

Gender and Climate Change Adaptation in Agrarian Settings: Current Thinking, New Directions, and Research Frontiers

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Abstract

The impacts of climate variability and change impinge upon different lives and livelihoods within agrarian populations in complex ways. While academic, donor, and implementer efforts to understand and act on this complexity have been profoundly influenced by gender analysis, most contemporary analyses are predicated on a construction of gender as binary (men versus women). This approach runs contrary to current understandings of gender and identity in the wider social science literature, which treats gender as a social categorization that takes meaning from its intersection with other identities, roles, and responsibilities. An emerging adaptation literature takes on this intersectional approach to gender, making conceptual, methodological, and empirical arguments against assessing the vulnerability of agrarian populations to the impacts of climate variability and change through binary gender categories. This literature argues that binary approaches are likely to overlook the specific challenges facing significant portions of any agrarian population, and therefore can result in maladaptive interventions that enhance, instead of ameliorate, the vulnerability of the most marginal and vulnerable. Though this emerging literature makes a compelling case for change, efforts to convince the academic and implementation communities focused on agrarian adaptation to adopt intersectional gender analyses point to two broad research frontiers. First, convincing these communities of the value of this shift will require an expanded, rigorous empirical base of evidence for who is overlooked by binary gender analysis relative to intersectional analysis in particular places. Second, facilitating the implementation of intersectional approaches will require methodological innovations that have thus far been under-addressed in this literature.

Introduction

The impacts of a changing climate on the lives and livelihoods of the global poor become clearer with each passing year. Among agrarian populations, these impacts are particularly pronounced, as they contend with ever-more uncertain conditions in which to raise food and earn a living. While the impacts of climate change have effects, large and small, on all who rely on agriculture for their livelihoods, these effects are not uniformly felt. The contemporary literature on adaptation widely acknowledges that the patterns of vulnerability to climate change impacts we see today are largely, if not principally, shaped by roles, responsibilities, and entitlements associated with various markers of social status and expectation, including gender, class, and caste (for example, Adger 2006; Paavola and Adger 2006; Pelling and High 2005; Reid and Vogel 2006).

This broad understanding informs that portion of the literature focused on adaptation in agrarian contexts. Drawing on decades of feminist scholarship on agriculture and agricultural development in the Global South (Angeles and Hill 2009; Barrientos et al. 2005; Barry and

Yoder 2002; Bassett 2002; Bhuyan and Tripathy 1988; Boserup 1970; Bryceson 1995; Carney 1996; Carr 2005; Chikwendu and Arokoyo 1997; Creevey 1986; Dixon 1982; Egharevba and Iweze 2004; Feldman and Welsh 1995; Ferguson 1994; Gairola and Todaria 1997; Goebel 2002; Goheen 1988; Grier 1992; Harrison 2001; Harriss-White 1998; Jackson 1993; Jackson 1998a; Jha 2004; Koopman 2009; Leach and Fairhead 1995; Mama 2005; Mbata and Amadi 1993; Moser 1993; Oakley and Momsen 2007; Peters 1995; Radel 2011; Razavi 2009; Riley and Krogman 1993; Rocheleau et al. 1996), this literature focuses heavily on gender as a critical social cleavage through which climate-related impacts on agricultural livelihoods are shaped. Emerging work on the gendered implications of climate change in agrarian settings highlights how these gendered patterns of labor and responsibility produce both differentiated vulnerabilities (where different members of a population experience and/or respond to the impacts of the same event or trend differently) and distinct vulnerabilities (where different members of a population are exposed to different events and trends), at scales from the household to the community to the country (Carr 2008a; Sultana 2013; Swai et al. 2012). These findings make a compelling case for the incorporation of gender analysis in the design of any program or project that aims to address the climate variability and change-related vulnerabilities experienced by those living in agrarian settings.

