
THE GENDERED IMPACTS OF CLIMATE CHANGE: CASE STUDIES FROM ASIA AND AFRICA

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Abstract: Climate change has emerged as a global challenge, the impacts of which are being felt across the globe in the form of climatic variability, extremes and disasters. According to the Intergovernmental Panel on Climate Change (IPCC), the world mean temperature is further projected to increase by 0.3°C to 4.8°C by 2100. There are likely to be increased incidences of droughts, floods, heat waves, heavy rainfall events accompanied by shortage of natural resources. Such climatic extremes, though will affect all sections of population but will have a greater negative impact on women especially in developing countries owing to women's limited education, mobility, and access to work opportunities outside the home and ownership as well as control over resources such as land and finance. The scarcity of natural resources will make the lives of poor women much harder as they would have to trudge longer to collect the five F's of fuel, freshwater, fodder, food and fiber.

The present study highlights the gender differentiated impacts of climate change on four core areas impacting women's lives: income and employment; health and hygiene; changes in workload and violence against women. The study is based on secondary data from Asia and Africa, which are also the most populous regions of the world and the most affected by climate change. The other objective of the paper is to emphasize the need for greater gender sensitization of the climate policy makers at local, national and international levels to the specific vulnerabilities of women and the need for appropriate adaptation policies suited to the needs of women. This is because climate interventions often ignore gender concerns reinforcing the gender dimension of vulnerability despite the call for gender-balanced representation in climate related processes by the United Nations Framework Convention on Climate Change (UNFCCC).

Keywords: Climate Change, Disasters, Gender, Natural Resources, Vulnerability.

Introduction: Climate change is one of the most daunting challenges of our times. The year 2017 was the third warmest year in the 138-year climate record, after 2016 and 2015 occupying the first and second rank [1]. Climate change is resulting in climatic variability in terms of changing frequency, intensity, spatial extent, duration, and timing of extreme climate events. It is projected that there is going to be an increase in the frequency of heat waves and rising speed of tropical cyclones. In addition to this heavy precipitation events are also expected to rise having an impact on the frequency of floods and landslides [2]. During the period 1980-2011, the world witnessed several climatic extremes, much greater than previous three decades. There were 3455 floods, 2689 storms, 470 droughts and 395 extreme temperature events during the period [3]. Such climatic changes are likely to affect all aspects of human development including agriculture, natural resources, water resources, food and health. Between the years, 2000 to 2004, approximately, 262 million people were affected by climate disasters annually, and almost 98 per cent of them were from the developing world [4]. Within this marginal group evidently,

women are more severely affected by climate change and disasters owing to their social roles, gender discrimination and low economic status [5]. Poor women in developing countries have to struggle against the odds for providing food, fuel, fodder and fresh water for their families as scarcity of natural resources fueled by climate change, urbanization and industrialization makes their lives much harder. They are forced to trudge longer distances and spend larger amounts of time and energy to fulfill their gendered roles and responsibilities of accession and management of prime resources for the family. Besides all this, the care giving burdens of women magnify due to increase load of vector borne diseases, thereby diminishing the role of women in income generating activities further confining them to the home.

The domain of how climate change differently impacts women has been a topic of study for the last two to three decades by many national and international organizations. However, the existent structural and cultural factors of societies, are the cause of huge gender gaps in all domains of development. These gaps are exacerbated by climate change. Poor women bear the dual brunt of climate change because of their gender and poverty owing to which they have poor capacity to adapt to climate change. There is a need to establish more linkages between gender, poverty, impacts of climatic variability and extremes, vulnerability and the need to build adaptive capacity of the most vulnerable groups including women.

One of the objectives of this paper is to examine the gender-differentiated impacts of climate change, stresses and extremes on poor women in Asia and Africa and analyze the underlying causes of these differential impacts. The impacts will be examined on four core areas affecting women's lives namely, income and employment; food security, health and hygiene; changes in workload and violence against women. Since climate interventions, often ignore gender concerns reinforcing the gender dimension of vulnerability, another objective of the paper is to emphasize the need for greater gender sensitization of the climate policy makers at local, national and international levels to the specific vulnerabilities of women and highlight the need for gender mainstreaming in adaptation policies.

Methodology: The study is based on secondary data from Asia and Africa, which are also the most populous regions of the world and the most affected by climate change. An extensive review of literature was undertaken at national and international level in order to examine gender-differentiated impacts of climate change on women. The study was limited to identifying impacts of floods, droughts and cyclones since extensive literature was available for these extremes. Only those studies where the differential impacts on men and women were mentioned directly or indirectly could be considered for the present analyses. The causes of such impacts were also examined wherever possible.

