



# Women and adaptation

Margaret Alston\*

This article addresses the uneven impacts of climate change on women. To date, there has been a significant emphasis on climate science and technological solutions to aid mitigation and adaptation strategies. This has led to a form of global managerialism that presupposes that all people can adapt with the right resources and knowledge. In this article, it is argued that the differential impacts of climate change on women demand that climate actions and strategies require gender sensitivity and that further research on climate change, adaptations, and actions includes a gendered analysis. © 2013 John Wiley & Sons, Ltd.

#### How to cite this article:

*WIREs Clim Change* 2013, 4:351–358. doi: 10.1002/wcc.232

## INTRODUCTION

Climate change represents a significant threat to populations, the environment, and economies across the world. Consequently, a range of interdisciplinary and cross-disciplinary studies have focused on the most optimal ways to mitigate its worst excesses and adapt to the realities of global warming. For a variety of reasons, including the continuing climate change skepticism of some influential commentators and politicians, and the political and economic realities and rivalries associated with major investments in global actions, research and scientific attention has focused on ever more precise science to prove global warming, and scientific and technological solutions to address its impacts. While this has been an obvious and necessary response, it can be argued that this has resulted in a far less comprehensive approach to the complex social implications of climate change, the inherent social justice imperatives, and the uneven consequences for those most vulnerable and least able to adapt. This article addresses one aspect of this social reality—the implications of climate change for women in a range of global circumstances and their sometimes-constrained capacity to adapt.

While cognizant of the inherent danger associated with essentializing women as a unified category,

and of reinforcing gender stereotypes, this article nonetheless draws out the commonalities of women's experiences and their potentially enhanced vulnerability in differing social circumstances. It focuses on the higher levels of morbidity and violence experienced by women during and after climate and environmental disasters, their fight for safety and security for themselves and their children, their struggles for economic empowerment, and their significant knowledge and agency made more visible by the devastating effects of climate variability and catastrophic climate events.

In doing so, this article draws from research undertaken by the writer in a variety of situations including Australia's Murray–Darling Basin where a long drought has threatened water security during much of the 21st century; in Victorian communities where major bushfires razed several communities in 2009; in Bangladesh where cyclones, floods, salt water inundation, and river erosion have threatened and displaced communities; and across the Asia-Pacific where sea level rises, storm surges, and rising ocean and air temperatures have threatened islands and communities. In discussing these studies, attention will be drawn to women's vulnerability and resilience in order to provide greater understanding of the adaptive capacity of women in diverse circumstances. Climate change challenges will be addressed before discussion gender as a critical factor in vulnerability are discussed, before moving on to a brief discussion of our research in a number of sites to make the assertion that post-disaster sites can be places for renewed attention to gender equality.

\*Correspondence to: [margaret.alston@monash.edu](mailto:margaret.alston@monash.edu)

Department of Social Work, Monash University, Melbourne, Australia

Conflict of interest: The author has declared no conflicts of interest for this article.

## CLIMATE CHANGE CHALLENGES AND RESPONSES

Efforts to progress coordinated and collaborative sustainable climate change adaptation across the globe are ongoing and urgent. In this context, understanding what we mean by adaptation is critical. The IPCC<sup>1</sup> defines adaptation as *adjustments in natural or human systems ... which moderate harm or exploit beneficial opportunities*. A more encompassing definition linking the environment with social systems is that of Moser and Ekstrom<sup>2</sup> who view adaptation as *involv[ing] changes in social-ecological systems in response to actual and expected impacts of climate change [environmental factors] in the context of interacting non-climatic changes*. This definition makes more explicit the significance of factors other than climate change that frame the capacity of people to adapt in socially desirable ways.

Of significance is that climate change is not happening in a vacuum, but is one of a number of trends including globalization, rising world population, conflict, economic crisis and unpredictable policies that shape individual and community responses, and, in the context of this article, also enhance gender inequalities.<sup>3</sup> It is therefore critical that adaptive responses address both the ecological and social systems and the inherent inequalities within global communities. Social systems include inequality, access to technology, power relations, conflicts, values, knowledge, policies, cultural context, governance, and institutions, all of which have gendered elements that determine levels of vulnerability. The opportunities for, and pressures on, people and ecosystems affected by environmental factors are heavily dependent on the interlinked social and ecological systems that have generated them. To ignore social systems risks undermining positive adaptive responses, enhancing existing inequalities and increasing the vulnerability of women and other marginalized groups.

