association was led by an employee of the British Overseas Development Institute who was affiliated with the GFC at the time. The interviews revealed that the community was chosen for the project because of the high level of dependence of women on NTFPs at the time. A member of the group also emphasized the traditional ecological knowledge of the women on NTFPs as one of the main reasons that attracted the GFC to the group during the pilot phase of the CFM program.

> *"When the work started … a white woman came here. When the white woman came, she said she wanted women who can do the job [harvest NTFPs] because she wanted to establish an organization. So, we stood up and held discussions with her, that we can do it. She asked us whether we can cultivate the leaves [the Marantaceae plant]. And we said, as for that, it's easy … Then she came and established the organization for us and also gave us land … she gave us a place to be planting our things [food crops] on a small scale so that when we come and do the job, we'll get something small to eat."* (NTFP group leader, Kwapanin)

In Kyirayaso, the CFM program started with the establishment of a community-based organization, CFC, in 2000. There was consensus among key informants that the formation of the CFC was initiated by Rural Development Youth Association (RUDEYA) – an external NGO. When the key informant representing RUDEYA was asked why the organization chose Kyirayaso as the location for the establishment of the CFCs, he explained that the organization was established as a response to various threats facing the Tano Offin Forest Reserve, such as poaching, illegal logging and wildfires. Following the selection of the community, the establishment process involved a community entry procedure that included an initial contact with the traditional leaders, followed by sensitization of the community on the need for establishing the CFC, and selection of members of the organization.

> *"As for the CFC, what happened was that the big men [RUDEYA officials] came to this community and said they wanted people who can protect the forest … When they came, they informed the community and the entire community met, and the community itself looked for people for the big men … that these are the people who will help you to protect the forest."* (CBAG member, Kyirayaso)

Following the collapse of the CFC due to lack of institutional support after RUDEYA's project funding ended, another community-based forest management organization, CBAG, was established in the Kyirayaso community. Just like the CFC, the process for the establishment of CBAGs was initiated by an external actor – this time, the GFC.

> *"It was the same government [GFC] that brought it. They informed the chiefs and elders so that the chiefs will look for people who will help so that they [community members and outsiders] don't go to sections of the forest where the white man had demarcated that because of some things, he doesn't want anyone to enter it [Globally Significant Biodiversity Areas]. So we met and established the organization."* (Traditional leader, Kyirayaso).

While the leadership of external organizations was essential in the initiation of these CFM projects, the implementation process involved various types of institutions across multiple levels, including traditional institutions and local governance structures within and outside the communities. During the establishment of the community forest organizations in Kyirayaso, for instance, the implementation process relied on a network of actors comprising formal and informal organizations within and outside the community, such as the community's traditional authorities and local government representatives, as well as external government organizations.

> *"The chief and elders ... I think they played key roles in the whole thing [CFC formation], and the Unit Committee. The District Assembly also supported the whole thing. And ehh ... because of the tree establishment ... we also relied on MOFA [Ministry of Food and Agriculture]..."* (NGO representative, Kyirayaso)

Following the establishment of the community forest organizations, both communities participated in the implementation of agroforestry projects under the CFM program. The results from the interviews revealed that the established relationships between the communities and external organizations through the community forest organizations opened channels for information-sharing and subsequently created opportunities for both communities to participate in the implementation of the agroforestry projects. These interactions between the specialized organizations in forest management within and outside the communities, as well as other formal and informal organizations in the community response process tends to support Robinson and Berkes' (2011) contention that adaptive capacity resides not only in specific organizations but in the broader network of formal and informal institutional linkages embedded in the system. Moreover, the results support Oran Young's (1982) contention that resource regimes, the institutions that regulate the use of specific natural resources, are nested within the governance structures of the larger society.

5.3 CAPITAL ASSETS

While the role of institutions is very prominent in this case study, the role of capital assets cannot be overlooked. Consistent with Donoghue and Sturtevant's (2007) distinction between foundational assets and mobilizing assets, the results of this study showed that social capital and human capital played critical roles as mobilizing assets in the communities' responses to the implementation of the CFM program.

The existing literature highlights the roles of different types of social capital, such bonding, bridging and linking social capital in facilitating the mobilization of information and resources, as well as enhancing access to opportunities (Olsson et al., 2007; Magis, 2010). The networks of trust and reciprocity entailed in social capital also provides motivation for cooperative behavior (Fukuyama, 2001; Pretty and Ward, 2001; Flora and Flora, 2013; Gorriz-Mifsud et al., 2016). Key informant interviews in this study revealed that prior to the implementation of the CFM program, both communities demonstrated the presence of social capital by mobilizing to respond to wildfire threats facing their forest reserves although they had no legal mandate in forest management at the time.

