**Abstract**

The Himalayas, the youngest but highest mountain system, that acts as (i) Store house of snow and ice more than anywhere else in the world, outside the two poles, (ii) Provider of large volumes of freshwater to the people in Indian subcontinent, is popularly described as ‘The Third Pole’ of the world. It is characterized by a complex geological structure, snow capped peaks, large valley glaciers, deep river gorges and rich biological diversity. Broadly the Himalayan region, encompassing the Hindu Kush mountains and Tibet region of China, spans over an area of more than 4.2 million km2. Ten major rivers of the world originate from the Himalayan region, and drain a large part of Asia thereby making it a crucial ecological entity in the region.

 Climate change (CC) is a major global environmental challenge with implications on food production and security, fresh water supply, health, forests and biodiversity, and the overall environment. Projected studies indicate that Himalayan forests, and alpine grasslands including that of Indian Himalayan Region (IHR), can be very sensitive to CC. The region is likely to warm more rapidly, thus affecting the life and livelihoods of the people and stability of the region. Studies exhibit consistent trends in overall warming in the region over the past few decades, with indications that temperatures are rising at higher rates in higher altitude areas. Model-based projections also suggest that warming will continue for the foreseeable future. Under such a scenario of changing climate, it is expected that the diverse ecosystem components in the region will get affected. This phenomenon has wider implications for human survival both in uplands and lowlands where large populations are dependent on services emanating from the Himalayan ecosystem. In other words there is a need to develop effective strategies and plans for adaptation and mitigation. This requires attention and a balanced thinking at the local to the global level. While at local and national levels, following the projections on change, efforts are being made w.r.t. understanding the impacts, although the intensity and direction of investigations across regions is not uniform. Therefore, the global understanding on CC implications in the Himalaya is heavily influenced by studies/trends emerging from bigger nations in the region. Further, it is most often based on data sets of a particular biome or land form (e.g. Tibetan grasslands) thereby making the other biomes/land forms and dependent communities less represented. As a result the global projections/scenarios w.r.t. Himalaya remain less applicable for the entire region. This calls for uniform distribution of studies across diverse landforms/biomes so that scenarios become more agreeable.

Under the National Mission for Sustaining the Himalayan Ecosystem (NMSHE), as one of the core constituents of India's National Action Plan on Climate Change (NAPCC), studies have been initiated to understand the long term effect on diverse ecosystem components. The G.B. Pant National Institute of Himalayan Environment & Development has been assigned coordination of the task force on 'Forest resources and plant biodiversity' of the IHR. Little information is available on climate data of this region. While some studies have been reported from Hindu Kush Himalayan region, which largely include the Tibetan plateau encompassing grasslands, such information may not reflect IHR scenarios as the latter is vastly forested landscape. Although data sets are being generated under NMSHE, there is a need for a more serious thought process and R&D by Indian Scientists on CC aspects on IHR. Other Institutes may join hands to generate a Pan-Himalayan picture, which should form the basis for adaptation and mitigation strategies in the region.