

# Chapter 2

## Gender and Water in a Changing Climate: Challenges and Opportunities

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**Abstract** Climate change is exacerbating existing water insecurity globally, with significant gender consequences. Changes in water availability, access, scarcity and security play critical roles in shaping the ways that individuals, communities and countries are tackling existing and predicted climate change. Although climate change is already increasing vulnerabilities, marginalisation, and sufferings of many across the world, impacts are unevenly felt across social strata. Intersectionalities of social difference, especially along gender and class lines, differentiate the ways in which impacts of climate change are experienced and responded to. This is particularly evident in water-related productive and reproductive tasks, as climate change is expected to exacerbate both ecological degradation (e.g., water shortages) and water-related natural hazards (e.g., floods, cyclones), thereby transforming gender–water geographies. As such, it becomes imperative to undertake multi-scalar, critical and intersectional analyses to better inform both academic debates and policymaking. Heeding gendered implications of climate change is particularly important as patriarchal norms, inequities, and inequalities often place women and men in differentiated positions in their abilities to respond to and cope with dramatic changes in socioecological relations and changing waterscapes, as well as foregrounds the complex ways in which social power relations operate in communal responses to adaptation strategies that are increasingly proliferating globally. This chapter explores the nexus of gender-water-climate change to demonstrate how different groups of people understand, respond to, and cope with variability and uncertainties in a changing climate to reveal the challenges and prospects that exist.

**Keywords** Climate change • Water insecurity • Gender inequality • Adaptation strategies • Gender vulnerability • Socioecological relations

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## 2.1 Introduction

In November 2007, the powerful Cyclone Sidr swept up the Bay of Bengal and devastated millions of lives and livelihoods along the coast of Bangladesh. At the same time, the Intergovernmental Panel on Climate Change (IPCC) was meeting for the IPCC Plenary XXVII in Valencia, Spain, for the release of the IPCC Fourth Assessment Report, which detailed with great clarity and forcefulness the impacts of climate change that are already being felt and predicting what is likely to happen in the future. For the dead and dying in the coastal areas of Bangladesh in the aftermath of Cyclone Sidr, climate change was perhaps already a reality. The irony and the poignancy of the coincidence of these two events could not be clearer in the minds of many, compelling academics and planners to hotly debate the processes and impacts of climate change in the developing world. A few weeks later in December 2007, at the International Conferences of the Parties (COP) meetings in Bali, activists introduced a further dimension to these debates by drawing international attention to the gendered dynamics of climate change under the slogan “No climate justice without gender justice.” These three events in late 2007 are inter-linked and animate this chapter, where I look at the socioecological implications of climate change in South Asia, focusing on the gendered ramifications. The majority of the policy discourses and debates as well as academic writing on climate change have been largely ungendered, yet the impacts of climate change are acutely felt along gender lines and adaptation to climate change is a gendered process. Since climate change is largely about water change, any discussion about climate change must investigate the gender-water relationships that exist and are being transformed. This chapter thus demonstrates the complexities in the nexus of gender-water-climate change.

## 2.2 (En)gendering Climate Change Research

In recent years, a veritable industry has emerged in relation to climate change vis-à-vis research, reports, conferences, and projects. Despite more recent controversies and politicised debates on credibility of science, data, and predictions, the general consensus among scholars is that anthropogenic climate change has uneven and uncertain impacts. The contextual nature of climate change and the specificities of responses have been repeatedly highlighted in the milieu of generalisations and globalised discourses, and academics have responded with new research across the social sciences. Hazards geographers and political ecologists are increasingly contributing to climate change research and engaging critically with climate change policies and politics (e.g. Hulme 2008; Bailey 2008; Moser 2009). However, scholars should further engage with the gendered implications of climate change across sites and scales, given the paucity of emphasis on such issues in the current literatures.

