

# Hill Women's Perceptions and Articulations about Climate Change: A study of Chamba, Uttarakhand

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**Abstract:** Climate change is a serious threat that the humanity is facing at the moment. There is growing research in the field of academics about the scientific impacts that the changing climate can bring about, but there is not much understanding about how women in the rural hill communities, whose lives are intricately intertwined with their environments, are affected by this phenomenon. As the fragility of hill ecosystems to the changes in the climate is well established, this paper attempts to bring out the perceptions and articulations of hill women in the Middle Himalayan Region of Uttarakhand, about the changes in the climate that they feel have aggravated their hardships by making them increasingly vulnerable to its effects.

**Keywords:** Hill Women and Climate Change

## Introduction

Climate Change is one of the gravest threats that the world is facing today, intimidating human freedoms and limiting choice. Occurring at a faster pace than it has in centuries, climate change with its potential to stall developmental efforts is capable of causing major human development reversals in the lifetime of humanity (Human Development Report, 2007/2008).

Societal vulnerability to the risks associated with climate change exacerbate ongoing social and economic challenges, particularly for marginalized societal groups who are most dependent on resources that are sensitive to changes in climate (Adger, Huq, et al., 2003). Women are particularly affected by the combination of climatic and environmental stresses, as they are the ones primarily involved in activities related to natural resources. Their economic and social roles intrinsically link them to natural resources and the environment. Thus, environmental degradation deeply entangles women in a vicious spiral of poverty, high fertility, poor health, and limited opportunities. Degraded environments not only threaten women's health, but also increase the time women must spend to find water and fuel and produce food (UNFPA, 2001), intensifying their struggle to balance their productive and reproductive roles. Agarwal (1992) observes that women in India have been active in the environmental struggle largely because their position in society is such that they are the most affected by environmental decline and hence are most interested in resisting it. Further, Jennings and Magrath (2009) note that women's specific needs and ideas for adaptation are less likely to be heard or acted upon and their voices largely remain marginalized in the environmental debate. According to Braidotti, Charkiewicz, Hausler and Wieringa (2004) any solution to the environmental crisis must provide for a new consciousness by linking together the subjugated knowledge of the oppressed and marginalized people, especially women and should respect and reflect their identities, specific struggles and position.

The Middle Himalayan region of Garhwal, India is known for its rich natural wealth. Yet in recent years the increased exploitation of natural resources in the region has led to the region facing severe social and ecological stresses. Today, the Himalayan Glaciers are among the fastest retreating glaciers in the world causing massive economic and environmental problems in Northern India (WWF, 2005). Findings of the studies conducted in the Middle Himalayan region have indicated that the over a period of 25 years, the intensity of rainfall has gone down with the range of maximum temperature increasing and rate of snowfall decreasing (Singh, 2010).

With few employment opportunities and sharp reduction in agricultural incomes due to climatic variations and increased natural calamities, the region is faced with high rates of male migration

(Kollmair, 2010). Additionally, women's hardships have increased manifold as the burden of agriculture now rests totally on women as they struggle to support families with small, fragmented landholdings, backward modes of farm production, difficult geographical conditions and depletion of Common Property Resources due to erratic climatic conditions. The combination of all these stresses has resulted in the pauperisation of women as they cope with the varying effects of changing climate. (Rana,1996).

In the wake of these facts, the present study endeavoured to map Hill women's perceptions about Climate Change and understand the challenges they face due to the changing climate. The objective of taking up this study was to comprehend their understanding of the changing climate and map the issues that make them increasingly vulnerable to its effects.

## **Methodology**

The study was undertaken in the Chamba town of Middle Himalayan region of Garhwal, Uttarakhand and strived to provide a qualitative understanding about Hill women's perceptions of climate change. The region selected for the study on one hand has seen severe erosion of natural resources while on the other it has several strong grassroots initiatives to address the challenges. In the past, it has also been home to environmental movements such as the Chipko Movement and the Beej Bachao Aandolan (Save Indigenous Seeds Movement). Today, several community based collectives of local women known as the 'Mahila Mangal Dals' and initiatives like Henvavani Community Radio, have initiated steps for dialoguing these issues amongst different stakeholders as well as take up environmental protection activities for the conservation and regeneration of natural ecosystems.

