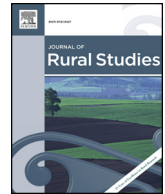




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Understanding climate resilience in Ghanaian cocoa communities – Advancing a biocultural perspective

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ABSTRACT

This paper aims to contribute to the ongoing conceptual development and practical pursuit of resilience, the ability to absorb and respond to shocks, in an agricultural and climate change context. It builds on work that aims to dissolve the nature-society dualism and naturalisation of power relations inherent in systems thinking by developing and extending a framework originally conceived to integrate research on biological and cultural diversity. The resultant ‘biocultural’ framework examines livelihood practices, institutions, knowledge and beliefs and is applied to a case study of cocoa communities in Ghana’s Central Region. Drawing on data collected over three years spanning an El Niño Southern Oscillation (ENSO) related drought event, the analysis demonstrates the utility of an expanded conception of resilience that links livelihood practices, which define the impact and response to droughts, with the constituent knowledge, institutions and beliefs that shape those practices. The study focuses on two key factors that underpin cocoa farmers’ resilience to climate shocks: access to wetlands and access to credit. We argue that particular characteristics of livelihood practices, knowledge, belief and institutions, and their interactions, can be both resilience enhancing and undermining, when viewed at different spatial, temporal and social scales. Although such contradictions present challenges to policy-makers engaging with climate resilience, the analysis provides a clearer diagnoses of key challenges to the resilience of agricultural systems and insights into where policy interventions might be most effective.

1. Introduction

Climate change poses a significant threat to tropical agriculture and the millions of livelihoods that depend on it. In sub-Saharan Africa, although there will be variations across countries, trends towards greater temperature and precipitation extremes are likely to intensify (IPCC, 2014) exacerbating existing development challenges and inequality (Adger et al., 2006; Mearns and Norton, 2010; Okereke, 2010). Against this background interest in the pursuit of resilience has been growing (Barrett and Constanas, 2014; Douxchamps et al., 2017; Howden et al., 2007; Pelling, 2010). Despite being the subject of several areas of debate, resilience is generally understood to refer to the ability of social, ecological, or social-ecological system to absorb, recover, respond and adapt to shocks (Folke et al., 2002).

Despite several decades of progress in these fields, there is still a significant research need in terms of developing insights into the factors that contribute to and undermine resilience that move beyond the

biophysical, knowledge and financial constraints on agricultural production and address underlying political, social and psychological issues (Shackleton et al., 2015). This paper aims to develop deeper understandings of resilience to climate change in African agricultural communities by examining the case of Ghana’s cocoa sector. To achieve this aim, the paper builds on the ‘biocultural’ framework developed by Pretty et al. (2009) and develops an approach to understanding resilience which incorporates livelihood practices, knowledge, beliefs and institutions. This approach is outlined in section 2, but the motivation for developing it is rooted in an intentional effort to build on existing work and capitalise on the ability of the concept to open up meeting points between social and natural sciences (Strunz, 2012), while simultaneously addressing long-discussed concerns regarding the weakness of some approaches to resilience with reference to questions of politics and culture (Arora-Jonsson, 2016; Cote and Nightingale, 2012; Kull and Rangan, 2016; Peterson, 2000).

The case of Ghana’s cocoa sector is illustrative because there is

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growing concern regarding the impact of climate change on the crop and the ~1 million livelihoods it supports (COCOBOD, 2014; Commission, 2014; Gockowski and Sonwa, 2011; Läderach et al., 2013; Schroth et al., 2016). Although the impacts of climate change on cocoa in West Africa are not as drastic as initially feared, with strong spatial variations regionally, there is general agreement that the overall area of suitable land will decline in the coming decades (Läderach et al., 2013; Schroth et al., 2016). Whilst this may lead to spatial shifts of cocoa in due course, on shorter-time scales, there is a need to understand the resilience of cocoa farmers and their communities, whose involvement with cultivating cocoa is socially differentiated along gender, age and ethnicity lines (Anyidoho et al., 2012; Carr, 2008; Friedman et al., 2018). The 2015/2016 El Niño-South Oscillation (ENSO) event provides an excellent case with which to study the existing character of resilience in Ghana's cocoa communities.¹ This paper draws on data collected before, during and after the 2015–2016 drought to assess contemporary dynamics of resilience.

The paper is organised as follows. The next section describes the 'biocultural' framework this paper employs. In Section 3 we describe the study site and the methodology before Section 4 presents the main results. These are presented in three parts. The first provides an overview of the impact of the ENSO event to contextualise the subsequent sections which examine in detail the two primary coping and adaptive strategies employed in the community - the conversion of wetlands and the borrowing of money. The penultimate section critically reflects on these findings and develops the argument that the factors which underpin resilience in Ghana's cocoa community are intimately interwoven with the barriers to increasing resilience. The implications of this are examined in the conclusion along with specific recommendations for Ghana's cocoa sector and reflections on the climate resilience agenda in general.