While it serves to highlight one set of important social differences that shape adaptation outcomes in agrarian settings, the bulk of the contemporary gender and adaptation literature, as well as majority of the implementation work that seeks to incorporate gender into climate change adaptation programming, makes its case through very narrow binary gender analyses, where “man” and “woman” are treated as unitary categories with contrasting needs. This binary framing of gender does not reflect current understandings of identity in the wider social science literature. Contemporary feminist research has moved beyond the duality of man vs. woman to demonstrate that gender categories gain meaning not just through opposition to one another, but also with reference to a host of other social markers like age, income, and ethnicity. This research demonstrates that many of the constraints and opportunities people face in the context of climate variability and change are shaped at the intersection of the responsibilities and expectations attached to a wide range of social differences. Thus, it is possible, and perhaps likely, that in a given agrarian community, the vulnerability of a wealthy woman’s livelihoods to climate variability may have more in common with that of a wealthy man than they do with the vulnerability of a poor woman’s livelihoods. As the second part of this article will show, a small but growing body of work in development studies and the literature on adaptation to climate change has taken up this contemporary feminist approach to understanding gender in the context of climate change adaptation. A portion of this emerging literature makes a conceptual argument for this approach, while the rest is driven by empirical case study evidence whose interpretation demands the disaggregation of gender categories. These case studies suggest that aggregating information on vulnerability in binary gender categories creates situations in which we are likely to overlook the needs of significant portions of the population that we mean to target with climate-sensitive development interventions. Such situations can result in maladaptive interventions that enhance, instead of ameliorate, the vulnerability of the most marginal and vulnerable in a given population. Thus, while a contemporary approach to gender analysis in the context of climate change adaptation reveals a complex landscape of vulnerability often obscured by binary gender categorizations, it also points us toward broader sources of vulnerability that might be addressed in development and adaptation programming, and therefore improves the chances that a given intervention will address the needs of all members of a given community.

Gender, Adaptation, and Agrarian Development

Since at least the 1970s, development studies (heavily influenced by disciplinary work in geography and anthropology) has recognized the importance of gender as a means of explaining development outcomes, and therefore the importance of gender analysis in designing programs and projects that are targeted to the often-variable needs of men and women in the same country, community, and even household. The bulk of this work starts from the assumption that men and women are social categories with distinct vulnerabilities, and that both men's and women's vulnerabilities present challenges to economic growth and other means to improved well-being in the Global South (for a discussion, see Jackson 1998b; Lawson 1995; Moser 1993). While a full review of this extensive literature is beyond the scope of this article, there are many instances where the concern for gendered vulnerabilities in agrarian settings stems from either implicit or explicit consideration of climate-related stressors. Here, we survey the broad lessons of this literature as it pertains to this specific concern.

First, the gender and rural development literature demonstrates the existence of a broad, pervasive (if not universal), and enduring lack of women's inclusion in agricultural decision-making in households at scales and settings from the household to agricultural development programs and projects (Alston and Wilkinson 1998; Damisa and Yohanna 2007; Dankelman 2002; Dankelman and Jansen 2010; Kabeer 2001; Kabeer 2005; Lambrou and Paina 2006; Merha and Rojas 2008; Skutsch 2002). This inequality in decision-making goes beyond selection of what crops will be planted and when, to socially constructed rules of who is allowed to sell in markets, rules on traveling to markets, and other restrictions on mobility (Chaudhury et al. 2012; Djoudi and Brockhaus 2011). In the context of adaptation to climate variability and change, such decisions are critical factors shaping agricultural outcomes. Further, sparse women's input on national, regional, and global climate agreements is a visible reminder of antiquated male-dominated power structures that remain pervasive today, and which often fail to reflect the particular climate-related concerns of women (Boyd 2002; Skinner 2011).

Second, this literature shows that in agrarian communities in the Global South, access to land is often marked by significant gendered inequalities. These inequalities include disparities between men's and women's abilities to purchase and hold land, as well as inequalities in access to communally held or managed land (especially the most desirable farm plots) (Agrawal 2003; Brody et al. 2008; Djoudi and Brockhaus 2011; FAO 2011; Karanja 1991; Nelson et al. 2002; Quisumbing and Pandolfelli 2008; Tripp 2004; Udry and Goldstein 2008; Whitehead and Tsikata 2003). Such inequalities have wide-reaching gendered impacts on agricultural productivity, which can be exacerbated by the impacts of climate variability and change. Unequal entitlement to land not only affects women's agricultural outcomes and resilience by limiting the size and quality of their farms, but also limits their ability to access credit (FAO 2011; Fletschner and Kenney 2011). Many small farmers need this credit to purchase more climate change-resistant seeds and livestock varieties, farm technologies, and fertilizer inputs (Ahmed and Fajber 2009; Demetriades and Esplen 2008).

