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Agrarian stress and climate change in the Eastern Gangetic Plains: Gendered vulnerability in a stratified social formation

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ABSTRACT

This paper reviews the complex impact of climate change on gender relations and associated vulnerability on the Eastern Gangetic Plains of Nepal and India. Field research has identified that gendered vulnerability to climate change is intricately connected to local and macro level political economic processes. Rather than being a single driver of change, climate is one among several stresses on agriculture, alongside a broader set of non-climatic processes. While these pressures are linked to large scale political–economic processes, the response on the ground is mediated by the local level relations of class and caste, creating stratified patterns of vulnerability. The primary form of gendered vulnerability in the context of agrarian stress emerges from male out-migration, which has affected the distribution of labour and resources. While migration occurs amongst all socio-economic groups, women from marginal farmer and tenant households are most vulnerable. While the causes of migration are only indirectly associated with climate change, migration itself is rendering women who are left behind from marginal households, more vulnerable to ecological shocks such as droughts due to the sporadic flow of income and their reduced capacity for investment in off-farm activities. It is clear that policies and initiatives to address climate change in stratified social formations such as the Eastern Gangetic Plains, will be ineffective without addressing the deeper structural intersections between class, caste and gender.

1. Introduction

There is a growing literature on gender and vulnerability to climate change, yet the complexities of climate change impact and the intersectionality of gendered vulnerability are yet to be fully understood. Based upon a series of three case studies in the Eastern Gangetic Plains in Nepal and India, this paper contributes to scholarship on vulnerability by understanding the social impact of climate change not in isolation, but as a 'conjuncture' or combination of circumstances, on an ecological, economic and political level. It is shown that climate is one of a number of stresses on agriculture, alongside a series of multi-scalar political economic processes. Furthermore, some of the most significant gendered patterns of vulnerability evidenced in this study are not directly but *indirectly* related to climate – particularly as climatic and non-climatic factors drive male out-migration and transform the household economy. In this context, a significant finding is that these patterns of gendered vulnerability are developed along class lines, a process which is all the more crucial to acknowledge in the deeply stratified social formation of the Eastern Gangetic Plains. This has significant implications for public climate change adaptation policies in Nepal, which currently tend to focus on climate change in isolation to other stresses and portray women's vulnerability as resulting from proximate causes such as poverty rather than underlying structural factors.

2. Understanding climate change, gender and vulnerability

The concept of vulnerability has multiple definitions, but in general it refers to 'the extent to which a system or population is susceptible to harm' (Adger, 2006, p. 268), and research on the topic aims to identify means through which wellbeing can be enhanced through reducing risk and promoting resilience (Adger, 2006).

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Ribot (2010) notes how vulnerability analyses are usually lumped into two broad approaches: the risk-hazard and social constructivist frameworks. The Risk-Hazard (or natural hazard) approach tends to understand vulnerability as multiple outcomes of one biophysical event (as an impact analysis), as a "dose-response relation between an exogenous hazard to a system and its adverse effects" (Füssel and Klein, 2006, p. 305). This largely depoliticised approach remains dominant in contemporary policy discourse on climate change adaptation (Bassett and Fogelman, 2013).

The social constructivist or political economy approach, which this paper will broadly adopt, seeks to explain vulnerability as due to multiple causes rooted in social structures (Füssel, 2007). Within this approach are a range of frameworks. Dreze and Sen (1991) analyse how the vulnerability of individuals and social groups is shaped by 'entitlements', the rights and opportunities people own or claim to command over different commodity bundles. As individuals and social groups have different entitlements depending on their age, caste, class, gender, ethnicity, or religion, vulnerability is shaped by social factors. Similarly, Watts' (1983) research from Nigeria in the 1970s examined how the social impact of hazards and adaptive capacity is intricately connected to local level relations of production, which are in turn connected to the unequal dynamics of the global capitalist economy. These frameworks trace the broader political–economic structures which enable some but not others to access assets and services, allowing one to understand vulnerability beyond its proximate causes (Ribot, 2010).