Results and Discussion: The gender differentiated impacts of climate stresses, extremes and disasters were examined for their impact on different domains of women's lives. Employment and income generation opportunities of women; food security, health and hygiene of the family; change in the workloads of women and other social impacts such as violence against women.

Employment and Income Generation Opportunities of Women: Majority of the world's poor are already dependent for their livelihood on natural resources which are threatened by climate change [6]. In South Asia, due to recurring floods income generating opportunities of women were lost due to adverse impacts on home based production such as kitchen gardens, poultry and livestock [7]. Findings from flood affected states in India such as Bihar and Uttar Pradesh, reveal that where women worked as agricultural laborers, they often lost their source of income as the fields were submerged. Also, since most women spent their income on self as well as children's needs, in the absence of such income, education and hygiene were greatly compromised putting them to great hardship [8].

Not only did women lose their jobs after disasters, in some cases such as Kosi in Bihar after the floods in 2008, most employment opportunities, were found to be biased towards men [9].

Similarly, in Bangladesh, due to climate change and climatic disasters such as tropical cyclones, tidal surges, coastal erosion, floods and droughts, women found themselves to be either entirely unemployed

or else employed in the informal sector. Some of them had to resort to self-employment or work as contingency workers in the absence of better options causing great hardship to the family because of lowered income [5].

In the drought affected areas of Gujarat, families faced major challenges because they had to initially shift from agriculture to animal husbandry and finally to non-farm sources of income because of severe water stress. The struggle of women was apparent because of the shift in their means of livelihood. In many households with declining incomes, assets including jewelry were sold off to make ends meet. In some communities in Satlasana in Gujarat, prevalent cultural barriers restricted women from working as laborers outside their own lands thus denying them opportunity to make up for the lost income. The study has also reported that despite such barriers, a small number of women (about 4 per cent) went against the restriction and took up jobs. After the Bhuj earthquake in 2001, women were forced to take up jobs, as laborers as the handicraft industry took a hit. Similarly in Bhiloda in Gujarat, it was women who performed all animal husbandry related activities but after the drought, 98 percent took up work as laborers. As a result of this, women were the primary source of income in 24 percent families and secondary source of income for 75 percent families. Such contributions to the household income if valued by the family members have the potential to enhance the status of women in family and society [8].

Another study conducted in drought prone areas of Banaskantha, Gujarat has revealed that if access to sources of water were improved and coupled with income generation schemes, it would not only improve women's incomes but also empower them and change their gender relations within the household. In addition to this, such alternate livelihood opportunities for women could also provide a steady source of income during the dry season [10].

Food Security, Health and Hygiene of the Family: Climate variability adversely affect agricultural production of households leading to declining yields and incomes. This may reduce food consumption and have negative human capital outcomes [11].

In Nepal, after event of floods in the Rohini and Bagmati basins, women and children often resorted to drinking of contaminated water, which worsened their already poor health. Women also faced immense psychological stress because of living in camps, such situations were particularly worse for pregnant and lactating mothers. In addition to this, in the flood affected areas of Bihar and Uttar Pradesh, anemia and malnutrition were common among women and children [8]. Combination of these factors may lead to poor health outcomes for women and children. Findings from the Ganga river basin in India, also suggest that psycho-social effects of a flood were more pronounced for women who, had to look after their family members despite their personal distress and loss of support networks [12]. In Bangladesh, the major reasons for nutritional insecurity, included decrease in variety of agricultural products, low incomes, insufficient food stocks and decline in kitchen gardening [13]. Personal hygiene became a challenge especially for menstruating and pregnant women in flooded areas in Bihar [8], [9] & [14]. Research has shown that in both flood and drought affected areas, menstrual hygiene was compromised thus, increasing the occurrence of reproductive as well as urinary tract infections [9] [15].

According to a recent study conducted in nine drought-affected states of India, the proportion of acutely malnourished pregnant women was found to be higher than the standard WHO cut-off values. Stunting rates among non-pregnant mothers were reported to be as high as 15% in the states of Chhattisgarh and Bihar. Similarly, the percentages for wasted non-pregnant mothers were around 57.6 per cent in Bihar, 55 per cent in Rajasthan, 40.9 per cent in Chhattisgarh and 35.3 per cent in Telangana. In Chhatrapur and Rewa districts of Madhya Pradesh, women reported that due to water scarcity Primary Health Centre (PHC) functions were affected to such an extent that patients' attendants were asked to fetch water on their own, the quality of which could not be ascertained because of limited sources. The problems associated with poor quantity and quality of water for child-birth related tasks exacerbated the possibility of infections [15].

In Burkina Faso, during severe droughts the households coped using several methods such as pawning their crops, selling of livestock, borrowing money while women sold off their assets, which they had set aside for their daughters' weddings. In some cases women volunteered these sales and in others the heads of household seized the animals and sold those [11]. It is apparent from the above studies that women are far more affected adversely by climatic changes and extremes and have very limited options available to them to cope or adapt.