A third theme in this literature focuses on the existence of gendered agricultural practices and crops, for example, demonstrating how the different crops grown by men and women present different challenges and opportunities in the context of particular environments and economies (Arndt and Tarp 2000; Carr 2008b; Cloud 1986; Doss 2002; Ezumah and Di Domenico 1995; Gladwin 1992; Kevane 2011; Lope-Alzina 2007; Padmanabhan 2007; Sachs 1996; Shiva 1988). These studies demonstrate that women often raise crops that are more sensitive to climate variability than do men. As many such women are not the principal agricultural decision-makers in their households or communities, the vulnerabilities that result from this differential climate impact are often not addressed by indigenous or traditional

strategies, and can be exacerbated by development and/or adaptation interventions that work within existing divisions of labor. These authors argue that by understanding the different vulnerabilities associated with particular crops grown by men and women, we can better understand the challenges development programming is meant to address, and therefore improve development and adaptation outcomes for women (and ideally men, though men's needs and benefits are not always explicitly mentioned in the literature on gendered crops). Less examined in this theme are the ways in which gendered roles in agrarian communities are changing in the context of climate change. In their examination of shifting gendered roles and household gender relations in rural Australia, Alston and Whittenbury (2012) suggest that these changes are not straightforward adjustments to changing material situations, but complex renegotiations of the very categories "man" and "woman" that must address not only changing agricultural situations, but also long-standing expectations of the genders in this context.

A fourth theme in this literature is the failure to identify women's activities as appropriate targets for development or extension programs. As Demetriades and Esplen (2008, 3) explain, "These obstacles are further exacerbated by gender biases in institutions which often reproduce assumptions that men are the farmers... The result is that agricultural extension services and technologies are rarely available to women farmers" (see also Ahmed and Fajber 2009; Boserup 1970; Buvenic 1986; Saito and Weidemann 1990). This unequal access to development (and adaptation) programming, as well as the resultant design of such programming for the often-distinct needs of men, is likely to have negative impacts on women's adaptive capacity.

A final, newer theme emerging at the nexus of gender and climate change adaptation in agrarian settings is that of promising adaptation strategies that are unique to women. This theme deals with new and innovative ways women are addressing existing and increasing impacts of climate variability and change within their daily lives, and is founded on the assumption that women can and do utilize their unique roles in their households and communities to create new strategies for dealing with situations of drought, flooding, uncertainty, and other climate change-related stressors (Ahmed and Fajber 2009; Babugura et al. 2010; Boyd 2002; Buechler 2009; Dankelman and Jansen 2010; Demetriades and Esplen 2008; Djoudi and Brockhaus 2011; Mitchell et al. 2007; Segnestam 2009; Sultana 2010; Sultana 2013; Swai et al. 2012; Tatlonghari and Paris 2013). While this literature does not discount the fact that men also are actively developing new coping strategies and adaptation activities to address the impacts of climate change, coverage of these men's activities is more cursory in this theme (Lane and McNaught 2009, however, discuss men's and women's activities more thoroughly). Although this focus at times risks replicating potentially problematic generalizations about the connection between women and land or women and the environment (see Chant 2010; Jackson 1998a for a discussion of the problematic feminization of poverty in the development literature), there is great potential in this line of thought for developing more critical gender analyses that go beyond persistent problematic categorizations of women as always comprising a majority of the poor and most vulnerable in society.

The climate change adaptation-relevant themes in the mainstream gender and development literature present a compelling case for gender analysis as a part of both program/project design and monitoring and evaluation. Without some form of gender analysis, it is unlikely that any project design process would adequately capture the range of vulnerabilities and challenges at play within a target population, resulting in an intervention that produces less-than-optimal outcomes, or even intensifies the challenges of some of the poorest and most vulnerable in society. The impact of the gender and development literature on development donors and implementers has been profound. For example, the policy and program

design process of the United States Agency for International Development (USAID) includes mandatory attention to gender differences from the level of operational policy (USAID 2013) to Agency policy (USAID 2012). The second paragraph of USAID's Gender Equality and Female Empowerment Policy reads like a summary of this literature:

No society can develop sustainably without increasing and transforming the distribution of opportunities, resources, and choices for males and females so that they have equal power to shape their own lives and contribute to their communities. A growing body of research demonstrates that societies with greater gender equality experience faster economic growth, and benefit from greater agricultural productivity and improved food security. Empowering women to participate in and lead public and private institutions makes these institutions more representative and effective. Increasing girls' and women's education and access to resources improves the health and education of the next generation. Women also play critical roles as effective peace advocates, community leaders, and champions of civil and human rights (USAID 2012, 3).