Few scholars have focused on the ways that gender is a key factor in impacts, adaptation, or mitigation in the voluminous literature on climate change. Men and women experience, understand, and adapt to climate change in different ways, and it is important to understand changes currently taking place, and likely to happen in the near future, from a gendered perspective. Climate change is likely to exacerbate gendered vulnerabilities and differential abilities to cope with changes on multiple fronts. Although climate change is often framed as a global problem for all of humanity, the heterogeneity of its manifestations, impacts, and responses has to be carefully considered. Even though climate change is often portrayed as affecting the poor uniformly in the Global South, this is further complicated by gendered power relations that are intersected with other social differentiations (e.g., class, race, ethnicity, etc.). Implications for livelihood, survival, poverty, and social power relations can have subtle and overt gendered outcomes, which have to be analysed in context. A focus on the various patterns of changes that exacerbate gender relations in livelihood opportunities, vulnerabilities, hardships, and survival can provide more comprehensive understanding of the ways that climate change impacts households and communities. Such analyses also shed further light on the ways that emerging adaptation programmes are influenced by gender dynamics and are complicated by gendered power relations.

Recent scholarship has highlighted the importance of heeding gender in climate change discourses, programmes, and projects (Dankelman 2010). Such scholarship draws from insights gained in the disaster risk and reduction (DRR) literatures that have predominantly focused on case-specific events and empirical findings and have contributed to greater understandings of the role of gender in disasters and recovery. More broadly, the emerging gender and climate change literature draws from insights of gender and development literatures. At the policy level, the clarion call of “No climate justice without gender justice” has become popular since the Bali COP conference in 2007, bringing attention to the fact that climate change is gendered in impacts, mitigation, adaptation, and policy processes. Although still nascent, scholarship in gender and climate change has drawn attention to the gendered differences in perceptions, responses, priorities, abilities, and preferences in the ways that climate change is understood in mitigation and adaptation discourses (Dankelman 2002, 2010; Denton 2002; Masika 2002; Nelson et al. 2002; Brody et al. 2008; Terry 2009; Agostine and Lizarde 2012; see also the GenderCC Network). For instance, a study of women in South Asia found that poor women were particularly vulnerable to dramatic shifts in environmental change related to water (e.g., erratic monsoons, extreme floods, etc.) but were knowledgeable about the needs and requirements of their households and communities to cope with changes, as well as about alternative livelihood strategies (Mitchell et al. 2007). The constraints they faced were also articulated along class, gender, locational, and institutional lines, however.

Feminist scholars can add much to the ongoing debates in the climate change and adaptation literatures, explicating the textured ways that space, place, identities, and lived experiences are intersected by a range of processes and social relations. Seager (2006) and MacGregor (2009) pointed out that gender is often selectively given

attention, or not, in any research or policy context. Demetriades and Esplen (2008) and Nelson and Stathers (2009) further argued about the crucial importance of context-specific and complex gender analysis in climate change debates, so as not to reproduce the “women only” narratives that portray women simultaneously as victims and as solution providers, thereby increasing the long list of caregiving roles women are already assigned to (Arora-Jonsson 2011). The collapsing of gender-as-women has been common in the existing gender and climate change literature, which is often written for and by the development practitioner and policy community. MacGregor (2009) pointed out that a lack of critical gender analysis or theorisation of gender limits such literature, even while bringing very important attention to gender by privileging certain framings in the international arena. For instance, as Dankelman (2010) indicated, it is important to look at women as a group, as well as gender as a construct, but pay greater attention to the experiences of women and focus on women in climate change debates. This might be strategically important, but it also has the potential to limit the attention to the complex ways that masculinities and femininities are constructed, negotiated, altered, and transformed through climate change processes. There can also be the tendency to essentialise women as a homogeneous group and overlook the multiple processes that constitute gendered subjects, identities, and bodies. The dominant focus has been on the impacts of climate change on women, but greater attention is needed to how gender is intersected by other axes (e.g., class, caste, age, etc.) as well as a relational analysis of both women and men across social categories in a changing climate. Given the importance of inclusion and equality, however, it is important not to romanticise women, women’s knowledge, or women’s participation in climate change mitigation or adaptation plans, but to recognise their roles, responsibilities, constraints, and opportunities. Balancing inclusion without essentialisation is thus crucial, albeit challenging.