To qualitatively capture the perceptions of the hill women about the changing climate, Participatory Learning and Action (PLA) exercises were undertaken with the women from the CBOs in four villages namely Jugadgaon, Hadam Malla, Chhota Syuta and Jijli, close to the town of Chamba. The selection of villages was done to enable geographic variation within the area to enable a holistic understanding of the region. All the four villages selected were located far off from each other on separate hills wherein the geographic systems prevailing in one village may not necessarily apply to the other villages.

In the monthly meetings of the CBOs, women were asked to identify the aspects of changing climate and record the variations perceived in these aspects. Four different PLA maps were drawn in each village to understand various aspects of climate change and nearly 30 women from each of these villages participated in the processes. Further, in-depth interviews with the women and key informants were also undertaken to gather the data.

## **Findings and Discussions**

Discussions with the women were held to primarily understand women's conceptualization of Climate Change. Further variations in climate related aspects were documented longitudinally in three broad temporal periods that were, present – last 1-2 years, recent past - 3-5 years ago and past - more than 8-10 years ago. The Seeds method used in performing the PLA exercise required the women to rate the variation in the aspects of Climate Change that they have perceived with time. A longitudinal analysis enabled women to identify and discern aspects they perceived change in. In their articulations about Climate Change, three categories of aspects emerged namely –

1. Changes in the Climate
2. Natural Disasters and Calamities
3. Impact of Climate Change on the lives of the Women

### **1. Changes in the Climate**

Women clearly identified several changes in the climatic aspects. Table 1 represents the PLA maps that include changes in rainfall pattern, intensity of heat, cold and fog in the region.

**Rainfall:** Women from all the villages clearly perceived rainfall variation as the most prominent aspect of climate change. They felt that a decade ago, rainfall pattern used to be moderate, neither very high, nor very low, but consistent. However, in the recent past, significantly less amount of rainfall occurred, triggering drought like conditions in the area. Presently a very high level of rainfall was observed in the area. In the words of the women from Hadam Malla village,

“...A decade ago, the rains used to happen as they always have happened...in accordance to our lives, our needs... However for the last 5-6 years, they rains have become very less and scanty, causing drought like conditions. This year the rains were so heavy that they brought destruction with it...”

**Increased intensity of Heat, Cold and Fog:** Increase in the intensity of heat and cold was another aspect of climate change that the women perceived. Thus, they felt that the summers were hotter and the winters colder than they used to be. Interestingly, some variations in perception were seen amongst women from village near the river. They didn’t perceive such extremes of heat and cold. Also, fog has become more common in the hills, with women feeling that there are more foggy days and intensity of fog has also increased manifold in the recent past.

**Table 1: Aspects of changes in the Climate**

Aspect	Village	Past	Recent Past	Present
Rainfall	Jugadgaon (JG)	***** **	****	***** ****
	Hadam Malla (HM)	***** **	***** **	***** ****
	Chhota Syuta (CS)	***** *	***	***** ***
	Jijli (JJ)	***** **	****	***** *****
Intensity of Heat and Cold	JG	*****	****	***** ..
	CS	*****	***** .	***** ...
	JJ	***** ...	***** ...	***** ...
Fog	HM	None	xxx	xxxxxx xx
	CS	None	xxx	xxxxxx x

## 2. Frequency of Natural disasters and calamities

Another aspect emerging in women’s articulations about Climate Change was the change in the occurrence of events of natural disasters and calamities in the region. Women felt the frequency of natural disasters had substantially increased. Table 2 represents this data.

**Landslides:** Landslide was an aspect that was singularly the most important aspect the women correlated to climate change. Being a hilly terrain, landslides were an incidence that local people were aware about. Further, women felt that in the past there used to be occasional incidences of landslides but in the recent past, the rate of landslide occurrences has gone up so much that it has started causing immense havoc in their lives.

