

The Role of Microfinance in Household Livelihood Adaptation in Satkhira District, Southwest Bangladesh

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Summary. — There is increasing interest in the potential of microfinance to foster climate change adaptation. However, existing literature over-relies upon theoretical arguments rather than empirical evidence, and until now the emphasis has been on potential positive linkages. We address these weaknesses by empirically examining the role of microfinance in adaptation, drawing from household-level quantitative and qualitative data gathered from Satkhira District, Southwest Bangladesh. We find evidence that microfinance facilitates coping by reducing sensitivity to environmental and climate hazards. Credit is especially important because its availability is uncorrelated with the occurrence of flooding, unlike many other traditional coping responses. We also find evidence that microfinance facilitates adaptation by helping households to overcome financial barriers of adopting adaptation options which reduce exposure or sensitivity. However, credit limits are likely to restrict its role to incremental adaptations, which may not meaningfully reduce vulnerability. Transformational adaptations at times required access to bank credit which the poorest cannot access. This restricts their ability to effectively adapt and are penalized financially by having to obtain loans to cope. We also find evidence that microfinance can lead to maladaptation when used in non-profit generating activities as income streams are not produced to help repay associated costs. Almost a fifth of all loans were obtained for repaying existing loans. Thus microfinance may undermine longer term adaptive capacity.

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Key words — Bangladesh, climate change, adaptation, flooding, microfinance, microcredit

1. INTRODUCTION

Climate change poses a particular threat to developing countries that lack the resources necessary to cope with the increasing climate variability and hazards it exacerbates (IPCC, 2014b). Climate change will have many negative consequences which will particularly impact on low-income and otherwise disadvantaged groups if no appropriate measures are taken. Consequently, adaptation to climate change (henceforth adaptation) is an important policy issue for developing countries. Three broad approaches to adaptation have emerged among practitioners: standalone adaptation, adaptation plus development, and adaptation as development (Ayers & Dodman, 2010). Each approach has implications for how adaptation is understood and operationalized. The standalone approach only tackles the additional anthropogenic aspect of climate change (see Hulme, O'Neill, & Dessai, 2011). 'Adaptation plus development' considers the two activities as distinct but sees that adaptation requires mainstreaming into development (see Sperling, 2003). 'Adaptation as development' considers the two activities as synonymous with 'good development', as is the case with community-based adaptation (see Forsyth, 2013).

Adaptation can take place in a top-down manner through planned measures undertaken by the public sector; and through autonomous bottom-up measures by households, businesses and other organizations. A combination of the two approaches is also possible (Smit *et al.*, 2001). Increasing flows of international and national finance are available to support adaptation. Much of these financial flows have been devoted to top-down adaptation efforts: only a small portion reaches the local-level and even less is available to support autonomous household adaptation (Fenton, Reid, Wright, & Huq, 2015).

There is growing interest in the potential of private finance to support autonomous adaptation. However, much

uncertainty exists regarding its role, despite it being widely used for mitigation. Microfinance is one key way of mobilizing private finance (and channeling public finance) for autonomous household adaptation (for overview see Fenton, Paavola, & Tallontire, 2015). Microfinance has been an important international development tool for over three decades, but little evidence exists beyond conceptual arguments on microfinance-adaptation linkages. Empirical studies adopting an adaptation lens are needed to address this evidence gap (Fenton *et al.*, 2015). This article seeks to contribute in this regard.

By microfinance we refer to formalized financial services to low-income and otherwise disadvantaged households that are not served by the conventional banking sector. We distinguish between formal and informal finance. Formal finance consists of financial exchanges between a legally recognized institution and individuals. Informal finance in turn consists of financial exchanges between individuals. Many approaches to microfinance exist in terms of the type of financial services offered, whether non-financial services are offered, the legal status of provider, ownership and management structures, source of funds, lending mechanisms, and borrower liability (de Aghion & Morduch, 2005; Dunford, 2001; Matin, Hulme, & Rutherford, 1999; Rutherford, 1996; Staschen, 1999).

We examine autonomous household adaptation and how microfinance influences livelihood outcomes in Satkhira District in Southwest Bangladesh. Bangladesh is a good location to examine the linkages between microfinance and household adaptation. It has a vibrant microfinance sector and is one

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of the most vulnerable countries to climate change. It is exposed to multiple environmental and climate hazards, particularly flooding which affects large parts of the country (MoEF, 2008). Our findings indicate that microfinance can facilitate adaptation by enhancing coping capacity and by enhancing adaptive capacity. However, microfinance can also lead to maladaptive outcomes via over-indebtedness. We conclude that better product design and integrating microfinance with wider top-down adaptation efforts would help microfinance to achieve its potential for adaptation.

In what follows, we outline our analytical framework and identify the pathways through which microfinance can influence adaptation. We then outline the materials and methods used and describe the case study site in terms of livelihoods, environmental and climate hazards and financial institutions operating in the area. We then report our findings, relate them back to the literature and conclude.