Such critiques resonate with those of feminist political ecologists and feminist scholars who have long argued that gender–environment relations risk being essentialised and reified without careful, contextual, and fluid understandings of gender as a power relation (e.g., Agarwal 1992, 2000; Jackson 1993; Rocheleau et al. 1996; Nightingale 2006; Leach 2007; Sultana 2009b). Few feminist geographers have forayed into the climate change debates (e.g., Seager 2009; Bee et al. 2012). To this end, scholars can contribute to the analyses and framing of debates, bringing forth the complex ways that gender–environment relations are produced, performed, contested, and lived. Feminist political ecologists have argued that gendered dynamics of environmental change must be analysed in ways that integrate subjectivities, scales, places, spaces, ecological change, and power relations (Rocheleau et al. 1996; Elmhirst 2011; Hawkins and Ojeda 2011). Broader contexts and constraints that influence gender are crucial to understand and address in processes of climate change. Given the gaps in the literatures on climate change that engage with recent advances in feminist theories, it becomes imperative to bring such insights to bear on the important work that has been accomplished by gender advocates in their sustained and tireless efforts in the development and policy circles. In this regard, feminist analyses of the impacts of climate change remain important, but also must

be broadened to examine the ways in which gender complicates the assumptions made, the analysis proffered, and adaptation solutions pursued in any climate change program. Such insights can enrich the burgeoning literature on gender and climate change that is relevant to academia and policy circles. In this chapter I highlight some key issues. Although my regional emphasis is on South Asia, the analyses and insights are relevant elsewhere.

### 2.3 A Feminist Analysis of Climate Change

Societies that are heavily dependent on natural resource bases are particularly at risk of multiple stressors and events driven by a changing climate, especially in water-related hazards (Thomas and Twyman 2005; Adger et al. 2009). Scholars have argued that ecological changes attributed to climate change in South Asia are already apparent (Mirza et al. 2003; O'Brien et al. 2004; Huq et al. 2005). The ways that hydrological, geomorphological, and biophysical changes affect regions and localities have to be closely studied and thereby inform the ways social vulnerabilities and adaptation options are assessed. The IPCC (2007) predicts that freshwater shortages in South Asia are likely to be compounded by increasing uncertainties of flooding (from rivers, flash floods, and sea surges). There will be worsening of both climate processes (sea level rise, salinity, water scarcity) as well as climate events (e.g., floods, cyclones, storms, tsunamis) in the near future (Mirza et al. 2003; Huq et al. 2005). The slow onset processes, as well as dramatic events will vary across regions, but will compound water-related hazards that are seasonally experienced in the monsoonal climates, such as those in South Asia. Uncertainties, irregularities, and failures in rainfall and beneficial floods will be combined with more extreme and frequent storms, cyclones, devastating floods, and riverbank erosion. Given the intimate relationship between societies and water, the implications will be profound.

This coexistence of both overwhelming amounts of water (floods, storm surges, cyclones, riverbank erosion, waterlogging), as well as inadequate water (pollution, drought, salinity, desertification) define the relationship that most South Asian societies have with climate change. This fluidity in relations to water, one of necessity and of threat, is an invariable factor in everyday life and livelihood in the agrarian and riverine areas. Differentiated vulnerabilities based on gender are often obscured in discussions of vulnerability of specific locations (e.g. floodplains). Concerns about frequency, duration, timing, and intensity of floods, especially for those living in floodplains and islands, are naturally important. Although geographical locational differences set the context, the social variations in the ways that hazards and vulnerabilities manifest themselves are important to draw out. This is particularly evident in water-related productive and reproductive tasks in agrarian societies that constitute the majority of the developing world.

The relationship between climate change, water, and gender are foregrounded through two dramatic transformations: socioecological transformations attributed to

climate change and historical patriarchal societies that are also facing challenges in gendered power structures. Focusing on the linkages through a feminist political ecology lens provides insights into changes that can inform global discussions, as well as local policies. As scholars have pointed out, access, control, use, and knowledge of resources are gendered, thereby making any changes in natural resources from climate change play out in different ways for different livelihood outcomes for men and women in any context. Worsening of the resource base and altering resource access have gendered implications for the abilities of individuals and households to adapt to and address challenges from climate change. Systemic inequities and gender biases in land ownership, inheritance rights, access to resources, and social norms of participation in natural resources management will be exacerbated with worsening ecological change from climate change. Gendered dependence on natural resources and gender division of labor produce differential relations to natural resources that vary spatially and temporally (Agarwal 1992). Resource conflicts can also be exacerbated over time (Sultana 2011). However, the tasks practiced along gender lines can remain constant through crises (e.g. fetching drinking water remains a particularly gendered burden for women, as men resist participating in this feminised task). As a result, accessing and procuring drinking water befalling women in most developing societies would result in worsening the burden when climatic changes result in changes in water quantity, quality, availability and seasonality in altering waterscapes.