In recognition of the importance of gender issues to the achievement of development goals, the Agency's operational policy document addressing gender, the Automated Directives System, Chapter 205 (ADS 205), creates a comprehensive structure of responsibility, ranging from personnel responsible for various aspects of implementation, monitoring, and evaluation to procedures for the appropriate conduct of such activities, designed to ensure adequate attention to issues of gender in Agency programming. For example, at the project level, the ADS requires that "gender analysis should influence the project design to ensure that it explicitly addresses any disparities and includes actions to reduce the inequalities that are revealed" (USAID 2013, 10).

However, the framing of gender analysis promoted (perhaps inadvertently) by this work rests on a very simplistic comparison of men's and women's situations, built on homogenous categories of 'men' and 'women' that many now argue are no longer the most effective tool for addressing challenges associated with gendered aspects of adaptation to climate change (Carr 2008a; Dankelman 2002; Demetriades and Esplen 2008; Djoudi and Brockhaus 2011; Kaijser and Kronsell 2013; MacGregor 2010a; Skinner 2011). For example, Demetriades and Esplen (2008, 24) explain that

The tendency has been to conceptualise women everywhere as a homogenous, subjugated group... such representations are problematic on multiple accounts, particularly in their failure to account for the complex interactions between gender and other forms of disadvantage based on class, age, 'race'/ethnicity and sexuality.

In short, dividing communities and even households into gendered categories reveals both differential and distinct vulnerabilities and opportunities between these social groupings. However, relying on the categories "man" and "woman" as the principal means of capturing the varieties of experience at play in any context risks overlooking significant differences with regard to knowledge, resources, and power *within* gender groups that shape development and adaptation outcomes. Further, such framings tend to cast men and women in oppositional roles that, while sometimes appropriate, can obscure situations in which men and women are interdependent and can work together to mutual benefit (Kaijser and Kronsell 2013, 8).

Bringing Gender Analysis Up To Date for Climate Change Adaptation

In the broader gender and development literature, a body of work that employs feminist post-structural approaches to gender calls into question the validity of dividing any social unit

by categories as broad as “man” and “woman” (for example, Bigombe Logo and Bikié 2003; Carr 2008a; Dominelli 2013; Doss 2001; Goheen 1991; Grigsby 2004; Jackson 1998b; Kandioti 1998; Lawson 1995; Pankhurst 1991; Pearson and Jackson 1998; Razavi and Miller 1995; Sachs and Alston 2013; Commonwealth Secretariat 2001; Sultana 2010; Wangari et al. 1996). This literature, drawing on broadly feminist notions of intersectionality in identity (Butler 1990; McCall 2005; Mohanty 1988; Valentine 2007), argues for development policies, programs, and projects that frame gender not as a stand-alone marker of social difference, but as a social category that gains meaning through its time- and place-specific interplay with other social markers of difference. In short, this literature argues that all women (or men) will not experience a place, event, or process in the same manner because their roles, responsibilities, and expectations are shaped by more than their gender. In the context of vulnerability to the impacts of climate variability, for example, wealthy women with diverse livelihoods might have more in common with wealthy, similarly employed men than they do with poorer women who are reliant on rain-fed agriculture for their food and income. This is of practical importance to development donors and implementers, as a simple binary gender analysis may lump together groups of people with widely divergent vulnerabilities to climate variability, making it difficult to identify and address the particular challenges facing the most vulnerable.

This point has not been lost on development donors. For example, though USAID’s documents frame the *practice* of gender assessment around binary gender analysis, there are several instances in both ADS 205 and the Agency Gender Policy where the importance of differences within gender categories is clearly articulated. For example, ADS 205 notes that gender analyses should include “Descriptive statistics on the status of males and females, ideally disaggregated by age, income, ethnicity, race, disability status, location, lesbian, gay, bisexual and transgender (LGBT) or other socially relevant category as appropriate” (USAID 2013, 8). However, the integration of these observations into the practice of gender assessment and mainstreaming remains uneven, and largely subjugated to binary analysis. For example, no sooner does ADS 205 demand the collection of what sounds like data appropriate for the construction of intersectional identities, it then demands that “These statistics...be collected and reported separately in two different categories (male or female) or fashioned into ratios or absolute or relative gaps to show the status of females relative to males” (USAID 2013, 8), thus reducing these data to binary categories.