2. ANALYTICAL FRAMEWORK

There are three strands of adaptation literature (Eakin & Luers, 2006; Eakin, Tompkins, Nelson, & Anderies, 2009; Janssen, 2007). The ecological resilience approach originates from ecology and focuses on feedback loops and thresholds in socio-ecological systems (Folke, 2006). The political ecology approach originates from the poverty and geography literatures and focuses on concepts such as poverty, equity, and capabilities (see Adger, 2006). The risk-hazard approach originates from the natural hazards literature and focuses on practical risk reduction efforts which reduce exposure and sensitivity to environmental and climate hazards (Smit & Wandel, 2006).

We adopt the risk-hazard approach due to its greater compatibility for examining autonomous household adaptation. This approach has the premise that risk reduction efforts lessen future climate risks and contribute to ensuring the sustainability of future development (see Ayers & Dodman, 2010; Schipper, 2007). Consequently, while it recognizes linkages between vulnerability to environmental and climate hazards and wider vulnerability caused by structural causes it ultimately sees these as distinct. It is highly compatible with understanding autonomous adaptation by households that are likely to adapt through managing and reducing livelihood risk (Ayers & Forsyth, 2009; Fenton, Paavola, & Tallontire, 2016). It is also compatible with the assessment of microfinance for which households, livelihoods, and risk are important concepts. However, we seek to integrate the complementary insights provided by the political ecology approach on equity in the discussion section to compensate for the insufficient emphasis on equity considerations within the risk-hazard approach (Fenton *et al.*, 2016).

In the risk-hazard approach, household adaptation is the process through which households adjust to changing conditions, hazards, risks, and opportunities posed by climate change (Smit & Wandel, 2006). The need to adapt stems from vulnerability to environmental and climate hazards (henceforth vulnerability). We understand vulnerability as a function of exposure, sensitivity, and adaptive capacity (IPCC., 2014a). Exposure refers to the potential of assets, livelihoods, and environmental resources to be adversely affected by climate hazards and the likelihood of harm occurring (IPCC, 2014a). Sensitivity refers to the extent to which they can be affected by climate hazards (IPCC, 2014a). Adaptive capacity refers to the tangible and intangible factors enabling a household to adapt (Grothmann & Patt, 2005; Jones, Ludi, &

Levine, 2010; Smit & Wandel, 2006; Williams, Fenton, & Huq, 2015). It is affected by how wider social, cultural, political and economic forces are locally manifested (Smit & Wandel, 2006). The frequency by which hazards occur can influence adaptive capacity by depleting resources needed for future adaptation (Smit & Wandel, 2006). However, adaptive capacity does not necessarily lead to adaptation, reasons for which are insufficiently understood (Brown & Westaway, 2011; Grothmann & Patt, 2005).

The ways in which households can reduce vulnerability are known as adaptation options, while factors restricting the feasibility of adaptation options are known as adaptation barriers. The factors which limit the number of adaptation options available are referred to as adaptation limits (IPCC, 2014a). Adaptations can be characterized by the degree of change they entail. Adaptations that enable limits to be overcome can be deemed transformational; and those that manage changing risks posed by hazards are deemed incremental (Fenton *et al.*, 2016; Park *et al.*, 2012). Maladaptation occurs if adaptation measures inadvertently increase vulnerability (Barnett & O'Neill, 2010). Within the adaptation framing we utilize, maladaptation occurs if exposure or sensitivity to natural hazards and stresses is inadvertently increased or adaptive capacity reduced.

Adaptation is distinct from coping, which refers to immediate household responses to environmental and climate hazards when they occur, such as obtaining credit or selling assets (Berman, Quinn, & Paavola, 2012). Coping strategies often maintain current livelihoods when possible. Actions detrimental to future livelihoods are avoided if possible, but are taken as a last resort (Ellis, 2000). In contrast, adaptation consists of anticipatory or reactive changes which alter livelihoods and reduce long-term vulnerability (Vincent *et al.*, 2013). However, it has been noted that the categorization of an action as coping or adaptation can be context and scale dependent (Vincent *et al.*, 2013). Despite being distinct entities, coping and adaptation are linked in that coping capacity is a prerequisite for adaptive capacity (Berman *et al.*, 2012). Additionally, they are determined by the same context, resources, and exposure to hazards which underpin adaptive capacity (Smit & Wandel, 2006). Furthermore, the frequency by which hazards occur can deplete resources needed for both future coping and adaptation (Smit & Wandel, 2006).

Microfinance has been proposed to facilitate adaptation by (1) improving ex-post risk recovery by enhancing coping capacity (Heltberg, Siegel, & Jorgensen, 2009); and (2) improving ex-ante risk reduction by enhancing adaptive capacity (Agrawala & Carraro, 2010; Hammill, Matthew, & McCarter, 2008). Additionally, concerns have also been raised about possible links with maladaptation (Hammill *et al.*, 2008). There is a need for empirical evidence to substantiate these links in light of recent literature that questions the links between microfinance and poverty reduction (Duvendack *et al.*, 2011; van Rooyen, Stewart, & de Wet, 2012). We seek to contribute to filling this gap by examining the microfinance-adaptation linkages at household-level in the Satkhira District in Southwest Bangladesh.

3. MATERIALS AND METHODS

Our research was conducted in Noapara village in the Satkhira District of Southwest Bangladesh. The site was chosen on the basis of key informant interviews conducted with national and local non-governmental organizations (NGOs) and community representatives. Noapara village was selected

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