Change in Workload of Women: Findings from a study conducted in the flood-affected states of Uttar Pradesh and Bihar, reflect that women's workloads were generally higher during and after disasters as compared to normal periods. Flooding magnified the workload of women, who were burdened with the responsibility of taking care of children and whatever valuables the family had in addition to gathering water and food for the family. Women were also involved in reclaiming fields along with undertaking repair and maintenance activities. In such situations, women had very limited time to sleep, rest or indulge in leisure [8].

Findings from India, Vietnam, Ethiopia and Senegal indicate that during dry spells, due to irregularities in water availability, users generally had to spend more time in fetching water as they had to locate and use an alternative source. Since water and fuel are often collected by women, such irregularities in water supply added on to the women's workloads [11], [16]. In most of the drought-affected states of India, women spent about two-six hours fetching water each day. With such heavy burdens on women, children especially girls had to skip school in order to help with household chores or tend to younger siblings and the elderly [15].

In areas affected by climate change, men are more likely to migrate, leaving behind women to take care of their families and households. For instance, findings from Nigeria suggest that during floods and droughts, temporary migration of men resulted in women being left behind to take care of the household. Women also had to bear the burden of supplementing the household income by engaging in petty trading and hawking along with their children. In another study in South Africa, climate induced male out migration did not result in bringing remittances back to the rural areas but resulted in reverse remittances as the men needed financial support from their households in the rural areas. Such findings indicate that male out migration may not always result in positive outcomes for the households and in many cases may add on to the existing workload of women and may also result in loss of children's education [11].

Furthermore, findings from Bangladesh highlight the deplorable conditions for migrant women. After cyclone Aila, migrant women reported losing access to whatever limited livelihood options they had. In addition to this, they also complained about lack of privacy and poor access to proper sanitation facilities in the overcrowded shelters [11].

Other Social Impacts: Climate disasters may often have negative socio-cultural impacts especially on women. For instance, after droughts in Gujarat (India), marriages were conducted when girls just attained puberty, so that less dowry was expected. For children up to five years of age, the sex ratios were also found to be as low as 717/1000 in Bhiloda and 756/1000 in Satlasana, Gujarat [8]. In case of floods, a study conducted in Pakistan found that there were increased incidents of early marriages (15-19 years female adolescents). After floods in 2010-11, the cases of early marriages were reported 16 percent as compared to 10.7 percent in 2009-10 i.e. before floods [17]. A study from Malawi (southeastern Africa) also showed that girl-children were married to older men with numerous sexual partners during the periods of drought. Also the study reported that the young girls were even forced to sell sex for gifts or money [18]. Similar findings were reported by another study conducted in Kenya, showed that during the time of droughts men often migrated away from rural communities leaving behind women with very few resources and making them in charge of the households. This often led to an increased incidence of prostitution and risk of contracting HIV/AIDS [18].

Interestingly a study conducted in 583 districts of India, during the period (2002-2007) it was found that reduction in rainfall resulted in a 7.8 percent increase in dowry deaths and a 4.4 percent increase in domestic violence [19]. It was well supported by another study conducted in Tanzania (2008-2013) showed that shock of negative rainfall led to increased incidence of domestic violence on wives by about 18.8 percent [20].

In Bangladesh it was found that 35 percent of the women were harassed by a male relative or acquaintance due to increased stress and social disruption as a result of floods [23]. The vulnerability of women was highlighted by another study from Bangladesh where many women refrained from going to shelters during a disaster in fear that they may have to share a room with strange men [16]. In addition, a qualitative study done in Bihar (India) after floods found that the problems such as eve-teasing and sexual harassment were common in relief camps, especially for lower caste women [14].

According to [22] in some villages in Maharashtra (India), men were found to be practicing polygamy in the drought prone areas so that additional wives could fetch drinking water to their home. These were called 'water wives' or 'Paani Bai'. On the other hand, in Zimbabwe, it was difficult for men to get married during droughts. This was because men were expected to pay bride price to the family [11].

Many studies from Asia and African region had also shown that traveling long distances by women and girls to full fill water requirements of the family led to increased risk of sexual violence [18], [23].