2. Resilience and biocultural thinking – an analytical framework

The dualism between material nature and immaterial culture, which has both deep roots (e.g. in the Philosophy of Descartes) and modern expressions (e.g. in the eco-modernist manifesto, see Asafu-Adjaye et al., 2015), has been diagnosed as a symptom of humans' perceived need to manage and control nature (Berkes, 2012). However, it is increasingly recognised that nature and culture are inseparably interwoven and the implications of this ontological shift continue to be explored within several theoretical and academic disciplines and has underpinned calls for interdisciplinary research (Barry and Born, 2013; Descola, 2013; Pretty, 2011; Whatmore, 2002). Resilience has emerged as among the primary 'interdisciplines' that has developed an agenda that reflects the connections between nature and culture, manifest in the dominance of the term social-ecological systems. Resilience is widely referred to as 'the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change' (Adger, 2000:347), and is closely associated with a range of related and overlapping concepts, including absorbing shocks, coping, adaptation, adaptive capacity, and vulnerability (Adger, 2000, 2006; Berkes and Ross, 2013; Folke, 2006; Folke et al., 2002, 2005; Gallopín, 2006; Holling, 1973; Walker et al., 2004). Despite referring to a range of theoretical and conceptual approaches to social-ecological problems, in general the field of resilience research has been

characterised by a normative, coherently systematic and reformist approach (Kull and Rangan, 2016). Climate resilience can be defined as the ability of individuals and communities to cope with, and adapt to, the social, political, economic and ecological challenges precipitated by a changing climate and climatic events.

Climatic resilience can vary significantly within and between communities because even small communities are typically hugely heterogeneous and sites of political, social, economic and cultural contestation. The community of scholars engaging with the concept of resilience shares these characteristics. Notably, the 'mainstream' resilience community has been critiqued for the shift of resilience from an analytical framework to a normative agenda used to design and implement policy initiatives to manage social ecological systems (Folke et al., 2005; Olsson et al., 2006). In particular, concern has been raised about the normative commitments in resilience thinking, particularly when coupled with the tendency for systems thinking to overlook critical cultural and political contestations (Brown and Westaway, 2011; Cote and Nightingale, 2012; Fisher et al., 2013; Hornborg, 2009; Miller et al., 2010; Thorén and Olsson, 2017; Turner, 2014). As Tschakert and Dietrich (2010:12) note in the context of climate resilience, the emergence of 'climate-proofing' thinking that suggests that development plans can be shielded from climate change simply by the identification and implementation of appropriate (typically technological) adaptive measures actually 'obscures the very processes that shape adaptive and resilient livelihoods'.

These critiques point towards the need for ongoing theoretical developments and practical applications that can provide insights into the complexities of pursuing resilience. This paper proposes that building on four 'bridges' widely identified within in the resilience literature, and brought together by Pretty et al. (2009) to integrate biological and cultural diversity, can be fruitfully developed in the context of examining climate resilience. The bridges of this 'biocultural' analytical framework are livelihood practices, knowledge, institutions and beliefs, and are briefly examined below.

2.1. Livelihood practices

Agriculture in general, and cocoa farming in particular, is a critical livelihood practice in Ghana and elsewhere in West Africa. Livelihood practices, broadly conceived here as the actions people take to try and meet their needs and fulfil their desires, are central to understanding the constituents of resilience because they both profoundly shape, and are shaped by, ecological processes. The emergence of the ecosystem services framework and related research (Assessment, 2005) testifies to the contributions ecosystems make to human wellbeing, but as Comberti et al. (2015) argue, the relationship between people and ecosystems is reciprocal. Increasingly, the idea of nature as wilderness, devoid of human intervention, is being replaced by an understanding that all landscapes are shaped, either directly or indirectly, by human activities (Nelson and Callicott, 2008). Furthermore, there is a general tendency, especially within the ecosystem services literature, to focus on the positive components of nature's contributions to humans, but there are a range of dis-services and antagonisms; natural process can frustrate the endeavours of human actions just as human activity may undermine the functioning of ecological processes that underpin the provision of ecosystem services (Dunn, 2010; Lyytimäki and Sipilä, 2009; von Döhrn and Haase, 2015; Zhang et al., 2007). These interactions mean examining material livelihood practices is an essential element of resilience that may be marginalised in analyses which focus exclusively on the factors such as knowledge, institutions and beliefs that underpin those practices (Berkes, 2012; Gorrard et al., 2016; Tanner et al., 2014). Nonetheless, knowledge, institutions and beliefs do form a sound basis for developing deeper understanding of the social-ecological relations that shape patterns of resilience, and are examined below.

¹ Rainfall patterns in West Africa are largely shaped by sea surface temperatures in the Gulf of Guinea which in turn are determined by multiple interacting phenomena, including the Inter-Tropical Convergence Zone (ITCZ), Atlantic Multidecadal Oscillation (AMO), Indian Ocean Dipole (IOD) and El Niño Southern Oscillation (ENSO). Disentangling the relative influence of these teleconnections is challenging and therefore it is difficult to precisely attribute particular weather observations in West Africa to ENSO. In the absence of any meteorological analysis suggesting otherwise, it is assumed that ENSO contributed to the extended dry season in Ghana.

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