> "W*hen something happened in the forest, such as forest fires, the community could organize for us to go and control the fires. So, we were all watching so that nobody does anything bad in the forest."* (CFC member, Kyirayaso)

> *"The only mechanism that was there was that the forest guards used to come and clear the road [forest boundary]. Sometimes in a year, they clear it once. That means it was those of us here who watched [over the forest] because our farms were close to the forest. So, if you don't watch and fire sets in, then it may burn your cocoa [plantation] or something. So, it was us who protected the forest all the time so that fire doesn't set in and destroy our farm produce."* (CFMP leader, Kwapanin)

During the implementation of the CFM program, social capital played a key role in the responses of both communities. The formation of the community-based forest management organizations and the implementation of the agroforestry projects both required the collective ability of community members to work together. The role of the traditional institutions and local government structures was essential in this regard. In Kyirayaso, local traditional institutions played an influential role in the mobilization of community members for sensitization meetings, as well as the selection of competent young men who were prepared to execute their required duties during the establishment of the community

forest organizations. Similarly, the implementation of agroforestry projects in both communities required community collective action. Following the selection of Kwapanin for the CFMP agroforestry project that is limited to 50 participants per community, the community needed to select 10 people, each of whom would in turn select four people to work with. The selection process involved the collaborative effort of the traditional leadership, local government institutions, and experienced individuals in forest management. The 50 people selected comprised members of the fire volunteer group, NTFP collectors' group, local government representatives, farmers, and other identifiable community groups. Similarly, in Kyirayaso, key informants mentioned the names of two key individuals – both men, as well as the assemblywoman, the Unit Committee members, and the traditional leaders of the community as having played influential roles in mobilizing the community to prepare and submit an application to the GFC for participation in the agroforestry project.

Still on capital assets, human capital, which comprises attributes, such as health, formal education, leadership skills and so forth which enable individuals to experience good quality of life and to contribute to community development (Flora and Flora, 2013), has also been found to contribute to community collective action by enhancing access to information and resources (Sen, 1997; Magis, 2010). The results of this study showed that human capital was a necessary component of community participation in the program. During the establishment of the community forest organizations, the local knowledge of the NTFP collectors in Kwapanin was essential in the selection of the community for the project; and the availability of young and healthy community members willing to protect the forest was essential in the formation of the CFC and CBAG in Kyirayaso. Regarding the agroforestry projects, the selection of Kwapanin for participation in the projects was said to be based on the knowledge and experience of that community. And in Kyirayaso, the leadership of key individuals also seemed to have played a role in the community's application to participate in the agroforestry projects.

The roles of the other types of capitals (i.e., foundational assets) were less prominent but still essential. For instance, economic capital was also an important factor shaping the participation of community members in the agroforestry projects due to the cost entailed in the maintenance of the farms. The communities' proximity to forest reserves that were partly degraded or under threat of degradation (natural capital) was also essential in the selection of the communities for the CFM projects. Also, community infrastructure, such as roads (physical capital) were essential, and their absence adversely impacted the capacity of communities to benefit from the CFM program (Akamani et al., 2015).

5.4 INTERACTIONAL ARENAS

Arenas for collaboration also emerged as another important factor in the communities' response to the CFM program. The literature on resilience highlights the availability of arenas for interaction as essential in transitions toward adaptive comanagement (Olsson et al., 2004). Similarly, interactional community theory highlights the role that opportunities for communication and interaction within community fields or arenas play in promoting community collective action (Kaufman, 1959; Wilkinson, 1991). McDonough and Vachta (2005) have argued that the implementation of forest policies could help create such arenas for interaction through which the community field emerges. Consistent with these insights, the results of this study suggest that the establishment of the community forest organizations created such an arena for interaction between community members and external organizations. This interactional field facilitated the sharing of information and resources and created opportunities for both communities to be subsequently involved in the implementation of the agroforestry projects.

In Kwapanin, agroforestry projects that were implemented comprised the CFMP and the NFPDP. During the interviews, key informants in Kwapanin indicated that it was the establishment of the NTFP collectors' association that led to the re-introduction of the agroforestry projects in their community following the termination of the old agroforestry project in the 1980s.