The various ways that water comes to affect gender in the context of climate change thus becomes critical to examine. Drinking water availability, reliability, quality, quantity, and accessibility will be altered with changing weather and climatic patterns and climate-induced ecological change. Such changes might be gradual (e.g. salinity increase, sea level rise, drought) or dramatic (e.g. floods, storms, riverbank erosion) and will exacerbate daily water fetching tasks. Irrigation water availability will also challenge the roles that men and women play in agrarian economies. The burgeoning literature on gender–water relations could be productively engaged in climate change discourses and programmes, demonstrating the ways in which gendered subjects are produced, challenged, and entrenched via materialities, management, and mismanagement of water (e.g. Cleaver and Elson 1995; Crow and Sultana 2002; O’Reilly et al. 2009; Sultana 2009b; Truelove 2011). Such attention to the diverse ways that water comes to imbricate notions of femininity and masculinity can better explain how climate-induced waterscape changes have a bearing on gender relations. Lack of water that is socially and ecologically viable can strain gender roles and relations in the household and in communities. Furthermore, lack of safe water will affect the health and well-being of all members of a household, exacerbating household vulnerabilities and poverty. This strains the reproductive and caregiving roles of women. These are some of the ways that climate-induced ecological change affects men and women differently.

In many places throughout the developing world, loss of crops, assets, livestock, and property in disasters and dramatic ecological changes can force entire households into a downward spiral of impoverishment and being indebted, leading household members into working as wage labor and often having to relocate for livelihoods

(often as exploited urban denizens). Migration and displacement in these processes are also gendered, as male outmigration is more common, leaving *de facto* and *de jure* female-headed households to fend for families. Loss of social networks from displacement, and being more open to violence, exploitation, and impoverishment, affect men and women differently. But gender-based violence and marginalisation are increasingly of concern in areas of climate-induced ecological stress and migration. Although various coping strategies might enable people to survive, what can strain households and families are the psychological and social implications. Feeling helpless, desperate, and anxious about the next disaster or crisis event as well as ongoing struggles to survive can compound gendered marginalisations. Because women often do not own land or cannot inherit land in many South Asian societies, the importance of property rights in land and resources in reducing vulnerability and enhancing both coping and adaptation have thus become important points of discussion and debate.

Given the growing crises around the world, a gendered analysis of water-related hazards and disasters provides greater evidence of what to expect from the vagaries of climate change. Water-related hazards such as floods, cyclones, tsunamis, droughts, glacial melts, and riverbank erosion are expected to strain existing social systems throughout the world. Increasing rainfall, river floods, and storm surges will challenge gendered roles and responsibilities within and outside the home as water-induced hazards become more uncertain, intense, and frequent (Enarson and Morrow 1998; Fordham 1999; Enarson and Fordham 2001; Cannon 2002; Sultana 2010). This requires greater attention to gendered vulnerabilities to hazards and socioecological changes, as well as the gendered outcomes of recovery, relief, and rehabilitation endeavors. It is thus crucial to simultaneously analyse and address both these aspects related to water (Sultana 2010). It could not be clearer in coastal areas, where gender-water relations are constantly stressed and shifting given the various ways that water is both benign and harmful.

Geographers have long led the research on hazards and disasters, but few have focused on gendering hazards, vulnerabilities, and disasters (e.g. Paul 1997; Seager 2006; Sultana 2010). As the study by geographers Neumayer and Plumper (2007) demonstrates in data collected from around the world, more women compared to men are killed and injured in disasters. Women and children suffer the most during and after the event (Enarson and Morrow 1998). For instance, several studies in Bangladesh have found that a majority of respondents (male and female) identified women as having the greatest challenges and negative impacts from floods and salinity intrusion (e.g. Paul 1997; Nasreen 2000; Few 2003; Rabbani et al. 2009). Such findings resonate with those from other areas of the world (Enarson and Morrow 1998; Enarson and Fordham 2001; Bradshaw 2004). How and why these occur is essential to addressing context-specific changes.