**Cloudburst:** Cloudbursts surfaced as a new threat the region has started experiencing. According to the women, cloudbursts were unheard of until a decade ago. However, in the last 1-2 years, their frequency has increased to acquire a meaning properly. During the discussions while conducting PLA exercise in Chhota Syuta Village, women said,

“...When Cloud burst happened, there was a sudden, very heavy and incessant rainfall that took place...lasting for several hours... for a phenomena that hasn't ever taken place here in the past...it became a common occurrence this year, leading to several landslides... destruction of our crops...and at the same time limiting our access to fuel and fodder...thereby threatening our lives and livelihoods...”

**Table 2: Frequency of Natural Disasters and Calamities**

Aspect	Village	Past	Recent Past	Present
Landslide	JG	***** **	*****	***** ***
	HM	**	*****	***** ***
	CS	***	*****	***** ***
	JJ	***** *	***** ***	***** *****
Cloudburst	JG	None	None	xxxx
	CS	None	None	xxxxx
Earthquake	HM	••	•••	•••• •
	CS	••	•••	•••• ••
	JJ	•••• •••	•••• •	••••

**Earthquake:** Tehri Garhwal region which is situated in the seismic zone V is faced with very high level of seismicity (Arya, 1999). Experiencing tremors was an aspect people were familiar with. However, women perceived an increase in the frequency and intensity of tremors in the last few years. According to them, the tremors they have faced presently are more severe and long lasting as compared to how they used to be a decade ago. The women were of the opinion that faulty construction practices have weakened the foundations of the mountains, hence the earthquakes are becoming more common and stronger by the passing day.

### 3. Consequences of Climate Change on their lives

Another aspect surfacing out of women's articulations about climate change was the hardships they were facing in their lives. Women correlated their increasing hardships with the changes in the climate. Table 3 depicts the PLA maps representing water shortage, forest cover, fodder availability, forest fires, wild animals and agricultural productivity and farming as the aspects aggravating women's hardships.

**Density of Forest Cover and forest fires:** Forests are CPRs with which the lives of hill women are intricately and deeply linked. Poor women especially face increased hardships due to a decline in the CPRs (Agarwal, 1992). Hill women perceived variations in the forest cover of the region. The last few years have seen serious efforts for the revival of forests and the regeneration of some of the forests. Infact, villages that had poor forest cover in the past had been reviving the forest in their region as well. However, women in their narratives clearly brought out the challenges they faced despite of increased tree density for the region has been planted with similar tree types. Thus, they understand that the forests being heterogenous in their natural bounty have largely become monogamous. As hill women's lives are deeply attached to the availability of fuelwood, fodder and other forest products, forest fires disrupt their access to the forest commons. Women feel that the instances of forest fires have considerably gone down due to the initiatives taken by the village people and fast action by forest officials in resolving the fire.

**Fodder Availability:** Livestock management is another activity that the hill women practice for their own subsistence, thus the availability of fodder becomes a crucial aspect. In the past women never used to feel a dearth in the quantity of fodder, but in the recent past, due to a drop in the level and

frequency of rainfall, fodder was scanty and only available in the villages near a water source such as spring or river. Since, there has been increase in the intensity of rainfall in the last 1-2 years fodder is available in plenty presently. In the discussions, women from Chhota Syuta narrated their hardships,

*“...All of us in the hill communities have domestic animals in our homes, therefore fodder is compulsorily needed... a few years ago when the rainfalls didn’t happen in plenty... we had to leave our houses early in the morning and travel more than 50 Kilometres on foot to get fodder for our cattle.... this impacted our health and working capacities...”*