> *"We farmed [in the old taungya system] for a while and the government made us to vacate the land. So just when we vacated the land, the women's group of leaf collectors … the leaves they used to harvest … some white people also came and saw how they go about harvesting the leaves [and] they decided that where the women go to harvest the leaves is too far. So, they would like the women to farm portions of the forest and cultivate the leaves so they don't have to travel long distances. So, they came and allocated a small portion of the forest to the leaf collectors. That was what made them to start re-allocating the forest to this community and we started farming."* (NPDP leader, Kwapanin)

In Kyirayaso, the MTS is the type of agroforestry project that was implemented in the community. Similar to the case of Kwapanin, most key informants depicted the implementation of the MTS project in Kyirayaso as the outcome of the community-based forest organizations that were previous established under the CFM program in that community.

> *"At first we did not farm in the forest here. So, when they came and established [the CBAG], it was through them that they came to inform us that right now, they have demarcated an area in the forest where the CBAG should watch over. Nobody has the right to enter it. But for those areas outside the boundary … they have to give it to us to farm and plant new trees. That's why I said it was through the CBAG that we got the project."* (Traditional leader, Kyirayaso)

5.5 PATH DEPENDENCE

Consistent with findings in the community resilience literature on the importance of community history and context in shaping community adaptation processes (Dampier et al., 2014; Stotten et al., 2021), the results of this study show that path-dependence may help explain the differential responses of the two communities to the CFM program. Although both communities participated in similar programs, i.e., the establishment of community forest organizations and the implementation of agroforestry projects, Kwapanin was selected to be involved in the program much earlier and was also involved in more agroforestry projects than Kyirayaso. Two events in Kwapanin's history prior to the CFM program may help explain these responses: one is the devastating wildfires the community experienced in the 1980s that destroyed its cocoa farms and forest resources, leading to the dependence of most households in the community on NTFPs as a source of livelihood; the other is the community's involvement in the GFC's taungya agroforestry project that was implemented between the 1960s and 1980s.

During the interviews, key informants mentioned the high dependence of women in Kwapanin on NTFPs and the knowledge they had accumulated in doing so were mentioned as some of the factors that influenced the selection of the community for the pilot phase of the CFM program in 1993. Following the formation of the association of NTFP collectors, the community's subsequent involvement in various agroforestry projects under the CFM program was attributed to the historical ties Kwapanin had established with the GFC, as well as the ecological knowledge the community had accumulated from its involvement in the old taungya agroforestry system that was abandoned in the 1980s. In addition to being involved in the old taungya system, it was learned during the interviews that Kwapanin had continued to participate in agroforestry projects on private plantations after the GFC's taungya project was terminated. Key informants mentioned that the community's success in the implementation of agroforestry on private plantations contributed to its selection for the agroforestry projects under the CFM program.

> *"It was because we did our work and did it well that we got the 2002–2003 [NFPDP] program and later on the CFMP program."* (CFMP leader, Kwapanin)

An interview with the project coordinator of CFMP for the Offinso District, where Kwapanin is located, further highlighted the importance of community history. The interview revealed that beneficiary communities were selected for this program based on factors such as proximity to the forest reserve and community members' attitude towards work, as judged by their past involvement in forest management. Once a community was selected, participant farmers were also selected based on their historical record of involvement in forest management, which determines whether they are capable and willing to participate in the project. This view was corroborated in an interview of staff of the GFC who indicated that Kwapanin's prior engagement with the GFC made it a good candidate community for the coveted CFMP agroforestry project since the community already had the relevant experience.

6. CONCLUSION

In this qualitative study, a community resilience model was employed in analyzing the responses of two forest-dependent communities to the implementation of Ghana's collaborative forest management program. Data were collected using a qualitative approach, involving interviews and the review of documents. Consistent with the community resilience literature, the results highlight the importance of drivers of change, institutions, capital assets, and arenas for interaction as explanatory factors in understanding the community response process. The results suggest that these factors interact in complex ways to shape community members' motivation, awareness, ability, and opportunity for collective responses aimed at addressing their common concerns. Importantly, the results also highlight the critical role that community history and context plays in shaping the differential responses of the two communities to similar drivers of change. The prominence of community history and context draws attention to the path-dependent nature of the community resilience process (Akamani 2012; Wilson, 2014; Stotten et al., 2021). In all, more theoretical and empirical work is needed to understand the roles of various contextual factors in shaping the process and outcomes of community resilience. Moreover, further research is needed to explore the attributes of resource-dependent communities as complex adaptive systems and the implications of these attributes for policies aimed at promoting community resilience and sustainability.

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COMPETING INTERESTS

The author has no competing interests to declare.

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