In a majority of rural societies across the developing world, women generally look after livestock, care for household belongings, take care of children and elderly, tend to the ill and injured, and often stay back with children and elderly in the midst of an impending disaster. More women die during floods due to lack of swimming skills, trying to save children and belongings, and staying at home instead of going

to flood shelters. In addition, there are concerns of collapses in inheritance rights after disasters, disparities in disaster relief and aid, and issues of abandonment. Women's roles as caregivers exacerbate their existing burdens, even if floods, tsunamis, and cyclones affect entire households. Cultural constraints on what they can or should do to protect themselves often result in greater mortality rates among women and girls compared to men and boys. More girls die, as boys are often protected better in the midst of flood waters (generally linked to the greater preference given to boys compared to girls vis-à-vis education, food, and social valuation). Although parents might want to save all of their children, sometimes they can only hold on to one or two children in flood waters and storm surges, and there have been reported cases of parents letting go of the girl child to save the boy child (Hossain et al. 1992).

In times of disasters, the marginalisation of large numbers of female-headed households (de facto and de jure) results in many women not receiving adequate information, assistance, shelter, or rehabilitation material (especially if they are not connected to powerful households that control politics and financial benefits coming into an area). Concerns of purdah (practices of seclusion) in some South Asian communities often dictate to what extent women can actually be involved in any planning or even in seeking shelter. Sociocultural norms of women's mobility are hindrances to women seeking shelter, obtaining medical assistance, or leaving the homestead, as male chaperones are generally expected during their mobility in public spaces. The greater dependency of women on men in general can result in reinforcing disempowerment among women. Proper decorum and constructions of feminised subjectivities result in women being unwilling to associate with unknown men, be alone in public places, and be outside of familiar kinship structures. Notions of shame, honor, and dignity are strongly enforced by both men and women in maintaining social practices even during disasters. Concerns of proper feminine decorum are pervasive such that male elders do not always support women seeking refuge in flood shelters, where they would have to cohabitate with unknown men. Women also internalise such patriarchal sensitivities and feel insecure and anxious in such spaces; they thereby are often unwilling to seek shelter during floods and storms. Instances of rape, harassment, violence, and humiliation further exacerbate such realities (Hossain et al. 1992). As a result, women and girls often stay behind in their homesteads, surviving by living on the rooftops or in trees (see also Paul 1997; Nasreen 2000; Schmuck 2000). Pregnant and lactating mothers and disabled women might find it particularly difficult to move to shelters or obtain the help they need. Furthermore, concerns of looting and robbery at the shelters, as well as theft of their belongings left behind in uninhabited homes, discourage women from seeking shelter if they believe they can survive while remaining in their homes.

Gender differences are seen also in flood relief and rehabilitation work, where men dominate both arenas. As a result, women's and girl's needs are often overlooked. In the long relief lines, men might spend considerable amounts of time trying to procure food and other items for their families. But women are also seen in such spaces, trying to manage children and procure food. With a lack of manual labor jobs in flooded landscapes, women find it difficult to earn a living, especially

if men of the household have left. With crops flooded and homesteads under water, there is no source of earnings and starvation is common. The unpaved dirt roads are often severely damaged in each flooding event, making communication and transportation difficult even after the waters have receded. Uneven burdens are placed on men, who often migrate in search of livelihoods, straining households and often breaking up families.

Recovery and reconstruction are difficult when the frequency of floods and disasters is almost annual or when impoverishment from one event makes it impossible for households to become sufficiently resilient to the next event or worsens their vulnerabilities to the next event. Female-headed households often are increasingly made destitute through such recurring events, compounded by the ongoing marginalisation that women face in society in general. Loss of home-based production, kitchen gardens, poultry, and livestock particularly affect women across socioeconomic brackets, as these resources provide both subsistence and income-generating opportunities for women (Wiest 1998). Issues of displacement, land rights, housing, and relocation thus become critical in any disaster recovery effort, but uncritical and gender-insensitive efforts can result in worsening the situation for poor women and poor men in a range of locations. With climate change exacerbating the intensities and frequencies of dramatic water-related hazards and disasters, such issues complicate any adaptation strategies in a locality.