While this framing of gender (and identity) is well on the way to becoming common conversation in development studies, only a relatively small body of work applies this framing of gender to the study of adaptation in agrarian settings (Kajiser and Kronsell 2013 make this point for climate change studies writ large). Mainstream approaches to adaptation will, at times, acknowledge the complex interplay of social factors affecting development and adaptation outcomes, but they rarely address that complexity in research or programming. The small amount of adaptation work engaging the intersectional character of gender is perhaps unsurprising, given that Banerjee and Bell (2007, 4) found references to gender (binary or otherwise) in less than 4% of *all articles* in five top journals in environmental social science between 1980 and 2005 – a figure they rightly call “shockingly low” (see also MacGregor 2010a, 2010b).

However small, this body of work is important, as it moves beyond existing work on gender and adaptation in three major thematic areas. First, it offers conceptual challenges to the idea that binary gender analysis works to identify those most vulnerable to the impacts of climate variability and change. Second, it presents case study demonstrations of the importance of intersectionality to gendered adaptation and vulnerability outcomes. Finally, it considers the methodological implications of this literature and these studies for development programming, especially gender assessments of vulnerability to climate variability and change.

First, a portion of the intersectionality-inspired literature challenges the assumption that binary gender analysis captures the most relevant and important social factors shaping agricultural decisions and vulnerability to climate change. At the very least, as Warner and Kydd (1997, 144) argue, “the identification of gender roles does not usually do justice to the actual complexity which characterizes the social and economic lives of rural people in Africa” (see also Demetriades and Esplen 2008). Others (Arora-Jonsson 2011; Carr 2008b; Harris 2006; Tschakert 2013; Tschakert and Machado 2012) argue more explicitly that gender should not be seen as an isolated, or even primary, cause of vulnerability. Therefore, they argue that a narrowly framed gender analysis of vulnerability to climate change impacts in agrarian settings might not be as productive as a wider effort to understand the locally specific identities and activities that intersect to produce varying vulnerabilities within agrarian communities and even households. For example, Arora-Jonsson (2011, 746) notes that while most general claims about women’s vulnerabilities to climate change impacts are poorly supported by empirical evidence, there is good evidence to suggest that disasters produce gendered outcomes that discriminate against women *when such events exacerbate existing patterns of discrimination* (Nelson et al. 2002; Sultana 2010). Such discrimination, she argues, is not merely about gender, but an intersection of different identity categories ranging from socioeconomic status to ethnicity. Because “vulnerability is generated by multiple processes and different situations,” to effectively address the range of impacts that a community or household might experience from climate change, “we need to examine the specific form of vulnerability and discrimination that people face in order to respond to it effectively,” (Arora-Jonsson 2011, 746) whether or not gender is the definitive social cause of vulnerability (see also Brouwer et al. 2007; Carr 2008a, 2008b; Tschakert and Machado 2012; Bee et al. 2013).

Second, drawing upon this conceptual critique and reframing, a growing literature grounded in empirical, case study evidence bears out the conceptual arguments above, providing several examples of gender intersecting with another significant social category to produce complex, variable vulnerabilities to climate variability and change within and between the genders in particular places. Warner and Kydd (1997); Bassett (2002), and Nelson and Stathers (2009) have demonstrated that *age can be a significant social modifier of gender* that produces very different challenges and opportunities to agricultural adaptation under climate change. Warner and Kydd (1997), looking at the differences *among* Dagomba women, note myriad changes in social status throughout the course of their lives, such as those associated with marriage (junior wife) and childbearing (cooking wife). These changes in status are accompanied by different expectations with regard to labor and expenditures, such that cooking wives have more days off from household labor but also greater expectations to find income to meet the needs of their compound. These differences produce different types of agricultural practice as “apart from having the time and incentive to engage in individual production activities, separate from the compound [family], cooking wives are also much more likely than other married and unmarried, junior women to be able to mobilize cash and other resources with which to purchase inputs and, if necessary, pay for hired labor” (Warner and Kydd 1997, 148).