Despite its theoretical importance, the political economic approach to vulnerability and resilience remains marginal within debates on climate change today (Bassett and Fogelman, 2013). There is however, a growing body of related scholarship exploring how gender shapes vulnerabilities and adaptation. The most notable contribution on this topic stems from the disaster and gender and development field which have explored the impact of natural disasters on health and livelihoods. These studies have emphasised that women are usually disproportionally hit by extreme climatic events (Neumayer and Plumper, 2007). Natural disasters have both an immediate direct effect on women during the event and an indirect effect through a change in gender relationships under distressed conditions. Women's higher vulnerability has been attributed both to their (lack of) access to certain assets and to social norms determining their mobility and behaviour (Neumayer and Plumper, 2007; Sultana, 2013; Shah et al., 2013). Such disparities are particularly prominent in the Eastern Gangetic Plains, a region characterised by a highly patriarchal society and strong gender norms. In both the Nepal Tarai and Bangladesh, flood-related fatalities were found to be higher for women than men (Bartlett, 2008; World Bank, 2010). Suggested structural factors for women to be more vulnerable identified from Bangladesh include social norms which cause women to leave the homestead last (Nelson et al., 2002; Dasgupta et al., 2010) and discourage them from entering public shelters with strangers (Climate Change Cell, 2006). Pre-existing girls' vulnerability to shocks due to a systematic lower access to education and higher malnutrition rate also makes them more vulnerable than boys to natural disasters (Sultana, 2013).

In a broader literature on the impact of climatic variability, women have often been portrayed as more vulnerable to climate change because of their higher dependence on natural resources and higher poverty rate (Mainlay and Tan, 2012). Women's vulnerability has increased when access to resources and income derived from key livelihood activities in the 'female' domain are disproportionately affected by a changing climate. A prominent example is how a change in water availability affects women's workload. For instance, the disruption of fresh water sources following saline intrusion in the Ganges delta has affected a large proportion of women, who are obliged to travel longer distances to provide drinking water for their families (WEDO, 2008). Again in Bangladesh, increased water logging has also been shown to raise the work burden for many women, as they take responsibility for much of the relocation work (Climate Change Cell, 2006).

These simplistic and polarised representations of men and women in the face of climate change are however, problematic. Studies drawing from feminist political ecology (e.g. Demetriades and Esplen, 2008; Mitchell et al., 2007; Nelson and Stathers, 2009) have shown that how men and women are affected by natural disasters and environmental stress is highly dependent on the social context, including other divisions such as class, caste, age and ethnicity (Sultana, 2013; Arora-Jonsson, 2011). However mainstream discourses on gender and vulnerability to climate change have failed to engage with the broader political economy. Presenting women as passive victims of climatic variability and climatic hazards holds the risk of wrongly diagnosing the causes of vulnerability (Arora-Jonsson, 2011). A sound analysis of gendered vulnerability to climate change requires one to go beyond the description of how men and women are affected differently, and requires analysis of the underlying structural causes of vulnerability that mediate access to resources.

3. New directions in vulnerability research

There are a number of areas where the emerging scholarship on the political economy of vulnerability, gender and social differentiation in the context of climate change can be expanded. Firstly, as noted above, it is crucial to combine research on gendered vulnerability to climate change with the analysis of other axes of inequality. Women or men cannot be understood as singular categories, but are divided according to their position in the agrarian structure. The intersection between gender and socio-economic status has been acknowledged in past research (O'Hare, 2001; Ahmad, 2012; Sultana, 2009). However, there is a need to make class and caste more central to understanding gender differences in climate change vulnerability and adaptation, while also engaging with the broader political–economic relations which reproduce these larger social structures.

Furthermore, it is important to note that the impact of climate change is not always direct. The process of adaptation itself can disrupt the household economy, and this is beginning to receive attention in the literature. This is most relevant with respects to climate induced migration (Ansorg and Donnelly, 2008; WEN, 2010), which not only creates new forms of vulnerability for migrants who are usually male, but for those left behind, who are often women. These include higher workloads, difficulties accessing state services, and challenges ensuring the safety and welfare of the family (Zahur, 2009; Sultana, 2013). This can be considered an *indirect* form of vulnerability to climate change.

This however, raises a final issue, which has received little attention in the literature: the actual role of climate as a driver of livelihood change. Mortreux and Barnett's (2009) study from Tuvalu challenges dominant discourses of 'climate refugees', showing how decisions to leave the islands are primarily linked to economic opportunities outside, with religious beliefs and attachment to place sometimes off-setting the perception of climate risk. Similarly, research by Nielsen and Reenberg (2010) on the Sahel notes how livelihood transformations in communities such as a move away from agriculture, changed cropping practices, and out-migration have been determined by a range of historically specific political–economic and social processes, although climate change sets the context in which these adaptation strategies become necessary in the first place.

This calls for a new approach to the political-economy of vulnerability. In this study from Nepal and India, the social and