Such critiques resonate with the vulnerability literatures in geography and related disciplines, where vulnerability is understood not just individually but historically, geographically, politically, ecologically, and socially (O'Brien et al. 2004; Wisner et al. 2004). Nuanced understandings of vulnerability and social power are essential to the ways that adaptation can be theorised and understood. Gendered vulnerability analysis demonstrates that men and women have differentiated vulnerabilities and thereby respond to and cope with vulnerabilities in different ways across social categories (Enarson and Morrow 1998; Fordham 1999, 2003; Enarson and Fordham 2001). There remains a greater need in the climate change literature to account for the various power relations that operate in the lives of men and women. These insights from the vulnerability and political ecology literatures underscore that adaptation is premised on ways people cope with and respond to hazards and vulnerabilities, and how they handle the ongoing transformations thereafter that pose newer and unforeseen challenges. Such dynamism to understanding shifting vulnerabilities and abilities to cope requires greater nuanced and sustained attention from academics and policymakers alike.

Vulnerability is not the same as poverty; it is contextual and driven by interplay of differentiated risks, abilities, and susceptibilities to different hazards. Vulnerability and poverty are strongly correlated in South Asia, and gender compounds both poverty and vulnerability that individuals face in society (Cannon 2002). Vulnerabilities are linked to physical, social, and attitudinal factors, all embedded within the broader political ecologies of development and globalisation (see Wisner et al. 2004 for an overview). Although there is increasing attention to the fact that there are varying gendered differences in vulnerabilities in any context, not all women are equally vulnerable, even if their gender locations often make them as a group more

vulnerable to various forces and systems. Gender is intersected by a range of social differences such as class, caste, ethnicity, age, education, and religion (i.e., package of entitlements and resources people are able to access or command). Similarly, perception of risk is gendered, as is the way people process information and view their role in what should or can be done (Enarson and Morrow 1998; Fordham 2003). Men's and women's understandings of risk, and their abilities to act on information, are further inflected by class, caste, and so on. Such factors are important in climate change adaptation processes as they influence the interpretation and experience of climate change in any given locality (Nelson and Stathers 2009). Gender inequalities and norms that exist in many parts of the world often expose women and girls to greater risks (physical and social) than their male counterparts. Problems of assessing differentiated and nuanced vulnerabilities can result in uncoordinated and ad hoc adaptive strategies to be developed (Ahmed and Fajber 2009).

Practitioners and scholars have argued, however, that women and men are not passive victims of climate change but that they display a range of strategies and coping mechanisms to deal with ongoing transformations (Dankelman et al. 2008). Women who are facing changing climates and hydrological events are already making changes to adapt their lives and livelihoods and often are able to articulate what they need (even if they are not fully aware of what is available to them or how climate change might affect them in the future; e.g., Mitchell et al. 2007). Although various coping strategies have been identified and even celebrated in the DRR literature, these might not necessarily be supportive of long-term adaptation abilities (Wisner 2010). Furthermore, there is a critical need to look at strategies that are voluntary and involuntary (e.g., distress sale of women's personal assets for immediate survival that leads to longer impoverishment during and after disasters). As a result, adaptation should not mean just coping with vulnerabilities and uncertain hazards but a shift to more resilient and flexible livelihoods (cf. Ahmed and Fajber 2009). Coping might be acceptable in the short term, but repeated requirements to cope with hazards and ecological crises can undermine long-term ability to adapt or survive. The temporal nature of coping and dealing with vulnerabilities has to be juxtaposed to long-term survivability and quality of life. In patriarchal contexts, the gendered vulnerabilities and coping strategies are influenced by the overall location of women in society.

## 2.4 Gendering Climate Change Adaptation

In response to the impacts of climate change, there has been a growth of adaptation programmes throughout the developing world. These are meant to prepare people and households to be more resilient to climate-induced changes to life and livelihoods. How gender is understood, conceptualised, and acted on in adaptation policies and projects is thus critical to analyse. How women and men's needs are identified and then targeted is the cornerstone of adaptation on the ground. Adaptation strategies can change gender relations, too, as they are not gender

neutral. This is an important, but understudied area of research (Smith et al. 2000; Demetriades and Esplen 2008; Adger et al. 2009; Terry 2009; Cannon and Muller-Mann 2010; Wisner 2010). Climate change adaptation might reinforce gender inequalities and marginalisations. Gendered differences in knowledges and experiences with natural resources can influence the priorities people place on adaptation strategies, as well as the perceptions they might have about socioecological changes. This is where feminist political ecology research becomes relevant again, in explaining the ways that climate change impacts could result in reconfiguration of power relations and gender relations in multiple ways in any given context. Gendered implications of climate change in South Asia are particularly poignant as patriarchal norms, inequities, and inequalities often place women in considerably disadvantageous positions in their abilities to respond to and cope with dramatic changes in socioecological relations, but also underscore the complex ways that social power relations operate in communal responses in adaptation strategies.

