

# Prologue

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Climate change and Global Warming have taken the civilization by storms, and thus, any sensible minds anywhere in the world is now taking Climate Change as an effective threat to the very existence of its own and surrounding. After climate change and global warming, there are ten sub-thousands of factors which can be classified as natural, meteorological, astronomic anthropogenic and a mix of all these mentioned already. For a good count of times, the good earth has passed through a cycle of global warming and cooling, the ice ages. The present global warming scenarios, as experts across the world, claim that it is mostly due to anthropogenic factors. The change in night temperature, rainfall pattern, setting of monsoon and winter, withdrawal of snowlines from its previous expansion, all are indicators and predictors of climate change. It is due to global warming, the yield of most of the conventional crops shall decline, floral and faunal diversity would be affected, the coastal lines will be inundated enough to promote migration.

The Hill Ecosystem is possibly going to be the worst hit. The melting of snowlines and its movement, the change of river courses and drying out of water bodies, the decline of productivity and bio-diversity increased seismic vulnerability all would take the ecosystem with higher fragility and vulnerability.

The unplanned urbanization in hill ecosystem, mindless construction work including depletion of dolomite and multistoned buildings are being associated with deleterious impact of global warming hill ecosystem is now at the crucks of global concern. Any global threat should not be confined only to minds of experts or scientists the threat of climate change must properly be perceived by the people across the profession and pursuits.

Perception is the experience based disposition of learning and idea. Even with increasing propensity of cyclones, extreme summer and winter, rising of sea levels, landslides and avalanches, people do not perceive it from the point of global warming and climate change, yet. Befitting extension strategy has also been the need of the hour to involve people in the people's participatory movement to mitigate climate change risk and disaster.

So the present study has envisaged the People's Perception down the line of experience and elements of learning, people's perception should be conceived as one of the most important predictant to be estimated through a set of exogenous variables in estimating climate change and its effect on social ecology as well as natural ecological set up at length.

There is a worldwide consensus that global warming is a real, rapidly advancing and widespread threat facing humanity this century. Scientists have presented evidence and tested models to substantiate this truly alarming fact (Chaudhary & Aryal, 2009).

In order to understand how human beings would respond to climate change, it is essential to study people's perceptions of climate and the environment in general. (Vedwan et al.2001). Human expectations regarding weather and climate sometimes lead to perceptions of climate change which are not supported by observational evidences (Rebetcz 1998). Studies focusing on the socioeconomic aspects of climatic change are sparse and have almost exclusively restricted their analysis to the impact of environmental modifications on agricultural production (Scott et al. 1990). Micro-level studies of the impact of climatic variability on people's livelihoods and their consequent responses are relatively few.

Thus, this study is important in a way that it takes into account local people's awareness of weather fluctuations and aims at understanding the localized impact of the climate in this region which are not directly visible but changes, nevertheless, are happening indirectly. This kind of study can prove to be vital to arrive at an understanding of patterns in human responses, for future studies. This sort of work was needed to know- 'what one thinks' and 'how one thinks' about the changes in climatic patterns and their impacts; and to give an account of understanding and responses about the changes in the plains.

Himalayan degradation coupled with global warming is imposing severe threats to the existing environmental problems. Recent modelling studies suggest that the forest ecosystems can be seriously impacted by future climate change. Even with a rise in 1 to 2 °C, much less than the most recent projections of warming during this century, most ecosystems and landscapes will be impacted through changes in species composition, productivity and biodiversity. These will also have an impact on the people who depend upon the forests for their livelihoods. Due to the impact of global warming, the atmospheric temperature is increasing in a dramatic manner, which has raised the surface air temperature of the Himalayan region by 1 °C. The concept of climate change and its consequences have been theorized, discussed and predicted by the scientists and environmentalists world-wide during the last two decades. However, there is little or no micro-level study depicting the actual change in climatic conditions and its impact on people and natural resources, particularly in a developing country like India.

Having this brief background in place, the present study has got the following objectives:

### **Objectives of the Study**

- To estimate the People's Perception on Global Warming and Climate Change and their effect on Hill Ecosystem.
- To estimate the people's perception on Global warming through a set of predictor's variables.
- To assess the interactive relationship between predictors and predictant variable, both intra and inter levels.
- To derive some policy implication that could be well implicative in designing and formulating micro level policy for mitigating Climate Change, especially in hill ecosystem.

### **Importance of the Study**

The Himalayan mountain ranges are more fragile, complex and vulnerable to global climatic changes. The impacts of ongoing changes in climate have already been experienced by the hill communities. The economy of the Himalayan region is fully dependent on natural resources. Changes in natural resource base due to global warming will affect livelihood of local communities. Rapid melting of Himalayan glaciers or decrease in snow cover has affected the overall availability of water for drinking, agriculture, hydropower and other purposes. Shift in forest vegetation, biodiversity and cover will have positive or negative impact on the livelihood of local communities. Therefore, there is an urgent need to study the community perceptions on climate change, key local indicators and perceived impact coping mechanisms for future planning.

It is increasingly argued that many climate change studies, whilst effective in alerting policymakers to the possible effects of climate change, have had limited usefulness in providing local-scale guidance on adaptation, and that the climate change community should learn from experiences gained in food security and natural hazards studies (Richard, 2004). The analysis begins with the recognition that vulnerability exists today, vulnerability that will not disappear on its own and may indeed be growing, and with the desire to make active interventions to reduce the vulnerability (Richard, 2004). The scientific knowledge on impacts of climate change is increasing all the time, as are practical experiences in responding to adaptation needs. This knowledge needs to be exploited.

### **Some axiomatic statements over the study**

- People's perception on climate change is based on their routine observation as to how, what and why the biodiversity is declining.
- The impact of global warming and climate change is well discernible through the change in local market landing of different vegetables, fishes and cereals, e.g. local species are increasingly being replaced with exotic ones.
- People of a given social and biophysical ecology, can perceive the brunt of climate change vis-à-vis global warming because of their education, interaction, strategic location, settlement, increasing stress on public health, cattle's etc.

- Community has got their own unique way of perceiving climate change which can be attuned to their sugeneris socio-economic and cultural traits.

### **Defining Terminology**

#### **Perception**

As Ban and Hawkins (2000) define perception‘, it is the process by which we receive information or stimuli from our environment and transform it into psychological awareness. It is interesting to see that people infer about a certain situation or phenomenon differently using the same or different sets of information. Knowledge, interest, culture and many other social processes that shape the behaviour of an actor who uses the information and tries to influence that particular situation or phenomenon (RECOFTC 2001, Cited by Banjade, 2003). Saarinen (1976) talks about perception as an extremely complex concept and confines social perception ‘which is concerned with the effects of social and cultural factors on cognitive structuring of our physical and structural environment. This varies with the individual’s past experiences and present sets or attitudes acting through values, needs, memories, moods, social circumstances, and expectations (Saarinen, 1976, Cited by Banjade, 2003).

#### **Impact**

The effects of climate change on natural and human systems<sup>§</sup> (IPCC, 2007). Depending on the consideration of adaptation, one can distinguish between potential impacts and residual impacts:

- **Potential impacts**

All impacts that may occur given a projected change in climate, without considering adaptation.

- **Residual impacts**

The impacts of climate change that would occur after adaptation.

#### **Climate Change**

United Nation Framework Convention on Climate Change (UNFCCC) has defined climate change as a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.

For this research purpose definition given by Intergovernmental Panel for Climate Change (IPCC) has been used, which defines climate change as a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.