**Table 3: Consequences of Climate Change on the lives of Women**

Aspect	Village	Past	Recent Past	Present
Density of Forest Cover	JG	♣♣♣♣♣ ♣♣♣♣	♣♣♣♣♣ ♣	♣♣♣♣
	HM	♣♣	♣♣♣♣	♣♣♣♣♣♣ ♣♣
	CS	♣♣♣	♣♣♣♣♣♣	♣♣♣♣♣♣ ♣♣♣♣♣♣
	JJ	♣♣♣♣♣♣ ♣♣♣♣♣♣	♣♣♣♣♣♣ ♣♣♣♣	♣♣♣♣♣♣ ♣
Forest Fires	JG	xxxxxx xxx	xxxxxx	xxx
	HM	xx	xxxxxx x	xxxxxx xxx
	CS	xxxxxx xx	xxxxxx x	xxx
	JJ	xxxxxx x	xxxxxx x	xxx
Fodder Availability	JG	●●●●● ●●●●	●●●●● ●	●●●●● ●●●
	HM	●●●●● ●●●	●●	●●●●● ●●●●
	CS	●●●●● ●●●●	●●●	●●●●● ●●●●●
	JJ	●●●●● ●●	●●●●● ●	●●●●
Water Shortage	JG	*	***** **	***** *
	HM	****	***** *	***** ***
	CS	***	***** **	***** ***
	JJ	***** *	***** **	***** ***
Agricultural Productivity and Farming	HM	♣♣♣♣♣ ♣♣♣♣	♣♣♣♣	♣
	CS	♣♣♣♣♣ ♣♣♣♣	♣♣♣♣♣	♣
	JJ	♣♣♣♣♣♣ ♣♣♣♣	♣♣♣♣♣♣ ♣	♣♣♣

**Water Shortage:** One of the most crucial aspects that emerged in the PLA exercises conducted with the women was the lack of availability of drinking water and the drying up of their water sources. Women from all the villages perceived that the underground water table has gone down because of water based farming, pollution and tourism coupled with poor rainfall in the recent past. Further, they felt that poor density of trees has led to low retention of water, increasing surface run-off. Having comprehended this, they were of the opinion that over a period of ten years the drinking water shortage has consistently exacerbated.

***Agricultural Productivity and the impact of wild animals:*** As the majority of men in the hill communities have migrated out of the villages, farming provides for food for subsistence and an additional source of income for the women and their families. Women from all the villages noted a steep decline in the agricultural productivity over a past few years. They attributed their perceptions to the advent of climate change making agriculture productivity increasingly uncertain. However, they didn't deny the threat to agriculture from wild animals. They were able to comprehend that due to increasing deforestation and use of forestland for agricultural purposes, wild animals have been pushed out of their natural habitat and hence have started creating havoc around the human settlements, further increasing the hardships of the women.

#### **4. Attributors of Climate Change**

In their articulations women also narrated their perceptions about the causes of Climate Change. They not only linked Climate Change to pollution and felling of trees or other environmental stressors, but were also able to correlate Climate Change to deep complex societal processes. Further, in their discussions the dichotomous nature of these aspects emerged as women evaluated the pros and cons associated with them and how their own lives were deeply linked and defined by the nature of these. The dichotomies women posed provided valuable insights about the challenges of addressing the issue of Climate Change in the hill communities.

***Conflict between the traditional and modern knowledge system:*** One of the dichotomies that the women articulated was the conflict between the traditional and modern knowledge systems. Women found that the modern systems of knowledge did not always fulfil the promises that they were made to believe. In the name of modern, better knowledge they had adopted practices that were actually detrimental to them, to their environment and their lives. They gave instances of farming practices, methods of construction of roads and homes, to system of supply of drinking water in the villages. Faced with few options most felt that the modern knowledge systems were forced upon them. Their traditional ways of doing were no longer relevant in the present context and slowly took away their access to and control over natural resources. Thus the natural resources they not only used but also cared for were no longer theirs. According to Dhakal and Leduc (2010) women of Himalayas are its users, custodians and managers, despite this, new schemes rarely give value to the traditional knowledge they possess that significantly contributes to the ecosystem services. Their knowledge is crucial for food security, health, and the general well being of mountain communities and is increasingly becoming critical for adaptation to the growing challenges of climate change.

***The Development Paradigm: Economic versus Ecological Development:*** Women increasingly felt that in the name of development, the efforts of the Government directed at bringing about modern facilities such as electricity and piped water at the disposal of the people has had devastating effects on the environment and the lives of the people associated with it. They observed that the efforts dedicated towards economic development have led to large scale projects such as dams displacing the people from their own land and submerging large forestlands under water. The narratives of the women spoke about the increased intensity of cold wave and fog that they started perceiving after the creation of the dam. Further, they questioned the foundation of this new development paradigm as it believes in having economic development at the behest of the degrading the ecology. Hence, to satisfy the needs of growing urban populations, the intervention by the Indian state on the Himalayan environment has increased the pressure on the hill ecosystem (Braidotti et al, 2004).