The existing gender and climate change literature stresses that women in some instances might be able to take advantage of changing livelihood opportunities that are brought about by transformations of socio-ecological systems (Ahmed and Fajber 2009). Examples abound of women's collective groups helping communities recover from disasters and of self-help groups that participate in adaptation projects (e.g. brackish fish farming in increasingly saline landscapes due to sea level rise). But women (compared to men) generally lack access to credit, markets, technology, and skills to sustain such changes that might not readily be available to them, or they are constrained by a host of social, political, and cultural factors. For instance, in areas with growing salinity, the collapse of ecosystems that supported diversified livelihoods is being transformed into market-based shrimp farming in coastal areas across Asia; similarly, dying vegetation due to rising salinity results in crises of fuel and fodder, the collection of which are particularly gendered tasks for women and girls. Attention to such limitations and possibilities requires sensitivity to feminist debates, as well as to contextual dynamics.

Feminist scholars have pointed out that patriarchal decision-making structures exist from global policy to local implementation in climate adaptation programs (Boyd 2002; Carr 2008). Although some programs might address practical gender needs, they largely fail to address strategic gender needs and systemic gender inequalities, power structures, and exclusions. A masculine bias remains in access to information, employment opportunities, decision-making processes, and institution building. Such macro-level issues are complicated by micro-level dynamics within communities and households. Gendered knowledge about water, agriculture, forestry, and disaster mitigation can assist in bolstering adaptation programmes in different localities, but these knowledge systems are often not engaged and individuals or groups are not fully involved in decision making. Lack of involvement of differently-located women in public decision is a long-standing issue and highlights the need to address gender inequality for effective adaptation programmes.

Similarly, the lack of engagement of the voluminous critiques of community and participation in the current climate change literature raises concerns of oversimplification, romancing the community, and problematic practices of participation (cf.

Cooke and Kothari 2001; Hickey and Mohan 2005; Few et al. 2007). These are particularly relevant for the growing number of community-based adaptation (CBA) programmes around the world. The gendered dynamics of community and participation have been captured in various strands of scholarship, which need to be engaged with more forcefully in the climate change debates. As feminist scholars have systematically demonstrated, invoking “community” or “participation” does not necessarily mean inclusive or egalitarian outcomes (e.g. Agarwal 2001; Cornwall 2003; Sultana 2009a). Women are often marginalised or silenced in community projects. As a result, the gendered implications of climate change can be further exacerbated by uncritical conceptualisation and implementation of adaptation programmes that come in the name of community. The need to create space for different voices and recognition of a multiplicity of opinions and concerns could not be more urgent, so that men and women can all benefit from climate adaptation programmes.

Furthermore, there is a need to ensure that adaptation strategies do not place undue burdens on women or men and that their gendered division of labor is not of “free” labor for the sake of the community. Adaptation tasks and responsibilities come at a price, even if they are supposed to help individuals, households, and regions. Many development projects specifically target women as caregivers for the environment and for communal tasks, but feminist scholars have long critiqued such overtures that identify women simultaneously as victims and as saviors (e.g. Agarwal 2000; Jewitt 2000; Masika 2002). Open to debate are the ways that adaptation strategies further marginalise groups and how gender relations are obscured in presumed successful strategies. As a result, the valorisation of both externally driven community projects and endogenous collective action as the adaptive strategy or solution to climate change vulnerabilities often overlooks the point that both are fraught with exclusions and marginalisation, often along gender and class lines. Furthermore, not everyone might experience the threat of climate change in the same way, and some might have different ideas of what it means to adapt within their own community.