Onta and Resurreccion’s (2011) consideration of agricultural adaptation strategies in Nepal explicitly considers the *intersection of gender and caste as producing the social categories that most shape vulnerability to climate change*. Interestingly, they note that while this particular intersection enables particular cross-caste relationships that might foster adaptation to climate change, these relationships are not reshaping gender boundaries within castes and may well reinforce possibly problematic gender roles (see also Ahmed and Fajber 2009; Jones 2010).

In their work in rural Burkina Faso, Nielsen and Reenberg (2010) demonstrate that *variable gender expectations associated with particular ethnicities produce different adaptive capacities in*

similar agrarian settings. They note that Fulbe members of their study communities have not adopted the same range of livelihoods activities to manage the challenges brought on by economic and environmental change as their Rimaiibe counterparts because, even though Rimaiibe households have demonstrably more resources with which to buy food due to the diversification of their livelihoods and the incomes of women in Rimaiibe households, “Fulbe men see the growing power of the Rimaiibe women as a confirmation of the moral and personal weakness of Rimaiibe men as people ‘easily manipulated and pushed around’,” (Nielsen and Reenberg 2010, 149)

Finally, several authors note that *gender often intersects with livelihoods* in important ways to produce variable vulnerabilities and adaptation decisions/outcomes within the categories “men” and “women” (Carr 2008b; Carr 2011; Codjoe et al. 2011; Molua 2010; Nielsen and Reenberg 2010). Codjoe et al. (2011), working in Ghana, demonstrate that preferences for adaptation projects emerge at the intersection of gender and livelihoods. For example, when looking at preferences for adaptation to drought, they demonstrate that women fishers preferred options addressing post-harvest technology and seasonal forecasts, while men preferred constructing fish ponds, crop insurance, and fish culture technologies. However, to suggest that gender is an adequate lens through which to capture adaptation preferences in their study area would be incorrect, as they also show that women producing charcoal also wanted seasonal forecasts, but wanted new/more wells and boreholes, and technologies that would facilitate sedentary pasture management. This makes sense, as under particular climate stresses, fisheries will respond differently than the forests from which charcoal’s raw material comes, and therefore, those engaged in these different occupations will have differential vulnerabilities, even when they are of the same gender.

In recognizing the ways in which gender roles are created and maintained with reference to other social categories, roles, and expectations that transcend the household or community, this research helps to explain the persistence of gender roles that place unjust burdens on particular members of society. In his discussion of adaptation and livelihoods decision-making in Ghana’s Central Region, Carr (2008b, 2013) lays out the ways in which particular livelihoods mobilize and reinforce existing social categories and expectations in a manner that legitimizes both these categories and the different expectations attached to them. Carr argues that this creates the potential for unacceptable trade-offs in adaptation programming and projects, for example, between interventions aimed at producing socially just outcomes that address gender inequalities, but which result in locally unacceptable challenges to men’s authority in target households that would make the intervention inherently unsustainable in the absence of sustained external engagement. Tschakert (2013) and Tschakert and Machado (2012) have suggested that the problem of persistent inequalities in the face of climate change and variability requires adaptation programming to adopt a human security framing, in which projects would have a primary goal of enhancing human freedom and fulfillment, as opposed to narrowly material goals amenable to technical interventions.

Third, a portion of this literature moves beyond the empirical illustration of the first two themes to explicitly focus on the methodological/implementation implications of these findings for gender analysis in development programming aimed at agrarian settings. Both the conceptual arguments and empirical evidence generated by this literature suggest that starting with gender as the most important social characteristic shaping adaptation and livelihoods outcomes risks overlooking other social differences that might be equally or even more important (Tschakert 2013, 149). Warner and Kydd (1997, 144), informed by their fieldwork experience among the Dagomba of northern Ghana, argue that any vulnerability, livelihoods, or participatory planning exercise should start by identifying “important categories of individuals (whose social and economic roles are defined by gender, age, marital status, parental status

and other social and biological factors)” (Warner and Kydd 1997, 160), as opposed to starting from *a priori* presumptions about the importance of particular social categories such as gender.