Conclusion: Women in the developing countries play multiple roles as providers, cultivators and care givers to the family members. The present study clearly highlights that women are often more vulnerable to disasters than men through their socially constructed roles and responsibilities, limited access to resources, restricted rights, limited mobility and muted voice in shaping decisions. Women are spending considerable amount of time and energy in a number of activities such as food production, natural resource management, education of children and family care. All this leads to increased time poverty for economic and educational opportunities for women, thus impacting their overall development. Women's extensive knowledge and expertise can also be used in climate change mitigation, and adaptation strategies making them effective actors and agents of change. While designing adaptation policies, it is very important to consider these differential impacts on women so that their gender specific needs can be considered. The UNFCCC has called for gender balanced representation in climate related policies, because adequate participation by women is very crucial to ensure the development of inclusive policies and programmes that are equitable and have a long-lasting impact [24]. However, it may not be enough, just to have women on board, it is important that the members (men and women) are gender sensitized to the roles, socio-cultural norms and the expectations of family members from women. The inclusion of gender positive and gender transformative policies can enable women to lead climate resilient lives.

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References

1. NOAA: 2017 was 3rd warmest year on record for the globe | National Oceanic and Atmospheric Administration. *Noaa.gov*. Retrieved 13 February 2018, from <http://www.noaa.gov/news/noaa-2017-was-3rd-warmest-year-on-record-for-globe>
2. IPCC. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, New York: Cambridge University Press. (2012). (pp. 1-25).
3. Banholzer, S., Kossin, J., & Donner, S. The Impact of Climate Change on Natural Disasters. In A. Singh & Z. Zinta, *Reducing Disaster: Early Warning Systems For Climate Change*, (2014). (pp. 21-50).
4. UNDP. *Human Development Report*. Fighting Climate Change: Human Solidarity in a divided world. UNDP. (2008).

5. UN Women, Norwegian Embassy, BCAS. *Assessment of women's livelihood needs in three eco-zones of Bangladesh*. (2014).
6. UN Women Watch. *Women, Gender Equality and Climate Change*. UN Women. (2009).
7. Sultana, F. Gendering Climate Change: Geographical Insights. *The Professional Geographer*, 66(3), (2013). 372-381.
8. Moench, M., & Dixit, A. *Adaptive capacity and livelihood resilience*. Kathmandu, Nepal: The Institute for Social and Environmental Transition, International, Boulder, Colorado, U.S.A. and the Institute for Social and Environmental Transition, Nepal. (2004).
9. UNDP. *Kosi Floods 2008*. India: UNDP. (2009).
10. James, A., Verhagen, J., van Wijk, C., Nanavaty, R., Parikh, M., & Bhatt, M. Transforming time into money using water: A participatory study of economics and gender in rural India. *Natural Resources Forum*, 26(3), (2002). pp- 205-217
11. Goh, A.H.X. A literature review of the gender-differentiated impacts of climate change on women's and men's assets and well-being in developing countries. CAPRI Working Paper No. 106. Washington, D.C.: International Food Policy Research Institute. 2012
12. Mitchell, T., Tanner, T., & Lussier, K. *We know what we need*. London: Action Aid International. (2007).
13. Huq, N., Hugé, J., Boon, E., & Gain, A. Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories. *Sustainability*, 7(12), (2015). pp- 8437-8460.
14. Madhuri, The Impact of Flooding in Bihar, India on Women. *Asian Women*, 32(1), (2016) pp- 31-52.
15. UNICEF. *When Coping Crumbles*. New Delhi: UNICEF India. (2016).
16. Dankelman, I. et al. Gender, climate change and human security: Lessons from Bangladesh, Ghana and Senegal. WEDO/ABANTU/ENDA. (2008).
17. Syed Iazaz Ahmad Bukhari and Shahid Hassan Rizvi, "Impact of Floods on Women: With Special Reference to Flooding, Experience of 2010 Flood in Pakistan", *J Geogr Nat Disast*, Volume 5 • Issue 2, 2015.
18. Mayesha Alam, Rukmani Bhatia, Briana Mawby, "Women and Climate Change", Georgetown Institute for Women, Peace and Security, (2015)
19. Sekhari and storeygard, "Dowry Deaths: Response to Weather Variability in India", *Journal of Development Economics* Volume 111, November 2014, Pages 212-223
20. Olukorede Abiona and Martin Foureaux Koppensteiner, "The impact of household shocks on domestic violence: evidence from Tanzania", Working Paper No. 16/14, September 2016, University of Leicester
21. Azad, Hossain, and Nasreen, "Flood-Induced Vulnerabilities and Problems Encountered by Women in Northern Bangladesh", *Int. J. Disaster Risk Sci.* 2013, 4 (4): 190-199
22. Retrieved from <https://www.indiatimes.com/news/india/this-story-of-maharashtra-s-water-wives-is-as-heartbreaking-as-the-drought-itself-253278.html>, 2016
23. Alyson Brody, Justina Demetriades and Emily Esplen, "Gender and climate change: mapping the linkages", Prepared for the UK Department for International Development, 2008.
24. UNFCCC. Achieving the goal of gender balance, Technical Paper by the Secretariat. 2017