Other aspects of gendered concerns in the climate change literatures emerge from the ways that existing gender-focused development programmes are threatened by climate-induced ecological crises. For instance, Nelson and Stathers (2009) argued that climate change poses threats to “empowerment” programmes for women (however problematic these might be to begin with) and that there is greater need to pay attention to power relations and actions by different actors (private sector, state, civil society) to the perceived risks and what this means for gender equity in development planning. Climate change-induced ecological and hydrological changes will reinforce gender disparities in income, health, and education by exacerbating existing development challenges. Scholars have pointed out that climate change adaptation cannot fully succeed with structural constraints to gender equality, even if gender mainstreaming in climate change debates has gained some ground (Denton 2002; Seager and Hartmann 2005). Thus, development goals of gender equality might be further undermined via both climate change implications as well as adaptation strategies that do not meaningfully engage with gender analyses. In fact,

techno-centric and market-based solutions for climate change policies could end up hurting poor households and particularly poor women, where the focus needs to change to include issues such as justice, care, and equality (Hemmati and Rohr 2009; Seager 2009). It is thus important to account for gendered differences and gender relations in the solutions and mechanisms that are proposed in ameliorating climate change impacts. It is critical to not rationalise women or men into neoliberal subjects who will act as agents of change but, rather, see the variously situated power relations and subjectivities that are lived and experienced in everyday lives in relation to changing environments.

What thus becomes critical for academics and practitioners is to undertake careful and critical analyses of the different degrees of vulnerability, positioning in social networks and structures, differential access to resources and decision-making powers, and poverty in context. Such attention must be marshaled in analysing the impacts of climate change, as well as in the mitigation and adaptation programmes that ensue. Viewing gender relations as unequal power relations is important in fully understanding the ways in which vulnerabilities and adaptation play out. They inform the ways in which reductions in vulnerability can be envisioned and configure possible mechanisms that would enable women and men to enhance their abilities to respond to climate change and transformations of their environments. In enabling women to take part in decision-making processes and having their concerns and voices heard, there are opportunities to reduce women's heightened vulnerabilities, thereby allowing them to better resist, cope with, and adapt to changes.

## 2.5 Conclusion

The three events identified at the beginning of this chapter—policy discourses (via the IPCC report launch), feminist activism (via the Bali event), and ground realities (via the dramatic outcomes of a tropical cyclone)—demonstrate the entanglements and importance of gendered analyses and interventions in the debates around climate change. Gendered lenses are crucial in assessing the impacts of climate change, as well as the outcomes of adaptation programmes proffered in response to impacts and the further transformations that ensue. Climate change will impact the lives of women and men in different ways, thereby underscoring the importance of feminist political ecology and feminist geography analyses of climate change. The focus on power thus has to be made central, as do more complex and contextual understandings of gender, which are often missing in discussions. Greater attention to gendered subjectivities and identities can explain the complexities that exist and bring into sharper focus the intricacies of the nexus of gender–water–climate change.

Although many development actors focusing on gender and development might not feel that they are qualified or aware of all the complexities of climate change debates, there are many issues they can identify and work on, particularly if they are drawing from existing studies on gender and natural resources management or from gender and disasters literatures (Terry 2009). Similarly, those working in the climate

change literatures can engage more meaningfully and carefully with insights from feminist literatures. Such synergies and interdisciplinary analyses are crucial to more comprehensive understandings of situations and thereby more meaningfully informing policies and programmes. Although there is a growing lip service to gender in climate change policymaking and programmes, what remains to be seen are the ways these are adopted, interpreted, implemented, and negotiated on the ground.

In conclusion, various bodies of scholarship that are informed by feminist theories can greatly enrich ongoing debates in academia and policy circles on the various dimensions of gender, water, and climate change. The rich genealogies of hazards studies, political ecology, feminist environmentalism, and other disciplinary approaches can further productively contribute to such studies. Similarly, regional specialists can gain considerably by incorporating these insights to influence the ways that debates, policies, and programmes are currently being envisioned and practiced across regions. This chapter highlighted some of the key issues that require further attention and analyses. Scholars should fruitfully and forcefully engage in ongoing debates across a range of scales and issues to demonstrate the ways that gender and other social axes of differences can constrain and alter adaptive capacities, as well as the ways that vulnerabilities are transformed and experienced in changing climates and waterscapes.

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