However, it is arguable that the current scientific and technological focus of adaptation research masks these critical social inequities and inherent vulnerabilities. Current adaptation research knowledge development appears to be based on the fundamentally flawed assumption that adaptation is both possible and desirable in all parts of the globe, and that with determined effort, the right technology, and adequate funding, the vulnerable will adapt. This linear assessment of adaptive responses presupposes that existing conceptual frameworks are adequate for planning and implementing adaptation strategies.<sup>4</sup> Yet, it is increasingly clear that there are limits and barriers to the capacity of individuals and communities to adapt, and that expectations that

rational adaptive responses will occur are illusory for a variety of reasons, not least being widespread poverty amongst those most vulnerable.

In a previous coauthored publication, the writer and others define a critical constraint associated with adaptation research as being the lens of global managerialism.<sup>5</sup> This perspective views adaptation as

adjustments to the predicted impacts of climate change; frames solutions in technical, economic, and managerial terms; presumes that enhanced climate science will result in the reduction of uncertainties; prioritizes expert knowledge about the future; and allows for the selection of optimal adaptation strategies. Such an approach not only pursues linear, apolitical, and self-limiting trajectories that generate lists and inventories of readily available and discrete adaptation options, but also adheres to a strong belief in the ubiquitous usefulness of science products for dissemination.

This managerialist, technological framing of adaptation is flawed for a number of reasons including the underexposure of critical, vexatious, culturally grounded factors shaping pre-existing vulnerability, and hence inability by many to adapt in a linear, progressive way. These factors include poverty, gender, and race. Particularly vulnerable are poor women living in rural areas, restricted by culturally oppressive regimes of power, with little control over resources, and, therefore, the facilities to adapt in positive and sustainable ways. Gender inequalities make change more difficult for women because of uneven power relations, lack of resource control, and low levels of institutional support. Women's increased vulnerability to climate events is therefore very much shaped by pre-existing inequitable gender relations and gender-blind policies and practices.

## CLIMATE CHANGE AND WOMEN

Climate change and environmental catastrophes have exposed the woman question—why is it that women are so disadvantaged in this space and why is it that women are so critically vulnerable? The answer lies in the fundamental gendering of society and the intersection of gender with a variety of social and cultural factors that limit adaptive capacity. Gender refers to the social construction of what it is to be female and male in any given society at any given time. Constructions of femininity and masculinity vary across regimes of power. Nonetheless, women in most societies have vastly unequal access to resources, constraints on their movements and freedom, reduced income generation capacity, and disproportionate

caring responsibilities. Gender denotes what is expected, allowed, and valued in men and women. It is learned through socialization processes and grounded in cultural and political contexts. It is not fixed or unchangeable, but is premised on men's greater access to power and resources. Gender relations tend to be hierarchical and to foster inequalities, and most importantly, are not just about women.

As a result of inequitable gender relations, conservative estimates suggest that women make up two-thirds of the world's illiterate, own 1% of the world's resources, earn 10% of the world's income, occupy only 18% of seats in the world's parliaments, constitute 70% of those living in extreme poverty, and, with their children, represent 80% of the world's refugee population.<sup>6</sup> Further, for women aged 15–44 gender violence accounts for more deaths and disability than cancer, malaria, traffic accidents, and war.<sup>7</sup> These statistics suggest that regardless of climate change, a significant proportion of the most vulnerable global population are women.

The embodiment of inadequate social practices is also pertinent in climate disaster sites. Embodiment describes the way bodies are both objects and agents of social practices.<sup>8,9</sup> For women these practices can and do result in high levels of gender-based violence (GBV), interruption of family planning support, unwanted pregnancies, and lack of hygiene facilities.