***Collective versus Individual Value Systems:*** Following the incidence of climate change, the women have started taking cognisance of the collective efforts that goes into saving the environment. They gave instances of the harmony at collective level that helps them ward off many forest fires. Often, the local clusters of Women's groups and community based organizations play an important part in preventing forest fires. As the women were always the ones to be affected by any damage to their environment because they live in close association with it, hence they try their best to conserve it (Agarwal, 1992).

## Conclusions

The PLA conducted with women of the four villages illustrated that women were cognisant of the changes in the environment. Women's perceptions about climate change were limited not just to the changes in the climate but extended to the disasters and calamities that they were experiencing as well as its impact on their lives. PLA's not only helped to understand the temporal variations perceived by women but also the geographical variations.

With serious decline in the availability of natural resources such as water, fodder and the agricultural productivity, increasing risk of forest fires and the attack on the crops by the wild animals has led to increase in the hardships faced by women residing in hill communities. All the aspects emerging from the PLA exercise indicate the increasing struggle of women as all these aspects collectively affect women's lives by aggravating the challenges they have to face due to the changing climate. Thus, in a micro socio economic and physical system that the present study focussed upon, substantial temporal and geographical variation in climatic conditions and its multifold consequences are deeply impacting women's lives increasing their vulnerability and challenges faced by them.

Clearly providing spaces for people to not only dialogue, but also discuss and find solutions to the challenges they are facing remain key to developing sustainable paradigm that can truly impact people's lives as well as preserve the environment. Chamba has been the home of several environmental movements spearheaded by local women and environmentalists. With new initiatives like Community Radio emerging in the region, the scope and possibility for dialoguing and change within communities has increased manifold.

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## References

- [1] A. Moitra and A. Kumar. *Hill Women's perceptions and articulations about Climate Change: A case of Henvalvani Community Radio*. Unpublished Master's Dissertation, Department of Development Communication and Extension, Lady Irwin College, University of Delhi, India, 2011.
- [2] A.S. Arya. Damage Scenarios of Probable Earthquakes of M6.5 in U.P. Himalaya. *Himalayan Geology*. 1999, 20(1): 93-103.
- [3] B. Agarwal. Gender and Environment Debate: Lessons from India. *Feminist Studies*. 1992, 18(1): 119-158.
- [4] H. Reid, M. Alam, et al. Community-based adaptation to climate change: an overview. *Participatory Learning and Action, Community Based Adaptation to Climate Change*. 2009, (60): 11-29.
- [5] M. Kollmair. Challenges and Opportunities for Women in the Changing Himalayas. *Gender Perspectives in Mountain Development*. 2010, (57): 2-4.
- [6] P. Sharma, N. Ogale and S. Singh. *Women in Hill Agriculture*. Concept Publishing Company, 2010.
- [7] R. Braidotti, E. Charkiewicz, et al. *Women, the Environment and Sustainable Development, Towards a Theoretical Synthesis*. Zed Books, 2004.
- [8] R.K. Singh. *Climate Change and its impact on Crops in Mid Himalayan Region*. Uttarakhand: College of Forestry and Hill Agriculture, Hill Campus, GBPUAT, Rani Chauri, Tehri Garhwal, 2010.
- [9] R. S. Rana. Garhwali Women: Limits of Change. *Economic and Political Weekly*. 1996, May 11, pp: 1125-1126.
- [10] S. Jennings and J. Magrath. What Happened to the Seasons? *Oxfam GB Research Report*, 2009.
- [11] T.D. Dhakal and B. Leduc. Women's role in Biodiversity Management in the Himalayas. *Gender Perspectives in Mountain Development*. 2010, (57): 16-17.

- [12] UNDP. Fighting Climate Change: human solidarity in a divided world. *Human Development Report*. 2007/2008, pp: 1-18.
- [13] UNFPA. Women Need Support to Break Vicious Cycle of Environmental Degradation, Poverty, Poor Health and High Fertility. *The State of the World Population*. 2001.
- [14] W.N. Adger, S. Huq, et al. Adaptation to climate change in the developing world. *Progress in Development Studies*. 2003, 3: 179-195.
- [15] WWF. An overview of Glaciers, Glacier Retreat, and subsequent impacts in Nepal, India and China. 2005.

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