Similarly, in his discussion of the development implications of gendered patterns of cropping in Ghana’s Central Region, Carr (2008a) argues that the different experiences of women earning livings under different livelihoods strategies, even in the same village, suggest,

that the key questions for any development program [concerned with addressing vulnerabilities in the context of livelihoods] should not begin with gender at all. Instead, it may be more productive to start with an understanding of the different modes of livelihood within the community in question and the identification of the social groups associated with these various modes (Carr 2008a, 911)

This approach, while perhaps sounding at odds with gender analysis, is actually gender analysis taken to its logical conclusion as a search for the social differences that produce particular vulnerabilities. As Carr (2008a, 912) argues, this approach

will allow us to better understand the challenges facing the community in question, and the likely impacts of any intervention package on these various vulnerabilities. Such information allows for the assessment of winners and losers under a particular package of interventions before implementation, thus minimizing the “surprise” outcomes that so often plague development projects. Further, the nuanced, complex picture of vulnerability enabled by this approach allows for the identification and targeting of the needs of minority or underrepresented populations that might not be heard in even the most sensitive participatory development consultations.

Pushing Adaptation’s Use of Gender Forward: Lessons and Opportunities

The literature on gender and climate change adaptation in agrarian settings demonstrates that, quite often, men and women experience vulnerability to climate variability and change distinctly and/or differentially. There is ample evidence to suggest that in agrarian settings, women often grow distinct crops, with different biophysical characteristics than those grown by men. Further, it is clear that women often experience constrained decision-making and access to key livelihoods resources like land and inputs. At the same time, women are generating their own adaptations, building locally appropriate techniques and strategies to address the impacts of climate change in their lives. Without first identifying such challenges and opportunities, we cannot effectively address the sources of particular vulnerabilities. Further, we risk designing and implementing adaptation projects that duplicate or even compromise existing viable adaptations. Such outcomes would, without question, cause more harm than good for women and other vulnerable populations in agrarian settings.

At the same time, development and adaptation programs in agrarian settings, including projects and programs whose design was informed by well-executed mainstream gender analyses, remain plagued by “surprise” outcomes and failures. An emerging body of literature on gender and identity in development helps explain such outcomes. By highlighting the limitations of binary gender analyses with regard to the identification of distinct and differential vulnerabilities in particular households, communities, and populations, this literature demonstrates that current gender and vulnerability assessments are missing other critical differences that shape actions and outcomes in agrarian settings as much as, if not more than, gender. This new literature calls for a different kind of gender analysis, which focuses on social difference more broadly and allows gender to emerge as important where appropriate.

While the conceptual arguments at the heart of this new literature are gaining traction in the academic communities associated with gender-in-development and gender and climate change, calls for a more nuanced, complex gender analysis have yet to gain wide purchase in development implementation and policy. The transmission of contemporary thinking on identity into the practice of climate change adaptation presents two research frontiers. First, the successful translation of contemporary gender approaches into policy and implementation will require evidence for the efficacy of such approaches. The literature on gender and adaptation in agrarian settings needs to better demonstrate the impact of adopting contemporary feminist understandings of identity in project design and implementation. With very few exceptions (for example, Carr 2008b; Carr and Thompson 2013), existing studies do not concretely measure what information, and whose experiences and vulnerabilities, are lost in the homogenization of women and men under conventional gender analysis. Even the case study-driven portions of this literature tend to focus on empirical data to demonstrate that within the categories of “men” and “women,” there is great diversity. The reader is left to sort out the implications of this demonstration with regard to project efficacy and impact, as such issues are largely implicit in this literature. There is a tremendous opportunity to generate wider acceptance of this approach to gender and vulnerability in the context of climate variability and change by applying it to several disparate cases. Specifically, case studies that demonstrate *who* becomes analytically invisible in binary gender analyses are particularly potent tools for policy change. It has been our experience, working with donors like USAID and the World Bank, that studies such as that of Carr (2008b), which demonstrated that binary gender analysis made it difficult to see and address the challenges and opportunities associated with the poorest 40% of women in a Ghanaian community, can make a powerful case for a change of approach.