## GENDER AS A CRITICAL FACTOR IN VULNERABILITY TO DISASTERS

Gender is therefore a significant indicator of vulnerability to climate challenges.<sup>10–12</sup> Kelly and Adjer<sup>13</sup> define vulnerability as the capacity to 'anticipate, cope with, resist, and recover from the impact of a natural hazard' and note that reducing vulnerability is essential for adaptation. Yet, it is important to reiterate that vulnerability precedes these disasters and is not a consequence of these events.<sup>14</sup> In the post-disaster space, women's vulnerability is heightened by a complex array of issues. These include loss of control over natural resources, including water, the means of production, information, and decision making; time poverty; a breakdown of educational and employment opportunities; increased exposure to unsafe conditions; and less capacity for local organizing.<sup>15</sup> All of these factors exacerbate women's vulnerability in changed circumstances. Women are much more likely to be living in poverty, to have no ownership of land and resources to protect them in a post-disaster situation, to have less control over production and income, less education and training, less access to institutional support and information,

less freedom of association, and fewer positions on decision-making bodies. Women are more constrained by their responsibilities for the aged and children, and during and after a climate event they are generally more likely to die and are more exposed to violence.<sup>16,17</sup>

Lane and McNaught<sup>10</sup> note that before and during climate disasters women are more likely to be responsible for the practical preparation of the household, informing family members, storing food and water, and protecting family belongings. In both developing and developed countries, men are more likely to liaise with government officials, prepare the outsides of buildings, make decisions about evacuation and timing, manage water resources, distribute emergency relief, and receive and disseminate early warnings to the community. Dankelman<sup>15</sup> argues that women have less access to resources that are essential to disaster preparedness, mitigation, and rehabilitation, and that their workloads increase not only because men are more likely to migrate to look for work but also because of a lack of energy sources, clean water, safe sanitation, and health impacts. Heavy workloads often result in girls dropping out of school to assist.

Women's increased morbidity and insecurity following disasters is demonstrated in a number of studies including our own in the Murray–Darling Basin area of Australia,<sup>18,19</sup> in the Pacific,<sup>20</sup> and Bangladesh.<sup>21</sup> This work supports that of others including Neumayer and Pluemper's<sup>12</sup> study of 20 years of disasters that indicates women are 14 times more likely to die in a catastrophic climate event; Enarson and Chakrabarti<sup>14</sup> and Enarson<sup>22</sup> who note the significant vulnerability of women to violent attack following Hurricane Katrina in the United States; and a report from the earthquake region in Christchurch in February 2011 that suggests the numbers of women seeking refuge from violence in the first month following the disaster nearly doubled.<sup>23</sup> In vulnerable areas, it has also been demonstrated that women are more likely to be food insecure and living in poverty.<sup>24,25</sup>

Research from across the world notes the higher mortality and greater vulnerability of women to food and water insecurity, to lack of access to health services such as family planning following disasters, to violence and abuse, and to poor health resulting from climate change events. These include studies from Australia,<sup>17</sup> India,<sup>24</sup> the United States,<sup>14,26</sup> Vietnam,<sup>27</sup> Nigeria,<sup>28</sup> South Africa,<sup>29</sup> Brazil,<sup>30</sup> and Colombia.<sup>31</sup> These studies reveal not only that culture and social mores shape responses in particular circumstances, but that there are also disturbingly common global gendered trends regardless of country,

developed or developing world status, or type of climate catastrophe.

UN WomenWatch<sup>32</sup> notes that in many contexts,

women are more vulnerable to the effects of climate change than men [and] are especially vulnerable when they are highly dependent on local natural resources for their livelihood. Those charged with the responsibility to secure water, food and fuel for cooking and heating face the greatest challenges [and] when coupled with unequal access to resources and to decision-making processes, limited mobility places women in rural areas in a position where they are disproportionately affected by climate change. It is thus important to identify gender-sensitive strategies to respond to the environmental and humanitarian crises caused by climate change.

Yet, women do not lack agency in this space. They hold critical local knowledge that can enhance climate adaptations and assist the development of new technologies to address climate variability in areas related to energy, water, food security, agriculture and fisheries, biodiversity services, health, and disaster risk management. With further attention to adaptation knowledge development, women's traditional knowledge and practices have the capacity to add enormous value to the development of new technologies to address climate challenges.<sup>10</sup> It is therefore critical that gender-based analysis be a fundamental aspect of research in this area, not only to tabulate gendered outcomes but also to anticipate likely gendered vulnerabilities.

## GENDER AS A FACTOR IN COPING, ADAPTATION, RESILIENCE, AND TRANSFORMATIONAL CHANGE

One result of women's increased vulnerability following disasters is the adoption of unsustainable coping strategies. Coping is the ability to respond to, and avoid, harmful impacts in the short term in order to address a dire situation. Such strategies are generally formed under stress and may be unsustainable in the long term.<sup>33,34</sup> By contrast adaptation is the ability to genuinely transform structure, functioning and organization drawing on strategies that are long-term sustainable actions, oriented toward livelihood security, using resources efficiently, aided by planning and reflection, and involving institutional change.<sup>35</sup>

Adaptation is dependent on the resilience of the people and communities affected—resilience referring to the capacity of people and communities to absorb change in a positive way.<sup>1</sup> Moving from coping to

adaptation strategies is highly dependent on how resilient people feel, how risky change appears, how safe traditional practices may seem, and the institutional supports provided to assist people to move through what are effectively uncertain change processes. There are several barriers to adaptation including physical (such as the disaster event), financial (levels of poverty and costs of adaptation), cognitive (assessment of risk and trust in institutions), normative behavior patterns (safety in doing what one has always done and unwillingness to deviate), and institutional governance and structure (institutional inequities, social inequalities, lack of information sharing, and institutional inflexibility)—all of which are influenced by gender relations.<sup>36,34,35,37,38</sup>

Building resilience is not only essential to adaptation, it is integral to gender equality and is defined by women's empowerment in what are essentially critical and often life-threatening circumstances. Resilience, adaptation, gender equality, and the empowerment of women and girls are critical to achieving transformative adaptive change,<sup>35</sup> change that requires governments and institutions to redefine and renegotiate social contracts, address the causes as well as the symptoms of vulnerability, and take actions to protect human rights, including the rights of women and girls.<sup>35</sup> In our research in a number of countries we are assessing the gendered impacts of climate change.

## ILLUSTRATIONS FROM THE FIELD

Drawing on our own research we are able to demonstrate consistency of gender vulnerability in a number of geographical areas impacted by climate events. In a number of sites including Australia, the Pacific, and Bangladesh, we have observed gender differences in vulnerability to climate challenges. In these contexts, pre-existing gender inequalities are reflected in land and resource ownership, decision-making bodies, livelihood strategies, morbidity, and vulnerability to violence. Research in the Murray–Darling Basin<sup>17</sup> reveals that drought and water insecurity has resulted in significant vulnerability for women resulting from their lack of ownership of land and inequitable decision making. A key livelihood strategy that has developed across Australian agricultural areas is the sourcing of off-farm income, a strategy largely undertaken by women. Many women travel long distances for work or must move away to generate income for farms that struggle to produce a profit. Yet, women also reveal their discomfort at decisions being made regarding staying in agriculture and/or retaining water licenses when they have limited input to the decisions because of their lack of ownership and when the

consequences impact dramatically on their own quality of life.<sup>18</sup> Further work suggests that women in these areas are experiencing increased violence within their relationships and that while family violence is a common outcome of farm stress, the focus of agricultural and water policy has been on industry and economic factors rather than on social factors leaving women highly vulnerable in challenging circumstances.<sup>39</sup>

Research emerging from the bushfire areas of Victoria following Australia's Black Saturday fires in 2009 also reveals gendered vulnerabilities. During these devastating fires, 173 people died and 2133 homes were lost. Because of the significant consequences of the fires, the subsequent Royal Commission detailed a number of recommendations including the need for future research to encompass physical, biological, and social research in order to more effectively capture the human elements associated with climate events. Amongst the myriad social consequences of these fires have been significant mental health issues, post-traumatic stress disorders, long-term displacement, and high levels of gender-based violence (GBV). Research conducted by the Women's Health Service in the Goulburn North East area of Victoria indicates that GBV increased substantially following the trauma of the Black Saturday bushfires in Victorian regions<sup>40</sup> corroborating data from other post-disaster sites.

Research in the Pacific region and Bangladesh reveals that women are particularly at risk of sexual violence following a disaster and their vulnerability is exacerbated by a lack of safety in shelters and reconstruction sites and experience declining access to family planning.<sup>41</sup> Pregnant women are at greater risk of abortion and miscarriage in shelters<sup>42</sup> and of malaria.<sup>43</sup> Poor hygiene in shelters can result in urinary tract infections, diarrhea, skin diseases, and hygiene issues related to menstruation.<sup>44</sup> A particular concern is the rising level of HIV and AIDS amongst women in the Pacific Islands and this may be related to GBV and the declining status of women, particularly noted in Papua New Guinea.<sup>45,46</sup>