Second, as we have discovered in this same work with development donors, perhaps the most important barrier to the uptake of contemporary framings of gender and vulnerability by donors and implementers working on adaptation to climate variability and change in agrarian settings is the need for guidance and methods for implementation. Currently, the advantage of binary gender analysis, from an implementation standpoint, is the ease of assessment design. Under such frameworks, the relevant categories are already established, and therefore, questions of design immediately move to appropriate sampling and tools for investigation. The methodological implications of contemporary feminist work on identity, however, preclude the establishment of such categories before conducting any analysis, as gender rarely serves as the single identity through which vulnerability to climate variability and change takes shape, and in some cases may be less relevant to such vulnerability than any number of other identities. Thus, the application of contemporary feminist thinking on identity to the assessment of climate change vulnerability will require new methodological approaches for establishing relevant categories in *particular places and at particular project scales*. While such tools should result in fine-grained understandings of gender, its construction, and its implications for understanding vulnerability to climate variability and change in a manner appropriate to the project, program, or policy at hand, they provide some means by which users can draw larger lessons from place- and scale-specific assessments. Assessments that produce analyses incommensurable with the findings of other analyses will likely undermine even the starkest demonstrations of value via case studies, and serve as a barrier to changing the practices of donors or project implementers.

It is our belief and experience that, given evidence and alternatives, major development donors can be swayed to a more critically informed approach to gender, identity, and vulnerability than is commonly employed today. Further, we see it as our responsibility to attempt to bring about and inform this change of approach. To stand back and employ our critical

lens for the purposes of critique without engagement is to allow practices we know to be faulty to continue, for projects to continue to fail, and for the poorest and most vulnerable to continue to be overlooked. Engagement with development donors and implementers is not straightforward (see the contributors to Simon et al. 2011) and presents its own research frontiers. We are excited by the opportunities for engagement ahead, and the challenges that will arise in the process.

Acknowledgement

The authors thank André Mershon, Natalie Elwell, and two anonymous peer reviewers for comments and advice that contributed greatly to this article. This article was made possible through support provided by the Offices of Gender Equality and Women's Empowerment and Global Climate Change, Bureau for Economic Growth, Education and Environment, United States Agency for International Development, under the terms of Award No. 5010-FP1-SEEG under the Climate Change Resilient Development mechanism. The opinions expressed in this article are those of the authors and do not necessarily reflect the views of the United States Agency for International Development.

Short Biographies

Edward R. Carr's research focuses on the intersection of globalization, development, and environmental change, principally in rural communities in sub-Saharan Africa. He has authored papers on these topics in *Global Environmental Change*, *World Development*, *Third World Quarterly*, *Environment and Planning A*, *Geoforum*, *Food Policy*, *Development in Practice*, and *Environmental Science and Policy*. His book *Delivering Development: Globalization's Shoreline and the Road to a Sustainable Future* (Palgrave Macmillan, 2011) synthesizes much of this research for a general audience, making the argument that development donors and implementers understand far less about the global poor than they think. His current research focuses on rethinking livelihoods frameworks and approaches to better understand livelihoods decisions and outcomes, and the application of this work to climate services projects that bring weather and climate information to farmers in Africa. Carr has held an AAAS Science and Technology Policy Fellowship, which he served at the United States Agency for International Development, first as the climate change coordinator for the Bureau for Democracy, Conflict and Humanitarian Assistance (DCHA) and later as a climate change science advisor on the Climate Change Team in the Bureau for Economic Growth, Education and the Environment (E3). He has also served as a consultant to the World Bank on issues of adaptation and development. He has served as a lead author of two global environmental assessments (the Millennium Ecosystem Assessment and the United Nations Environment Program's Fourth Global Environment Outlook), and currently serves as the review editor for a chapter on rural areas for Working Group II of the IPCC Fifth Assessment Report. Carr holds a BA with High Distinction from the University of Virginia, an MA and Ph.D. in Anthropology from Syracuse University, and a Ph.D. in Geography from the University of Kentucky.

Mary Thompson's research explores the intersection of biodiversity conservation and social and economic development. This research is based on field studies conducted in Ghana (2007) and Malawi (2010–2011) where she focused on the way that people living in or near protected areas are often negatively impacted by restrictions on land and resources associated with those protected areas. She has also carried out additional fieldwork on a climate adaptation project in Zambia (2012) and taught an environmental management module for students participating in a study abroad program in Ghana (2013). She has authored papers in

Environmental Science and Policy and *International Journal of Sustainable Development and World Ecology*. Mary successfully defended her Ph.D. dissertation in August of 2013 and is currently working as a Post-Doctoral Research Fellow in a position jointly based with Bioersity International in Rome, Italy, and the Basque Center for Climate Change (BC3) in Bilbao, Spain, where she is focused on the subject of agrobiodiversity monitoring and climate change adaptation. She was awarded her Ph.D. in Geography in December of 2013.

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