Bangladeshi women report being reliant on a male escort to go to the shelters, needing permission from their partners to leave home, feeling overwhelmed by loss of homes, livelihoods, and possessions, taking responsible for household and livelihoods when men out-migrate, walking through stagnant flood waters several times a day to collect fresh water, ongoing river erosion damaging their homes and livelihoods, and high levels of displacement.<sup>41</sup>

Commonalities across these particular research sites indicate a significant rise in GBV following climate events and disasters; a significant rise in

the amount of caring work undertaken by women in post-disaster sites; women taking on the burden of emotional support for family members without attending to their own needs; a lack of support services to assist with relocation, survival needs, safety, caring, and health needs; a lack of information flow to women; a lack of input to decision making; aid and resources being directed to men or the designated farm owner (usually male); a lack of awareness of the particular needs of women relating to family planning and reproductive health care, livelihood development strategies, and empowerment activities; and gender insensitivity in the way reconstruction planning, policies, and programs are developed.

## ENHANCING POSITIVE ADAPTATIONS THROUGH GENDER SENSITIVITY

Post-disaster sites provide the space not only for reconstructing physical landscapes and structures but also to address pre-existing vulnerabilities based on gender inequalities. In attending to mitigation and adaptation, we have the possibility of reforming and reshaping gender relations through strategies and practices that assume equality. Otherwise adaptation strategies risk reinforcing and solidifying gender inequality. For example, if a gendered division of labor is normalized in climate change and post-disaster responses; if GBV is accepted as traditional, and therefore unchangeable<sup>47</sup>; and if women are viewed as essentially mothers and carers and men as landowners, fishermen, and workers, then interventions can lead to increased GBV, inequitable resource distribution, and a lack of commitment to empowerment strategies for women.

A focus on gender equality is essential to positive adaptation. This would allow rights, responsibilities, and opportunities to be equally available to women and men; enable women and men to have equal influence and rights in relation to national priorities and outcomes; and give their interests and needs equal weight in decision making, resourcing, and policy. When women are integrated meaningfully into the labor force, impressive advances in social well-being can be achieved and when women are empowered, there are better health and education outcomes for their children as well as a more sustainable use of natural resources.

The global challenges of climate events demand urgent action. Yet, institutional frameworks, policies, and practices adopted in vulnerable areas are often gender-insensitive, women are not adequately consulted, and rarely form more than a token part of decision-making bodies.<sup>48,49</sup> This fact was

noted with frustration by the UN Secretary-General Ban Ki-Moon in the lead up to the Copenhagen Climate Change forum when he called on world leaders to ensure women have an equal role in climate change decision making; that they be seen as agents of change not victims; that they are recognized as the custodians of knowledge essential to local natural resource management; and that their particular vulnerability be addressed.<sup>50</sup> The lack of women in decision making has resulted in global understandings of climate issues being insensitive to gendered nuances and the policies, practices, and programs adopted having the unintended consequence of cementing gender inequalities and supporting women's inequitable access to resources and aid. A reframing of climate change policy and actions, and gender sensitivity to women's circumstances has the capacity to move people and communities to transformative change and to shift and challenge inequitable gender relations.

## CONCLUSION

A new conceptual framework for adaptation research is necessary if we are to assist the most vulnerable to adapt in positive ways. Current models focusing on scientific and technological precision tend to underplay the social implications and the consequent

limits and barriers to adaptation for vulnerable groups. A systematic awareness of the social systems, power differentials, and inequitable resource allocation is necessary if we are to avoid assuming that adaptation is possible for all people in all circumstances with effort, funding, and careful planning. Adaptation requires greater attention to social systems and, in fact, can provide the basis for challenging inequities and vulnerabilities in such a way as to be transformative. There is no doubt that women are more vulnerable in post-disaster sites and during climatic changes. There is also no doubt that this is essentially because of pre-existing gender inequalities that leave women more vulnerable and with poor adaptive capacity. If policies and programs attend only to ecological and economic systems ignoring existing and embedded inequalities then transformative change is not possible. What makes this so much more disturbing is that women's knowledge, experience, and energy have the capacity to build positive adaptations, extend local level knowledge, and address community empowerment. Women are not victims in this space but they are rendered vulnerable through existing social customs, caring, and reproductive capacity. Adaptation research and strategies coupling scientific, technological, and social understanding provide the basis for addressing inequalities, empowering women, and building resilience. It is time to think outside the square.

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